

Open and Distance Learning and Women's Advancement in Information Technology: The NOUN's Experience

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Abstract

This study investigates the potential of Open and Distance Learning (ODL) in advancing women's careers in Information Technology (IT), with a focus on the initiatives of the National Open University of Nigeria (NOUN). It aims to investigate how ODL can empower women by addressing gender-based disparities and enhancing career trajectories in IT. Despite the digital era's advancements, women remain underrepresented in IT-related occupations due to cultural norms and persistent gender disparities. ODL has emerged as a promising solution, offering flexible and accessible learning opportunities for women pursuing IT careers. The study utilised the interview and survey approach, combining quantitative and qualitative data collection from a sample size of 360 female students selected from six geopolitical zones. A total of 360 questionnaires were administered to selected NOUN centres across the six geopolitical zones, with 250 responses received. Additionally, interviews were conducted with 20 staff members to gather deeper insights. Findings reveal that NOUN's ODL programmes benefit female students by offering flexible learning options, personalised support services, and affordable mentorship, which help to mitigate barriers to IT careers. However, challenges such as gender stereotyping, resource scarcity, imposter syndrome, biases, discrimination, and lack of basic computer skills were identified as obstacles to women's empowerment in IT. The study underscores the potential of ODL as a tool for promoting gender equality and inclusivity in the IT sector. It highlights key challenges and proposes strategies to overcome them, contributing valuable insights for policymakers, educators, and stakeholders. Further research is recommended to investigate the effect of flexible study schedules on women's performance in IT education.

Keywords: Gender Equality, Information Technology, National Open University of Nigeria, Open and Distance Learning, Women's Advancement

L'apprentissage ouvert et à distance et l'avancement des femmes dans les technologies de l'information : l'expérience du NOUN

Résumé

Cette étude examine le potentiel de l'apprentissage ouvert et à distance (AOD) pour faire progresser les carrières des femmes dans les technologies de l'information (TIC), en mettant l'accent sur les initiatives de la National Open University of Nigeria (NOUN). L'étude vise à analyser comment l'AOD peut autonomiser les femmes en s'attaquant aux disparités entre les sexes et en améliorant les trajectoires de carrière dans l'informatique. Malgré les progrès de l'ère numérique, les femmes restent sous-représentées dans les professions liées à l'informatique en raison des normes culturelles et des disparités persistantes entre les sexes. L'AOD est apparu comme une solution prometteuse, offrant des opportunités d'apprentissage flexibles et accessibles aux femmes qui poursuivent une carrière dans l'informatique. L'étude a utilisé l'approche de l'entretien et de l'enquête, combinant la collecte de données quantitatives et qualitatives à partir d'un échantillon de 360 étudiantes sélectionnées dans six zones géopolitiques. Au total, 360 instruments ont été administrés à des centres NOUN sélectionnés dans les six zones géopolitiques, avec 250 réponses reçues. En outre, des entretiens ont été menés avec 20 membres du personnel pour recueillir des informations plus approfondies. Les résultats révèlent que les programmes AOD du NOUN bénéficient aux étudiantes en offrant des options d'apprentissage flexibles, des services de soutien personnalisés et un mentorat abordable, qui contribuent à atténuer les obstacles aux carrières informatiques. Cependant, des défis tels que les stéréotypes sexistes, la pénurie de ressources, le syndrome de l'imposteur, les préjugés, la discrimination et le manque de compétences informatiques de base ont été identifiés comme des obstacles à l'autonomisation des femmes dans l'informatique. L'étude souligne le potentiel de l'ODL en tant qu'outil de promotion de l'égalité des sexes et de l'inclusion dans le secteur informatique. Elle met en évidence les principaux défis et propose des stratégies pour les surmonter, apportant des informations précieuses aux décideurs politiques, aux éducateurs et aux parties prenantes. Des recherches supplémentaires sont recommandées pour étudier l'effet des horaires d'études flexibles sur les performances des femmes dans l'enseignement informatique.

Mots-clés : L'égalité des sexes, Les technologies de l'information, L'Université nationale ouverte du Nigéria, L'enseignement ouvert et à distance, la promotion de la femme

Introduction

Women's education has become a globally recognised priority, with increasing emphasis on gender equality in academic pursuits¹. Over time, societal views on the standing of women's access to education have evolved, resulting in efforts to dismantle barriers such as cultural norms, economic inequality, and discriminatory practices at both national and international levels². Achieving gender parity in education is critical for advancing development goals, as reflected in the United Nations' Sustainable Development Goal 4, which emphasizes universal access to quality education³. Educating women not only empowers them personally but also leads to social advancement, economic growth, and improved health outcomes⁴. Ensuring equal educational opportunities for women is essential to achieving broader developmental objectives⁵.

In Africa, and particularly in Nigeria, attitudes toward women's education have shifted, with growing recognition of the importance of gender equality in academic success⁶. Efforts to overcome obstacles such as cultural expectations, socio-economic challenges, and gender stereotypes have been made. The Nigerian government and various organizations have implemented guidelines to encourage girls' education and encourage women's participation in both academic and professional sectors⁷. Despite this progress, women, particularly in rural areas, still face significant barriers, including limited access to education and societal pressures that may influence their career choices⁸. Nonetheless, there is an increasing awareness in Nigeria of the

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- ¹ Halefom Gezaei Abera, "The Role of Education in Achieving the Sustainable Development Goals (SDGs): A Global Evidence Based Research Article," *International Journal of Social Science and Education Research Studies* 3, no. 01 (2023): 67–81.
 - ² Okunade Oluwasogo Adekunle, Olanrewaju Babatunde Seyi, and Ajao Jumoke Falilat, "Demographic Factors and Status as Predictors of Open and Distance Learning Students Academic Performance in Computer Science," *Communication in Physical Sciences* 6, no. 2 (2020).
 - ³ Oba-Adenuga Adeleke and Olusegun Adeleke, "ACCESS TO UNIVERSITY EDUCATION: NATIONAL OPEN UNIVERSITY OF NIGERIA A VERITABLE ALTERNATIVE," 2021, 281–300.
 - ⁴ Ethel Ewoh-Odoyi, "How Gender Is Recognised in Economic and Education Policy Programmes and Initiatives: An Analysis of Nigerian State Policy Discourse," *Social Sciences* 10, no. 12 (2021), <https://doi.org/10.3390/socsci10120465>.
 - ⁵ Felix Chukwuma Aguboshim, Ifeyinwa Nkemdilim Obiokafor, and Chidiogo C Nwokedi, "Closing ICT Usability Gaps for Nigerian Women and Girls: Strategies for Reducing Gender Inequality," *World Journal of Advanced Research and Reviews* 15, no. 1 (2022): 56–63.
 - ⁶ Toyin Ajibade Adisa et al., "Social Dominance, Hypermasculinity, and Career Barriers in Nigeria," *Gender, Work & Organization* 28, no. 1 (2021): 175–94.
 - ⁷ ADEOTI ADEREMI AKINWALE, "GENDER EQUITY AND SOCIAL PROGRESS: EMPOWERING WOMEN AND GIRLS TO DRIVE SUSTAINABLE DEVELOPMENT IN SUB-SAHARAN AFRICA," *International Journal of Innovation Research and Advanced Studies*, 2023.
 - ⁸ Nisreen Ameen, Nnamdi O Madichie, and Amitabh Anand, "Between Handholding and Hand-Held Devices: Marketing through Smartphone Innovation and Women's Entrepreneurship in Post Conflict Economies in Times of Crisis," *Information Systems Frontiers* 25, no. 1 (2023): 401–23.

transformative power of education for women's empowerment. Furthermore, women still do not receive the same treatment as men worldwide, though education has dramatically improved this assertion in many countries⁹. Even though education in Nigeria is a powerful tool for transformation and emancipation, women continue to be viewed as inferior or lowly¹⁰¹¹¹².

NOUN's commitment to creating a supportive learning environment allows women to pursue education while balancing other commitments. By offering online resources, flexible study schedules, and remote support services, NOUN addresses obstacles such as time constraints and geographical limitations. This approach helps to close gender gaps in education, providing women with equitable opportunities to succeed in the industries. Research from Pakistan and Nigeria indicates that remote and open learning supports women's enrollment and empowerment¹³. By recognising the benefits of women's active participation in education and their jobs, NOUN creates a supportive environment that allows women to pursue their education through open and remote learning while managing their personal and professional obligations. NOUN helps women overcome obstacles, including time and location limitations, by offering online resources, flexible study options, and remote support services¹⁴. Despite being established in 1983, NOUN didn't begin full-fledged activities until 2002 according to Adeleke et al.¹⁵. It was founded to provide a range of people with flexible and affordable options for higher education, including those who cannot attend traditional universities due to their employment, families, or geographic location¹⁶. NOUN,

⁹ Veronica Olubunmi Adesua, "Implementation of Educational Policy for Socio-Economic and Political Emancipation in Nigeria," *British Journal of Education* 10, no. 10 (2022): 51–59.

¹⁰ Ajibade Adisa et al., "Social Dominance, Hypermasculinity, and Career Barriers in Nigeria"; Anne Dwyer et al., "Suitability of Text-Based Communications for the Delivery of Psychological Therapeutic Services to Rural and Remote Communities: Scoping Review," *JMIR Mental Health* 8, no. 2 (2021): e19478; Gordon Monday Bubou and Gabriel Chibuzor Job, "Individual Innovativeness, Self-Efficacy and e-Learning Readiness of Students of Yenagoa Study Centre, National Open University of Nigeria," *Journal of Research in Innovative Teaching & Learning* 15, no. 1 (2022): 2–22.

¹¹ Ajibade Adisa et al., "Social Dominance, Hypermasculinity, and Career Barriers in Nigeria"; Dwyer et al., "Suitability of Text-Based Communications for the Delivery of Psychological Therapeutic Services to Rural and Remote Communities: Scoping Review"; Bubou and Job, "Individual Innovativeness, Self-Efficacy and e-Learning Readiness of Students of Yenagoa Study Centre, National Open University of Nigeria."

¹² Ajibade Adisa et al., "Social Dominance, Hypermasculinity, and Career Barriers in Nigeria"; Dwyer et al., "Suitability of Text-Based Communications for the Delivery of Psychological Therapeutic Services to Rural and Remote Communities: Scoping Review"; Bubou and Job, "Individual Innovativeness, Self-Efficacy and e-Learning Readiness of Students of Yenagoa Study Centre, National Open University of Nigeria."

¹³ Sumera Hasan et al., "Challenges Regarding Access to Higher Education among Rural Women in Punjab Pakistan: Impact & Implication," *Pakistan Journal of Humanities and Social Sciences* 11 (June 30, 2023): 2624–2630, <https://doi.org/10.52131/pjhss.2023.1102.0554>.

¹⁴ Hasan et al.

¹⁵ Adeleke and Adeleke, "ACCESS TO UNIVERSITY EDUCATION: NATIONAL OPEN UNIVERSITY OF NIGERIA A VERITABLE ALTERNATIVE."

¹⁶ Oba-Adenuga Adeleke and Olusegun Adeleke, "Access To University Education: National Open University Of Nigeria A Veritable Alternative," 2021, 281–300.

which offers a wide range of programmes in numerous subjects, including information technology, has promoted open and distance learning in Nigeria. Through NOUN, a wide range of programmes including IT-related at different study levels is available for postgraduate and undergraduate degrees. A handful of NOUN's IT-related programmes are displayed in the Table below. These programmes give students, especially women, a solid foundation in IT concepts, regulations, and practical skills to compete with their peers in the labour market.

Table 1: NOUN Information Technology-related programmes across Faculties

Programs Code	Program Title	Host Faculty
7406	Ph.D. Management Information System (MIS)	ACETEL Programs
7405	Ph.D. Cyber Security (CS)	ACETEL Programs
7404	Ph.D. Artificial Intelligence (AI)	ACETEL Programs
7403	M.Sc. Management Information System (MIS)	ACETEL Programs
7402	M.Sc. Cyber Security (CS)	ACETEL Programs
7401	M.Sc. Artificial Intelligence (AI)	ACETEL Programs
5402	Ph.D. Information Technology	Sciences
5401	M.Sc. Information Technology (Internet Options)	Sciences
5305	PGD Information Technology	Sciences
5209	B.Sc. Mathematics/Computer Science	Sciences
5203	B.Sc. Computer Science	Sciences
5202	B.Sc. Information Technology	Sciences
4503	Ph.D. Educational Technology	Education
4403	M.Ed. Educational Technology	Education
4214	BLIS - Library and Information Science	Education
4205	B.Sc. (Ed) Computer Science	Education

Source: NOUN, 2024

Though the broader benefits of women's education for families and society are widely accepted, less attention has been paid to the potential for empowering women in IT-related fields, where they are significantly underrepresented¹⁷. Nigeria's 2021 ranking of 139 out of 153 countries in the Global Gender Gap Report highlights a troubling

¹⁷ Victor Olugbenga Ayoko et al., "History and Developments of Schools Administration in Nigeria: From Natives to Present," *International Journal of Education and Teaching Zone 2*, no. 3 (2023): 389–400.

reality: women are largely passive users of technology, while men dominate the nation's tech industry¹⁸. Empowering women in IT is crucial in today's digital age, with scholars such as Gordon and Gabriel emphasizing the need for substantial educational investments to integrate women into IT careers¹⁹. This shift requires stakeholders to prioritize women's participation in the technology sector.

Hence, this study investigates the potential of Open and Distance Learning (ODL) in advancing women's careers in Information Technology (IT), using NOUN as a case study. The following objectives will be used to achieve this goal:

1. Investigate general perceptions regarding the academic progression of women in Nigeria.
2. Explore the benefits female students gain from enrolling in IT-related programmes at an Open and Distance Learning Institution like NOUN.
3. Identify and understand the challenges NOUN faces in its efforts to empower female students pursuing IT-related programmes.
4. Propose strategies for NOUN to overcome obstacles in empowering female students pursuing IT-related programmes.

Theoretical Framework

The feminist theoretical frameworks that are frequently used to examine the societal, structural, and cultural obstacles that have traditionally prevented women from entering traditionally male-dominated industries like technology serve as the foundation for this study. It relates to women's advancement in Information Technology (IT) and Open and Distance Learning (ODL), and it clarifies how ODL, particularly through organisations like the National Open University of Nigeria (NOUN), can function as a transforming tool for women's empowerment and IT development.

Gender Inequality and Structures of Patriarchy

The patriarchal structures that uphold and sustain gender disparities in education are criticised by feminist theory, especially in STEM (Science, Technology, Engineering, and Mathematics) domains like information technology (Beck, 2022). For women who might experience familial or societal restrictions that keep them from attending

¹⁸ Kamila Habib et al., "Impact of Education and Employment on Women Empowerment," *European Online Journal of Natural and Social Sciences: Proceedings* 8, no. 3 (s) (2019): pp-62.

¹⁹ Hasan et al., "Challenges Regarding Access to Higher Education among Rural Women in Punjab Pakistan: Impact & Implication."

traditional universities, NOUN's ODL platform provides an option. NOUN helps women overcome social norms and gender preconceptions by facilitating remote learning, which enables them to pursue IT education and career advancement²⁰.

The Use of Education as an Empowerment Tool

According to feminist theory, education can be a very effective means of empowering people, especially women who have experienced marginalisation in traditional educational settings (Pasque & Nicholson, 2023). It makes the case that education gives women the agency and self-assurance they need to confront and change restrictive societal institutions in addition to imparting information and skills. NOUN gives women the flexibility to pursue IT education on their terms, enabling them to juggle career and academic goals with their obligations as mothers and wives²¹. Increased social mobility, financial freedom, and a larger presence of women in the IT industry can result from this empowerment through ODL.

Shaking Up Conventional Gender Roles

The goal of feminist theory is to undermine the old gender norms that keep women in the home and limit their access to the workforce and technology (Dosunmu & Dichaba, 2021). By enabling women to pursue IT education without having to leave their communities or move to metropolitan areas where colleges are frequently located, NOUN's ODL programmes challenge traditional gender norms. This adaptability redefines gender norms by enabling women to acquire technological skills and enter an area that has historically been controlled by men²².

The Digital Divide: A Feminist Critique

While equal access to digital resources sustains current gender disparities, feminist theory suggests that technology should be an equalising force (Wickens & Miller, 2020). By providing IT education to women from all around Nigeria, especially the rural areas, NOUN is actively working to close the digital gap^{23,24}. Through the

²⁰ Figen Yaman Lesinger, Hülya Şenol, and Nesrin Hürriyetoğlu, "Empowering Women through Online Education: A Case of North Cyprus," *Universal Journal of Educational Research* 10, no. 8 (2022): 504–11.

²¹ Naila Kabeer, "Gender Equality, Inclusive Growth, and Labour Markets," *Women's Economic Empowerment: Insights from Africa and South Asia*, 2021, 13–48.

²² Julia Ranta, "Women Entering Tech-Challenges Women Face in the Technology Industry," 2022.

²³ Aguboshim, Obiokafor, and Nwokedi, "Closing ICT Usability Gaps for Nigerian Women and Girls: Strategies for Reducing Gender Inequality"; Ranta, "Women Entering Tech-Challenges Women Face in the Technology Industry."

²⁴ Ranta, "Women Entering Tech-Challenges Women Face in the Technology Industry."

integration of mobile-friendly platforms and the provision of offline learning opportunities, NOUN guarantees the participation of women from underprivileged backgrounds in the digital economy, thereby enhancing their socioeconomic standing.

A crucial framework for comprehending how Open and Distance Learning contributes to women's advancement in IT is provided by feminist theory. Feminist theory views ODL programs, such as those provided by NOUN, as instruments for challenging conventional gender roles, tackling intersectional inequality, breaking down patriarchal systems, and empowering women via education. To make sure that women are not left behind in the quickly developing field of information technology, feminist theory emphasises the significance of developing inclusive, adaptable, and accessible educational options.

Materials And Methods

Data for this study was gathered using the survey and interview method. Quantitative data from students was collected through the survey method while the interview techniques were used to collate qualitative data from NOUN employees. Integrating these two techniques results in a complete understanding of the opportunities for women's empowerment inside NOUN's IT programs.

For the investigation, a multistage sampling strategy combining non-probabilistic and probabilistic sampling techniques was used. The 119 study centres in NOUN were first divided into 6 clusters using a cluster random sampling technique. These clusters are referred to as geopolitical zones. Second, one study centre was chosen at random from each zone using a purposive sampling technique. These are the South East Centre (Enugu), South-South Centre (Calabar), North East Centre (Buchi), North West Centre (Kano), North Central Centre (Jos), and South-West Centre (Lagos). The use of purposive sampling was justified by the selection of only locations with sizable student populations. Thirdly, the study's sample size consisted of 360 female students, since 60 of the students were chosen through a systematic random sampling procedure from each of the six clusters. Taro Yamen's algorithm was used to determine the study sample at a 0.04 confidence level. Data instruments were given to the faculty desk officers at each chosen centre for student responses. Three hundred and sixty instruments were supplied, with sixty (60) data instruments delivered to each of the selected study centres. Out of the 360 instruments that the students were given, 250 completed questionnaires were returned. To achieve the research aim, the instrument was divided into sections, Section A – General Perception on gender equality, and

Section B - Benefits of ODE, each of which contains ten questions. Section A sampled fifty (n = 50) NOUN students about their general understanding of gender equality while Section B sampled 200 female students studying IT-related programmes about their experiences as IT students at NOUN.

An interview session was organised with twenty (n = 20) staff members, including academic staff, administrators, and technicians handling student complaints, to gain more insight into female IT students' unique difficulties. The data that was acquired was recorded, coded (*ticked and coded as 1*), and analysed. A descriptive statistical approach was adopted in this investigation. Descriptive statistical analysis comprises collecting, interpreting, analysing, and summarising data to portray data as charts, graphs, and tables.

Results

Table 1
Responses from NOUN Students on the perception of female academic advancement/gender equality (n = 50)

S/N	QUESTIONS	SD	D	SA	A	U	Total Percentage
Section A (Academic Advancement/Gender Equality)							
1.	Males in Nigeria have better mental capabilities than females	2 (4%)	3 (6%)	30 (60%)	10 (20%)	5 (10%)	100%
2.	Women are generally treated as inferior to men in most aspects of life.	2 (4%)	5 (10%)	25 (50%)	15 (30%)	3 (6%)	100%
3.	Education does not give women a sense of belonging in society.	0 (0%)	7 (14%)	20 (40%)	20 (40%)	3 (6%)	100%
4.	I don't think ODL is one of the most accessible strategies for equal educational access in Nigeria.	2 (4%)	8 (16%)	25 (50%)	10 (20%)	5 (10%)	100%
5.	I don't think ODL can help to meet the objectives of SDG 5	0 (0%)	3 (6%)	30 (60%)	15 (30%)	2 (4%)	100%

	for equality and inclusive Education						
6.	There exists a social bias towards women venturing into IT-related fields.	5 (10%)	5 (10%)	15 (30%)	20 (40%)	5 (10%)	100%
7.	Nigerian women in IT are not as ambitious as Nigerian men.	1 (2%)	4 (8%)	35 (70%)	10 (20%)	0 (0%)	100%
8.	Distance learning is suitable for training women whose religion does not permit them to go out.	3 (6%)	5 (10%)	20 (40%)	20 (40%)	2 (4%)	100%
9.	Quality Education in IT can also be acquired through the ODL program.	3 (6%)	5 (10%)	25 (50%)	15 (30%)	2 (4%)	100%
10.	I don't think that Open and Distance Learning can help empower Nigerian women in IT-related fields significantly.	2 (4%)	7 (14%)	25 (50%)	15 (30%)	1 (2%)	100%

Source: Field Survey, 2024

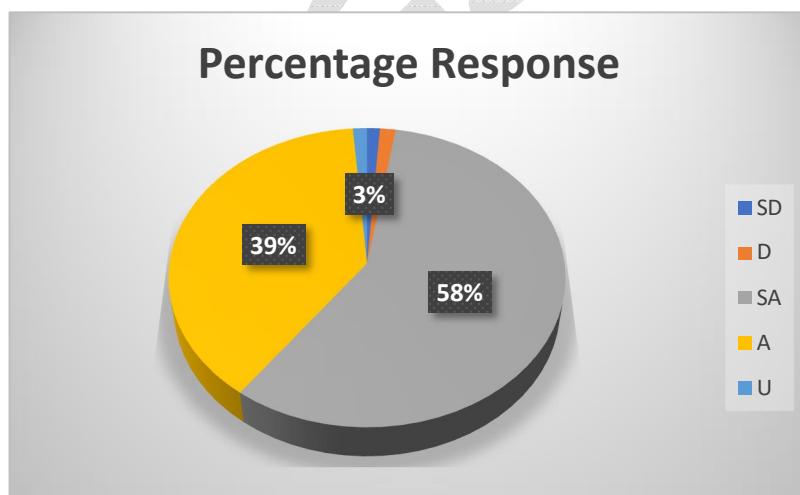


Figure 1: Perception of female academic advancement/gender equality

The responses to NOUN students' views on gender equality and women's academic achievement are graphically represented in Figure 1. Based on the answers to each question, we would conclude that a more significant majority of respondents (58%) strongly support the statement posed in the questions, indicating that the notion that women's academic achievement in Nigeria is meaningless due to gender. Because of this assertion, gender inequality among women continues to be a significant problem.

Table 2
Responses from Female Students in IT-related Fields (n = 200)

S/N	QUESTIONS	SD	D	SA	A	U	Total %
Section B (Benefits derived from ODE)							
1	Open and distance education is a flexible and accessible means of learning for all	2 (1%)	3 (1.5%)	125 (62.5%)	65 (32.5%)	5 (2.5%)	100%
2.	NOUN, as an ODE platform, provides affordable learning	0 (0%)	3 (1.5%)	115 (57.5%)	82 (41%)	0 (0%)	100%
3.	The NOUN platform provides an inclusive learning environment	1 (0.5%)	1 (0.5%)	110 (55%)	85 (42.5%)	3 (1.5%)	100%
4.	NOUN provides the opportunity to enhance IT skills through its online platforms	1 (0.5%)	2 (1%)	80 (40%)	117 (58.5%)	0 (0%)	100%
5.	NOUN platforms encourage interaction and collaboration with other female students	5 (2.5%)	2 (1%)	100 (50%)	91 (45.5%)	2 (1%)	100%
6.	NOUN provides open learning environments for women of different backgrounds and nationalities	0 (0%)	1 (0.5%)	108 (54%)	90 (45%)	1 (0.5%)	100%
7.	The NOUN platform creates room for	4 (2%)	6 (3%)	130 (65%)	55 (27.5%)	5 (2.5%)	100%

	mentorship, scholarship, and internship for women studying IT						
8.	Open and Distance Education is favourable to women in IT-related fields	3 (1.5%)	2 (1%)	105 (52.5%)	88 (44%)	2 (1%)	100%
9.	A woman can learn IT-related courses at a distance and still take care of her family	5 (2.5%)	5 (2.5%)	138 (69%)	47 (23.5%)	5 (2.5%)	100%
10.	Working IT career women can also study through distance learning at NOUN	2 (1%)	3 (1.5%)	140 (70%)	53 (26.5%)	2 (1%)	100%

Source: Field survey, 2024.

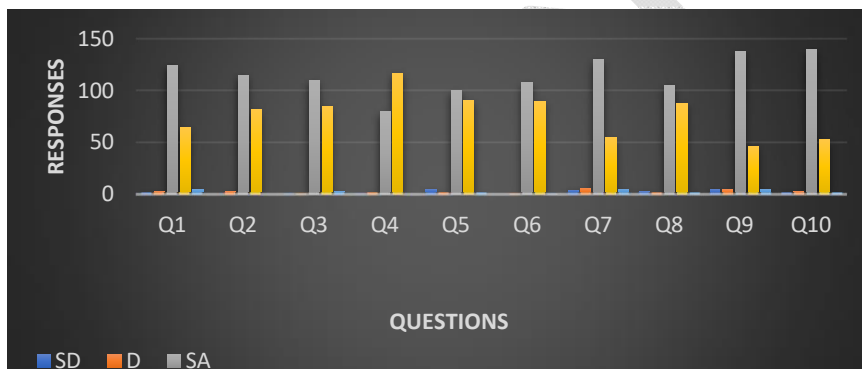


Figure 2: Benefits NOUN female IT students derived from NOUN

The purpose of Figure 2 is to give a visual depiction of the values that NOUN female students enrolled in IT-related programs expressed as a result of attending open and remote learning institutions such as NOUN. After examining all the answers, we can infer that a more significant proportion of respondents chose "agreed" than others. This observation indicates the importance of open and remote education for female students, particularly those pursuing IT-related programs.

Table 3
Challenges NOUN Faces in Empowering Female Students in IT-related Programs

Interviewee	<i>Summarised Students' Experience</i>						
	Gender Stereotypes	Lack of Support Learning Environment	Limited Access to Resources	Work-Life Balance	Impostor Syndrome	Basic Computer Knowledge	Bias and Discrimination
Staff 1	√	√	√	√	√	√	√
Staff 2				√	√	√	√
Staff 3	√	√	√	√	√	√	√
Staff 4			√		√	√	
Staff 5	√	√	√	√	√	√	√
Staff 6				√	√		
Staff 7		√	√	√	√		√
Staff 8	√		√	√			√
Staff 9			√	√	√	√	√
Staff 10	√		√		√	√	
Staff 11			√	√	√	√	√
Staff 12		√	√	√			√
Staff 13	√		√	√	√	√	√
Staff 14			√	√			
Staff 15	√		√		√	√	√
Staff 16	√		√	√		√	√
Staff 17		√	√	√	√		
Staff 18	√		√	√			√
Staff 19		√	√	√	√	√	√
Staff 20	√		√	√	√	√	
Total (No. Students)	10	9	18	17	15	13	14

Source: Field Survey, 2024

Above is a list of interviewees' comments (qualitative data) collected from NOUN staff members who work directly with students. Several of their comments regarding students' experiences (*ticked and coded as 1*) as outlined in the table, particularly in IT-related programmes act as the obstacles that NOUN encounters in empowering students.

Discussion

As illustrated in Table 1 above, eighty percent (80%) of respondents thought that men and women have different mental capacities. Ninety percent (90%) felt that ODL is essential for equity and comprehensive education, particularly for women, whereas eighty percent (80%) said that women are typically viewed as inferiors in society.

Additionally, eighty percent concurred that ODL offers high-quality IT education as a way of empowerment. Combining the findings, we can say that, in general, it is impossible to overstate people's opinions about how emotion and prejudice have prevented women in society from obtaining an education. This assertion is backed up by Endalcachew Bayeh²⁵ who asserted that even though education has dramatically improved in many countries, women are still not treated similarly to men everywhere and are still viewed as inferior. Since open and distance education encourages women's enrollment and empowerment, it is essential to create an advantage to reduce this gap because it offers flexible, equitable, and accessible education to everyone including bridging the digital skills in the gender gap. This assertion is supported by²⁶West, Kraut, and Ei Chew in their paper titled I'd Blush if I Could: closing gender divides in digital skills through education.

In Table 2, most respondents (98%) agreed that open and remote learning is accessible and adaptable. 97.5 percent agree that NOUN offers its students an inclusive learning environment. 98.5 percent of the participants concurred that NOUN offers a chance to improve digital abilities via her online platforms. Furthermore, 92.5 percent of respondents believed that NOUN accommodates internships, scholarships, and mentorship, particularly for female students with IT-related degrees. In general, over 90% of respondents said that NOUN IT-related programs are more advantageous to women and allow them to work, study, and support their families. The findings suggest that Open and Distance Education can have a substantial impact on the empowerment of women enrolled in IT-related degrees at NOUN by providing flexible and accessible learning options, a welcoming and inclusive learning environment for women, specialised support services, mentorship programs, and IT-friendly courses for working class and family women. This assertion is backed up by Saikia²⁷ who expressed the opinion that ODE should be brought up as a substitute for increasing educational access and offering opportunities for skill-based learning at a low cost.

Based on qualitative data collated from the interview of 20 NOUN staff members on experiences gathered during interaction with female students as they discharge their daily duties, we were able to come up with some findings. According to them, most female IT students (18) complained about having limited access to resources such as

²⁵ Endalcachew Bayeh, "The Role of Empowering Women and Achieving Gender Equality to the Sustainable Development of Ethiopia," *Pacific Science Review B: Humanities and Social Sciences* 2, no. 1 (2016): 37-42, <https://doi.org/10.1016/j.psr.2016.09.013>.

²⁶ Mark West, Rebecca Kraut, and Han Ei Chew, "I'd Blush If I Could: Closing Gender Divides in Digital Skills through Education," 2019.

²⁷ Nirupma Barik Saikia, "Empowerment of Women through Post Graduate Level Programmes in Open and Distance Learning Mode: A Case Study of Select ODL Institutions of Assam," 2020.

computer systems/laptops, mobile devices, data, etc. 17 of them struggle to manage their education and work while 15 feel like they are not good enough to compete with men because of imposter syndrome. 14, 13, and 10 students reported experiencing discrimination, low computer knowledge, and gender stereotyping respectively while a negligible portion complained about inadequate learning and environmental support. Combining the interviewees' comments, we can comment that NOUN has multiple challenges in its mission to empower women enrolled in IT-related programmes. These obstacles are typical barriers to the students' effective empowerment. Endorsing this, Okunade et al.²⁸ asserted that specific barriers women face when pursuing IT employment can keep them from entering and succeeding in the field. For example, when examining how computer proficiency affects ODL students' academic achievement in the sciences, they discovered a relationship between computer proficiency and students' academic success in open and distant education institutions. Moreover, Nisreen Ameen et al.²⁹ show how difficult it is for most women in developing countries to use ICT devices like computers, smartphones, and the Internet. He critically argued that formal school curricula should emphasise digital skill training starting in primary school to close the knowledge gap about digital realities for women and girls. This breakthrough will allow for the early development of ICT skills and usability education³⁰. This assertion is consistent with the study's second goal.

Finally, from the interview report, suggestions were made by the interviewees on how NOUN can overcome some of the challenges they encounter while trying to empower women enrolled in IT. Here are some potential solutions provided to these obstacles:

1. **Promoting Gender-Sensitive Curriculum:** Inclusivity and diverse perspectives should be ensured by updating course materials to reflect women's viewpoints, experiences, and contributions. According to Nieminen et al.³¹, gender sensitivity should be encouraged, and also there should be an enhancement of awareness of women's rights, gender equality, and empowerment through new courses or modules.
2. **Fostering Mentorship and Support Programmes:** Female students should be connected with accomplished female alumni, instructors, or business

²⁸ Adekunle, Seyi, and Falilat, "Demographic Factors and Status as Predictors of Open and Distance Learning Students Academic Performance in Computer Science."

²⁹ Ameen, Madichie, and Anand, "Between Handholding and Hand-Held Devices: Marketing through Smartphone Innovation and Women's Entrepreneurship in Post Conflict Economies in Times of Crisis."

³⁰ Aguboshim, Obiokafor, and Nwokedi, "Closing ICT Usability Gaps for Nigerian Women and Girls: Strategies for Reducing Gender Inequality."

³¹ Juuso Henrik Nieminen, "Inclusive Assessment, Exclusive Academy," *Assessment for Inclusion in Higher Education: Promoting Equity and Social Justice in Assessment*, no. December (2022): 63–73, <https://doi.org/10.4324/9781003293101-8>.

- leaders, offering guidance, mentorship, and support. Targeted academic, professional, and personal counseling services to help female students overcome challenges and enhance their overall well-being should be provided³².
3. **Offering Gender-Specific Financial Assistance and Scholarships:** Financial barriers, participation, and retention should be addressed by offering financial aid, scholarships, and grants specifically for female students. Access to external funding opportunities, including scholarships and fellowships aimed at women in STEM or other underrepresented fields should be provided by stakeholders³³.
 4. **Providing Capacity-Building and Skill Development Workshops:** According to Saikia et al.³⁴, female students' employability and confidence through workshops focused on key skills like entrepreneurship, leadership, communication, and digital literacy should be promoted. Empower women with specialized training in assertiveness, work-life balance, and negotiation techniques, fostering their personal and professional growth.
 5. **Advancing Advocacy and Awareness Campaigns:** Gender discrimination and stereotypes should be looked into by promoting awareness and advocacy campaigns that encourage an inclusive and gender-equal university culture. Gurrieri et al.³⁵ in their paper suggest that partnerships with student organizations, alumni, and community members to drive forums, events, and campaigns on women's rights, gender equality, and empowerment should strengthen. A policy that provides female students with flexible learning options, including online courses, part-time study, and distance learning, to accommodate those balancing work and caregiving responsibilities should be considered. Advocates for policies that enable work-life balance, such as flexible scheduling, childcare options, and parental leave, fostering a supportive educational environment for women.

These strategies hope to improve the inclusive, encouraging, and empowering classroom atmosphere by addressing the various issues that female students in NOUN

³² Mariluz Guenaga et al., "The Impact of Female Role Models Leading a Group Mentoring Program to Promote STEM Vocations among Young Girls," *Sustainability (Switzerland)* 14, no. 3 (2022): 1–19, <https://doi.org/10.3390/su14031420>.

³³ J Gazeaud et al., "With or without Him? Experimental Evidence on Gender-Sensitive Cash Grants and Trainings in Tunisia VO - RT - Unpublished Work," *OP* - (Centre for the Study of African Economies, n.d.).

³⁴ Nirupoma Barik Saikia and Ritimoni Bordoloi, "Socio-Economic Profile of Women Learners of the ODL System with Special Reference to KKHSOU in Assam," *Asian Journal of Distance Education* 15, no. 1 (2020): 1–17, <http://www.asianjde.org>.

³⁵ Lauren Gurrieri et al., "Feminist Academic Organizations: Challenging Sexism through Collective Mobilizing across Research, Support, and Advocacy," *Gender, Work and Organization* 31, no. 5 (2024): 2158–79, <https://doi.org/10.1111/gwao.12912>.

confront. Through the execution of these programmes, NOUN will be able to make a substantial contribution to the advancement of women's empowerment, gender equality, and the academic achievement and welfare of all students.

Conclusion

From the international to the local, from the government to non-governmental organisations, everyone is putting in a lot of effort to close the gender gap and advance women's empowerment globally. This landmark is only possible, though, if we raise our kids without gender bias from the start and throughout every developmental stage. Additionally, by giving them more options, amplifying their voices, and redefining their authority, we must allow them to exercise their legitimate rights in society freely, in their communities, and in their own lives. The study's conclusion sheds light on how a significant number of people agree with the fact that women are underrepresented in educational advancement, therefore, enrolling in ODL is essential. It also shows that women who enroll in IT-related programmes at NOUN benefit from flexible learning options, specialized support services, reasonably priced mentorship programs, inclusive learning environments, enhanced IT skills, and an affordable, collaborative learning environment that addresses gender-based disparities.

Furthermore, it highlighted some of the challenges NOUN experiences in empowering women enrolled in IT-related programs, including discrimination and prejudice, a lack of basic computer skills, the feeling of being an impostor, a lack of resources, and gender stereotypes. Some recommended strategies to get over these challenges include the creation of gender-sensitive curricula, mentorship and support programs, workshops on capacity building, advocacy and awareness campaigns, etc. Further investigation is needed to find out how to expand capacity, online support networks, mentorship programmes, and flexible study schedules in improving women's involvement, retention, and success in IT education. This research will help policymakers, educators, and stakeholders better understand how ODL may boost women's empowerment in IT-related occupations. They might therefore develop successful programs and interventions to lessen the gender gap in IT employment and education.

Recommendations

Based on recommendations made from the information previously mentioned and the study's findings.

1. The government and private sector should work together to improve digital infrastructure and increase internet connectivity in rural areas so that women can have access to the technology required for open and distance education.
2. Open and distance education programmes should be customised to meet the unique needs of women in various regions and include entrepreneurial, skilled-based courses that are directly related to local employment opportunities.

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Conflict of Interest Declaration

No conflict of interest

Ethical Approval

The confidentiality of all participants was strictly maintained. Data was anonymized and stored securely, accessible only to the research team. Personal identifiers were removed to ensure privacy.

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