Predicting job creation likelihood among corps members in Nigeria using linear and machine learning models

Valentine Joseph Owan[1,2,3*], Peter Owogoga Aduma[3,4*], Michael Shittu Moses[5] and Michael Ekpenyong Asuquo[3,6]

*Correspondence:
Valentine Joseph Owan
owanvalentine@gmail.com
Peter Owogoga Aduma
adumapeter31@gmail.com
[1]Department of Educational
Psychology, University of Calabar,
Calabar, Nigeria
[2]School of Public Health, University
of Port Harcourt, Port Harcourt,
Nigeria
[3]Ultimate Research Network (URN),
Calabar, Nigeria
[4]Department of Health Education
and Promotion, University of
Calabar, Calabar, Nigeria
[5]Braille Unit, National Commission
for Persons with Disability, Abuja,
Nigeria
[6]Department of Educational
Management, University of Calabar,
Calabar, Nigeria

Abstract

Youth unemployment continues to pose a major challenge in Nigeria despite sustained government initiatives promoting entrepreneurship and empowerment. The National Youth Service Corps (NYSC) established the Skill Acquisition and Entrepreneurship Development (SAED) programme to provide graduates with practical skills that can stimulate job creation. Earlier studies have often examined entrepreneurial intentions rather than actual job creation after participation in SAED or the joint influence of demographic attributes and graduate attitudes on such outcomes. This study examined how age, gender, marital status, educational qualification, and graduate attitude relate to job creation among Nigerian corps members. A survey research design was used to gather data from more than nineteen thousand NYSC members who served between 2012 and 2021. Data were obtained electronically through social media platforms and analysed with descriptive statistics and logistic regression, while a machine learning model was used to assess the strength of predictive accuracy. The results showed that graduate attitude, educational qualification, and marital status were significant predictors of job creation, whereas age and gender were not. The model performed effectively, confirming the reliability of the findings. This study contributes to current understanding of graduate employment outcomes in Nigeria and provides useful evidence for improving entrepreneurship education and policy measures aimed at addressing youth unemployment.

Keywords Entrepreneurial attitude, Post-training outcomes, Predictive analytics, Vocational education, Youth unemployment

1 Introduction

Unemployment among graduates has become one of Nigeria's most difficult socioeconomic problems. Across the world, youth unemployment weakens economic growth, contributes to social unrest and increases poverty [83]. In Nigeria, despite the country's wealth of natural and human resources, many certificate holders struggle each year to secure paid employment [55, 77]. Scholars have often linked this problem to the mismatch between the skills provided by tertiary institutions and the needs of the labour

market [38]. Surveys have shown that only a few undergraduates gain enough practical competence during their studies, with most of them unable to create livelihood opportunities on their own [75].

Recent labour statistics indicate that Nigeria continues to face high youth unemployment despite several interventions. The National Bureau of Statistics [52] reported that about 33.3 per cent of youths are unemployed, while underemployment affects a significant proportion of the labour force. Similarly, [3] found that most young Nigerians view job creation as the country's most urgent priority, confirming that the issue of unemployment is severe. In response to this growing problem, the Nigerian government introduced entrepreneurship education into university curricula in 2006. The aim was to equip graduates to become job creators rather than job seekers. These courses were aimed at building entrepreneurial mindsets and basic business skills, in areas such as generating business ideas, small business management and market analysis.

Beyond these university programmes, the federal government has introduced several initiatives, over the past fifteen years, to strengthen youth employment, promote entrepreneurship and indirectly address the social vices associated with unemployment among youths. Some of the key programmes include the National Directorate of Employment (NDE), the Youth Enterprise with Innovation in Nigeria (YOUWIN), the National Poverty Eradication Programme (NAPEP), the Subsidy Reinvestment and Empowerment Programme (SURE-P), the Small and Medium Industries Equity Investment Scheme (SMIEIS), and the National Economic Empowerment Development Strategy (NEEDS) [6, 26]. These initiatives focused on creating jobs for young people, supporting small and medium enterprises, and providing financial and technical assistance to graduates to stimulate entrepreneurship.

However, analysts argue that the persistence of graduate unemployment is due to structural weaknesses within the education system and the economy. These weaknesses include outdated curricula that fail to reflect current industry standards [63], limited access to modern educational facilities, and the shortage of competent instructors capable of delivering practical, skills-based training [60]. Many tertiary institutions also lack functional partnerships with industries, which restricts internship and apprenticeship opportunities that should have enhanced graduates' employability. Curriculum relevance has become a major concern as employers often report that university graduates lack critical thinking, problem-solving, and digital competencies needed in modern workplaces [62]. A possible reason for this is because some lecturers rely heavily on theory-based teaching and possess little exposure to business practice, which reduces the practical orientation of their courses. When students graduate under such conditions, they possess academic knowledge but lack the hands-on abilities required to innovate, start enterprises, or meet employer expectations [8]. These issues collectively increase the risk of unemployment and reduce the impact of government empowerment programmes.

In response to these challenges, the National Youth Service Corps (NYSC) launched the Skill Acquisition and Entrepreneurship Development (SAED) programme in March 2012. The SAED programme was designed as part of the NYSC orientation course to help corps members develop vocational and entrepreneurial skills across twelve fields. These include agro-allied technologies, automobile engineering, beautification, construction, cosmetology, culture and tourism, education, environmental management,

film and photography, food processing and preservation, information and communication technology, and power and energy (National Youth Service Corps, 2017). This programme provides practical, hands-on training combined with mentorship and funding support, making it a credible platform for graduates to translate acquired skills into real-world entrepreneurial activities [64]. The programme operates through two components: the skill acquisition component, which provides hands-on training, and the entrepreneurship and empowerment component, which links trainees to mentorship and funding opportunities. By combining practical skills with guidance and financial access, SAED equips corps members to pursue entrepreneurial ventures, which increases the likelihood of job creation even if participants have not yet started formal businesses.

What makes studying NYSC members unique is that they represent a cohort of graduates who have completed tertiary education and are in a structured national service programme with mandatory participation [64]. This allows for a controlled observation of skill acquisition, attitude development, and the transition from training to job creation across a nationally representative sample, rather than relying on fragmented or localised university-level studies. The NYSC framework also provides uniform exposure to entrepreneurship training, which makes it possible to systematically assess the influence of demographic and attitudinal factors on job creation likelihood among corps members across different camps.

The National Youth Service Corps (NYSC) Skill Acquisition and Entrepreneurship Development (SAED) programme has promoted creativity, productive engagement, employment generation and economic advancement among graduates. Some scholars [22, 51] maintained that the SAED programme has enabled many graduates to become self-reliant. However, observations suggest that not all corps members engage fully with SAED activities. Some participate actively in workshops and mentorship, while others lose interest or attend classes irregularly. These differences may be explained by varying levels of entrepreneurial interest among graduates. Not all graduates have the same willingness to take risks, pursue business ideas or work towards self-employment. These differences justify the need to focus on the likelihood of job creation as an outcome, as it represents participants' intention and readiness to use SAED skills to generate jobs rather than measuring only actual businesses created.

Few studies have examined job creation likelihood among SAED participants at scale, and even fewer have considered how demographic characteristics and graduate attitudes jointly influence different outcomes. Most previous research focused narrowly on entrepreneurial intention or satisfaction with training and often relied on small, localised samples. This study differs by using a large, multi-year sample of corps members across Nigeria and analysing both demographic predictors and attitudinal factors, providing a more comprehensive understanding of who is most likely to convert training into employment creation or not.

Moroever, Few studies have properly examined whether participation in SAED leads to actual job creation. Even fewer have assessed which characteristics of participants make them more likely to turn training into real businesses [22, 27]. A critical factor that influences these outcomes is graduate attitude. Attitude represents a person's readiness to apply acquired skills, persevere during challenges, and actively pursue entrepreneurship opportunities. Recent studies [40, 57] show that positive attitude improves persistence during training and increases the likelihood of establishing a business afterwards.

Despite this, very few investigations have assessed how attitude interacts with demographic characteristics such as gender, age, marital status, and educational qualification to influence job creation following SAED participation. This situation presents a clear research gap that motivated the present study.

Understanding these issues is important for judging whether SAED has achieved its aim of preparing corps members for self-employment and for improving future entrepreneurship programmes. Therefore, this study investigates how demographic characteristics and graduate attitudes jointly predict job creation among corps members who participated in the SAED programme. The emphasis on 'likelihood' aligns the study with the reality that graduates may not have started businesses yet but indicates their preparedness and intention to do so. In addition, the study applies both logistic regression and XGBoost models to analyse the data. Logistic regression allows clear interpretation of variable effects, while XGBoost captures non-linear relationships and improves prediction accuracy. This combined approach strengthens the reliability of findings and enables a more comprehensive understanding of the factors influencing the likelihood of job creation. Using both methods also adds novelty to the analysis within the Nigerian youth employment context, where such dual-method approaches are rare.

In general, the novelty of this stuy is in its large sample size, integration of demographic and attitudinal variables, focus on actual job creation likelihood, and use of a dual-method analytical approach, which distinguishes it from previous research that largely concentrated on intentions, education, or satisfaction in limited samples. The findings will provide evidence to help those involved in policy, programme design and higher education to improve entrepreneurship education and empowerment initiatives. The significance of the study lies in its potential to guide policymakers and educators in refining entrepreneurship training content, aligning academic curricula with industry standards, and enhancing the competence of trainers who implement SAED and similar initiatives. The study will provide recommendations for reducing youth unemployment and supporting long-term economic growth in Nigeria by identifying the factors that help or hinder graduates' shift from training to self-employment.

2 Theoretical framework

This study is guided by the Functionalism Theory of Attitude Formation proposed by [41]. The theory explains that people form attitudes based on the benefits these attitudes provide. Attitudes serve four functions: utilitarian, knowledge, ego-defensive and value-expressive. The utilitarian function refers to attitudes that help individuals gain rewards or avoid negative outcomes [50]. People are likely to hold favourable attitudes towards activities they consider useful. The knowledge function supports the need for understanding and helps people organise information. It also allows them to interpret events in ways that align with their goals. The ego-defensive function relates to self-protection. Attitudes can serve as a way to manage personal anxiety or avoid ideas that may threaten self-worth [17]. The value-expressive function allows people to express personal beliefs and maintain a sense of identity [14].

This theory is relevant to the present study, which focuses on NYSC corps members and their responses to skill acquisition and entrepreneurship training. Corps members come from various backgrounds and have different academic and social experiences. These personal differences affect how they respond to the SAED programme. Some may

see the programme as beneficial and adopt favourable attitudes due to its practical value. Others may be discouraged if the programme seems unfamiliar or misaligned with their goals or self-image. In such cases, resistance may be explained by the ego-defensive or value-related functions of attitude.

3 Conceptual framework

This study uses Katz s [41] Functional Approach to Attitudinal Study as the theoretical base. Katz described four functions that attitudes perform for people: utilitarian, knowledge, ego-defensive, and value-expressive. The utilitarian function covers attitudes that help people gain rewards or avoid harm. The knowledge function helps people organise information and make sense of events. The ego-defensive function protects self-esteem by allowing people to reject ideas that threaten their self-image. The value-expressive function lets people state beliefs and confirm identity [13].

Katz s framework suits this study because it explains how corps members form attitudes towards the SAED skill acquisition and entrepreneurship training. Corps members differ in academic experience and personal outlook. These differences tend to influence their responses to the programme. Some will see the training as useful and develop positive attitudes because they expect practical benefits [64]. Others will find the programme unfamiliar or inconsistent with their aims and resist it. The ego-defensive and value-expressive functions help explain this resistance and acceptance [17, 50].

On this basis, the study treats graduate attitude toward skill acquisition and entrepreneurship as a central predictor of job creation likelihood. Demographic variables, age, gender, marital status and educational qualification, serve as background predictors that may influence both attitude and job creation likelihood. The model (Fig. 1) therefore assesses each predictor independently and then together in a multivariate test to see how they relate to the likelihood of creating jobs after SAED participation [13].

4 Literature review and hypothesis development

Job creation seems to be one of the most tangible outcomes of entrepreneurship development, especially within graduate-focused training programmes such as the National Youth Service Corps (NYSC) Skill Acquisition and Entrepreneurship Development (SAED) initiative. While entrepreneurship education seeks to improve participants' knowledge, attitudes, and competencies, its broader goal is to stimulate graduates to create employment for themselves and others [56]. In this study, job-creation likelihood is defined as the extent to which corps members who participated in SAED training establish income-generating ventures after completing the programme. Although entrepreneurship intention and job creation are closely linked, the latter represents the realised behavioural outcome of the former, as supported by intention–behaviour studies and evidence that intentions predict job creation expectations and hiring behaviour [12, 76]. Hence, this review examines empirical studies on entrepreneurship-related factors, such as graduate attitude, education, and demographic attributes, as predictors of job creation. The section integrates theoretical perspectives and recent evidence to explain how these factors influence graduates' ability to generate jobs in the Nigerian setting.

Job creation likelihood can help reduce unemployment and support economic growth. Although related ideas such as entrepreneurial career [81], self-employment [25], entrepreneurial inclination [2], and entrepreneurial intention [19, 23, 44] have received
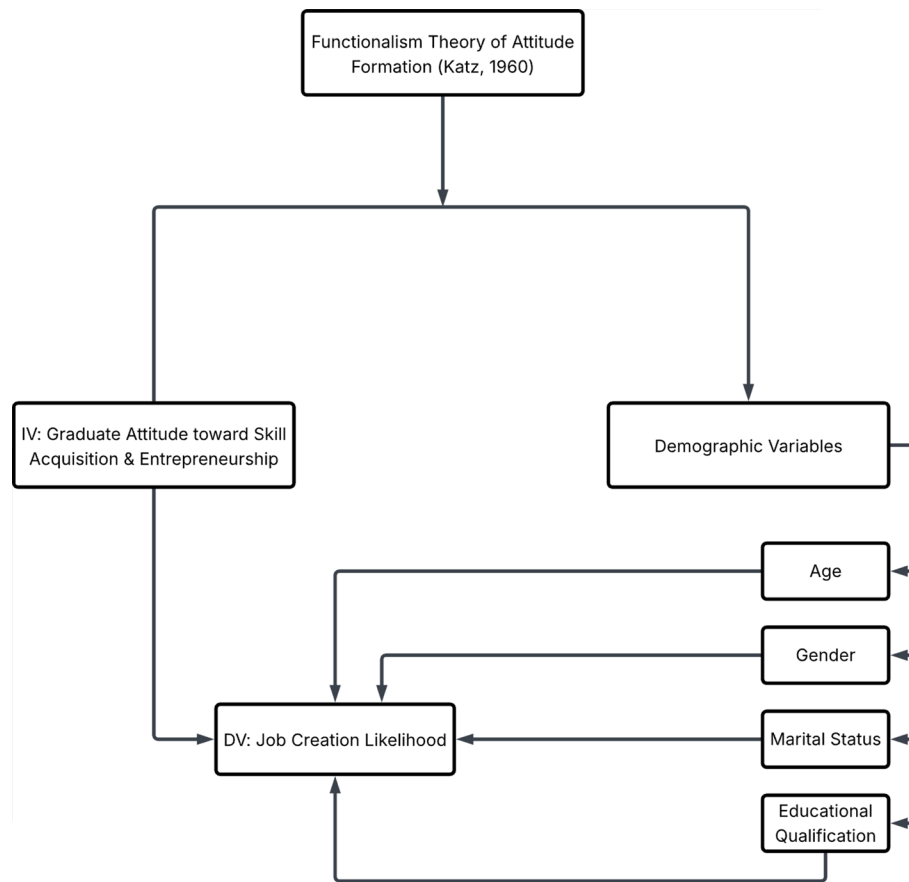
Fig. 1 Conceptual framework showing the relationships among demographic factors, graduate attitude, and job creation likelihood among NYSC corps members.
Source: Authors' elaboration

considerable attention, few studies have focused on job creation likelihood as a separate outcome. As a result, research in this area remains limited. While entrepreneurial intention refers to the decision to start a business [79], job creation likelihood concerns the extent to which that business is expected to generate employment. A strong intention to engage in entrepreneurship may lead to job creation when a business becomes successful and expands.

4.1 Age

[11] found a negative relationship between age and entrepreneurial activity. They also noted that the link was influenced by perceived opportunities and entrepreneurial skills. Similarly, [2] reported that graduate age had a negative correlation with entrepreneurial inclination. These findings align with the theory of time allocation [10], which states that people reach an age where they are less willing to invest time in new ventures. As they get older, they may see time as more limited and prefer activities with more certain or immediate outcomes due to the increasing opportunity cost of time. In contrast, [81] reported a U-shaped relationship between age and entrepreneurial success. Younger people were less likely to succeed, while older adults had more success. [65] found an inverted U-shaped relationship. Other research [43, 71] showed that entrepreneurial likelihood increases with age up to the late forties, then declines. This suggests that

middle-aged individuals may have better chances of creating jobs, while younger and older people may face other challenges. The conflicting results among the studies on age justify the use of a null hypothesis in the first hypothesis.

H1 Age does not significantly predict the likelihood of job creation among corps members.

4.2 Gender

The literature on gender is mixed. Some studies such as [31], [44], and [58] found that female students had lower entrepreneurial intention than male students. [67] noted that entrepreneurship education influenced intention for both genders equally. [48] also found that gender did not significantly influence job creation likelihood, while [2] found no significant link between gender and inclination. [59] suggested that gender played a moderating role in entrepreneurial intention. [23] observed a positive relationship between entrepreneurship education and female intention. [19] reported no differences between genders. [1], using a pairwise experimental method, found that male students initially had stronger intention than females, but this changed after exposure to entrepreneurship education, although no significant statistical difference was found. The inconclusive nature of the findings on gender also supports framing the second hypothesis in a null form.

H2 Gender does not significantly predict the likelihood of job creation among corps members.

4.3 Marital status

Research on marital status has also produced varied results. [44] found no clear effect of marital status on entrepreneurial intention among students. However, [46] found that married students had higher entrepreneurial inclination than unmarried ones. [2] did not find any significant relationship between marital status and inclination. Dutta [23] observed that married females were less likely to be self-employed than unmarried females. Studies on marital status have a more consistent link with entrepreneurial inclination. Some studies report that married individuals show higher entrepreneurial motivation or behaviour [46], while others found that marital status had a measurable impact on employment outcomes, particularly for women [23]. This supports framing the third hypothesis in an alternative form for this variable.

H3 Marital status significantly predicts the likelihood of job creation among corps members.

4.4 Educational qualification

Educational qualification has been linked to job creation in different ways. [9] showed that both entrepreneurial education and general schooling helped promote early-stage entrepreneurial activity. [34] found that individuals with college education were more likely to start businesses than those without. [4] reported that more years of education increased self-employment in high-growth industries. However, this increase did not hold for men in declining sectors. [82] found that being a graduate improved the impact

of entrepreneurship education. These results suggest that higher education can help individuals gain knowledge and skills relevant to starting businesses. However, some findings contradict this. [36] found that entrepreneurship declined with higher education levels, possibly because graduates are more likely to pursue formal employment. [16] found that college education did not have a significant effect on entrepreneurial choice. These differences may result from variations in the samples, settings, or research methods used. Regarding educational qualification, a considerable number of studies suggest that higher education promotes entrepreneurial intention and early-stage entrepreneurial activity [9, 34, 82], although a few studies found the opposite [16, 36]. Given the weight of evidence, an alternative hypothesis is more appropriate for this variable.

H4 Educational qualification significantly predicts the likelihood of job creation among corps members.

4.5 Graduate attitude

Attitude towards skills and entrepreneurship development may also influence job creation. [37] found that entrepreneurial knowledge had a positive impact on intention. Personal attitude strengthened this relationship. Similarly, [15] reported a moderate positive relationship between entrepreneurial attitude and intention. Other studies [21, 30, 42, 70, 74, 80] also found a positive link between attitude and intention.

However, [78] did not find a significant relationship between the two. [54] found a small but negative effect of attitude on intention among MBA students in Peru. [79] found that entrepreneurship and self-efficacy both influenced intention. They also observed that self-efficacy affected attitude. When entrepreneurship influenced intention, attitude did not act as a link. When self-efficacy influenced intention, attitude did serve as a link. [68] showed that self-efficacy had a strong positive effect on intention, attitude, and business creation among graduates in Malaysia. Graduate attitude toward skill acquisition and entrepreneurship is widely recognised as a strong predictor of entrepreneurial behaviour and job creation potential. Numerous studies [15, 37, 68, 79] found that positive entrepreneurial attitudes significantly increase the likelihood of new business formation. Therefore, an alternative hypothesis is warranted for this this variable. These factors are also expected to jointly influence job creation likelihood when examined in a multivariate model. This supports the final hypothesis of this study.

H5 Graduate attitude significantly predicts the likelihood of job creation among corps members.

H6 When considered together, age, gender, marital status, educational qualification, and graduate attitude significantly predict job creation likelihood among corps members.

5 Methods

5.1 Research design, participants and context

The researchers employed a survey research design to examine the predictors of job-creation likelihood among past NYSC members who served between 2012 and 2021. The study used a sample of 19,278 respondents collected via snowball sampling, as the total population of past NYSC members during this period is unknown. Snowball sampling

is suitable for dispersed populations and online survey recruitment, allowing initial participants to refer eligible peers [7, 32]. Recruitment continued until response rates plateaued, ensuring wide coverage across all 36 Nigerian states and the Federal Capital Territory.

To contextualise, Nigeria has 37 NYSC camps, each admitting three batches of corps members per year, with each batch consisting of no fewer than 2,000 participants. Across the years under review, the total number of eligible corps members exceeds hundreds of thousands. Consequently, a sample of 19,278 respondents is proportionate and justified for a national study of this scope.

To justify the sample size statistically, a post hoc power analysis was conducted using G*Power [28]. Assuming a small effect size ($f^2 = 0.02$), five predictors (age, gender, marital status, educational qualification, and graduate attitude), an alpha of 0.05, and a power of 0.95, the minimum required sample for multiple regression was approximately 107 participants. The study's final sample of 19,278 far exceeds this minimum, ensuring extremely high statistical power, stable estimates, and reliable results for both multivariate logistic regression and machine learning validation. This approach aligns with recommendations from [18] and [33] for regression analysis.

5.2 Instrument and measures

Data were collected using an online questionnaire designed using Google Forms. It comprised six sections: informed consent, eligibility screening, demographics, SAED participation, graduate attitude, and job-creation likelihood. Graduate attitude toward skill acquisition and entrepreneurship was measured with 12 Likert-scale items (1 = strongly disagree, 4 = strongly agree). Job creation likelihood was assessed using a dichotomous (binary) item. Respondents were asked whether they intended to use the skills acquired through the NYSC SAED programme to create employment for themselves or others. Responses were coded as 1 = Yes and 0 = No. This approach aligns with prior research on early-stage entrepreneurial behaviour, where binary measures are commonly used to capture the intent or likelihood of engaging in business creation. The complete details of the questionnaire have been previously reported in a related publication from this project [63]. The questionnaire design was informed by the NYSC experience of the authors and previous literature [47].

5.3 Instruments validity and reliability

The questionnaire was developed by the researchers, all of whom have prior experience as NYSC members, enabling them to contextualise items based on practical knowledge of the programme. The initial draft combined information from the literature on entrepreneurship education, graduate attitudes, and job creation [47]. To ensure content relevance and clarity, the draft questionnaire was distributed in paper form to 10 NYSC members from the 2019 batch. Feedback was solicited on item wording, clarity, and relevance to the constructs under investigation. Suggestions from this pre-test were incorporated into the final draft.

The pilot study involved 60 corps members from Batch C in Nasarawa and the FCT. These participants were excluded from the main study to prevent any testwiseness or familiarity bias. The pilot allowed the researchers to assess item comprehensibility and the preliminary psychometric properties of the scale. Graduate attitude toward skill

acquisition and entrepreneurship was measured using 12 Likert-scale items ranging from 1 (strongly disagree) to 4 (strongly agree), see [63]. Items captured participants' perceptions of the usefulness, applicability, and personal motivation to apply skills learned in NYSC-SAED programs.

Reliability was assessed using Cronbach's alpha, a widely accepted measure of internal consistency for Likert-scale instruments [20, 72]. The scale yielded a coefficient of 0.87, indicating high internal consistency. Validity was ensured through multiple approaches: (1) Content validity – Established via expert review and pilot testing, confirming that items adequately represent the construct of graduate attitude toward skill acquisition and entrepreneurship [66]; (2) Construct validity: Supported by adapting items from established instruments in the literature and aligning them with Katz's Functionalism Theory of Attitude Formation [41], ensuring the items measure the theoretical dimensions of attitude relevant to behaviour and job creation. All demographic and categorical variables (e.g., age, gender, marital status, education) were treated as nominal or ordinal and did not require reliability analysis.

5.4 Data collection and quality control

Data were collected through an electronic survey that was distributed online to different NYSC groups and batches. The survey link was initially shared with selected contacts who had finished their service and posted on WhatsApp, Telegram, and Facebook groups of current and past NYSC members. Respondents were encouraged to share the survey link with their colleagues and NYSC groups, creating a snowballing effect to expand reach. The data collection started in March 2019 and ended in December 2021. Respondents from 2019, 2020, and 2021 batches were still in service, while those from 2018 or earlier had completed their service. The main goal of this data collection was to evaluate the three core objectives of the programme. Over three years, responses were obtained from 19,278 participants who met the eligibility criteria. The dataset was in Excel (.xlsx) format, with 19,278 cases and 95 variables.

The researchers downloaded the survey data from the cloud and prepared it in MS-Excel 2019. Responses on the 4-point Likert scale (e.g., strongly agree, agree, disagree, strongly disagree) were converted into numerical codes (1–4) to facilitate analysis. All survey items were mandatory except for the optional follow-up questions. The data were checked for possible malicious or multiple responses using timestamp metadata. Researchers also examined the order and speed of responses and the variation in response patterns according to demographic characteristics such as gender, age, and marital status. No evidence of malicious or multiple responses was found, although complete elimination cannot be guaranteed. The survey length and inclusion of open-ended follow-up questions likely discouraged repeated or malicious submissions. Even if manipulation occurred, the large dataset size minimised potential impact [24, 73].

5.5 Ethical considerations

This study complied with the Nigeria Code of Health Research Ethics (NCHRE) and received approval from the University of Calabar ethics committee (UC/IRB/2019/0131). Participation was voluntary and limited to corps members who served between 2012 and 2021. Informed consent was obtained from all participants. Confidentiality was maintained throughout, and given the non-invasive survey design, the study posed minimal

risk. All data were anonymised and de-identified in line with Safe Harbour Principles [61–63]. Personally identifiable information was removed, and demographic variables were categorised to prevent individual identification. No sensitive contact information was collected. Encoded data were securely stored on the lead researcher's computer with password protection and antivirus safeguards. Participants were informed that data would be used for academic purposes, with the possibility of publication, and assured that data would be permanently deleted at the conclusion of the study.

5.6 Estimation techniques

Quantitative analysis involved multivariate logistic regression to estimate the effects of demographic and attitudinal predictors on job-creation likelihood. Logistic regression allows clear interpretation of independent variable effects on a binary outcome. To capture potential non-linear relationships and improve prediction accuracy, the study also employed XGBoost, a machine learning algorithm suitable for classification tasks. Both techniques complement each other: regression provides inferential insight, while XGBoost validates and strengthens predictive performance. This dual approach is uncommon in studies of Nigerian youth employment and enhances the study's analytical rigour.

6 Results

6.1 Age and likelihood of job creation

A binary logistic regression analysis was conducted to examine whether age predicts the likelihood of job creation among corps members in Nigeria. The overall model was not statistically significant, $\chi^2(3, N = 19{,}278) = 5.27$, $p = .153$, indicating that age did not reliably predict job creation likelihood. The model accounted for virtually none of the variance in job creation (Nagelkerke R^2 = 0.000). None of the individual age categories showed significant predictive power when compared to the reference group (above 30 years). Specifically, corps members aged 16–20 years were 5% less likely to report job creation than those above 30 years (OR = 0.95, 95% CI [0.83, 1.08], $p = .424$). Similarly, those aged 21–25 years were 1% less likely to report job creation (OR = 0.99, 95% CI [0.90, 1.08], $p = .766$), while corps members aged 26–30 years were 7% more likely to report job creation compared to those above 30 years (OR = 1.07, 95% CI [0.98, 1.17], $p = .148$); however, none of these differences reached statistical significance. Therefore, the hypothesis that age significantly predicts the likelihood of job creation is rejected. These findings suggest that age does not have a meaningful influence on job creation among corps members in this study. The summary of the crude odds ratios for age is presented in Table 1.

Table 1 Logistic regression predicting likelihood of job creation from age (*n* = 19,278)

Predictor	B	S.E.	Wald	df	*p*	OR	95% CI for OR
16–20 years	−0.054	0.068	0.639	1	0.424	0.95	[0.83, 1.08]
21–25 years	−0.014	0.048	0.089	1	0.766	0.99	[0.90, 1.08]
26–30 years	0.066	0.046	2.09	1	0.148	1.07	[0.98, 1.17]
Constant	−1.358	0.034	1552.94	1	< 0.001	0.26	–

Reference category = above 30 years

Table 2 Binary logistic regression predicting likelihood of job creation from gender ($n = 19,278$)

Predictor	B	S.E.	Wald	df	p	OR	95% CI for OR
Male	0.010	0.036	0.063	1	0.802	1.01	[0.94, 1.08]
Constant	−1.349	0.026	2753.33	1	<0.001	0.26	—

Reference category = Female

Table 3 Binary logistic regression predicting likelihood of job creation from marital status ($n = 19,278$)

Predictor	B	S.E.	Wald	df	p	OR	95% CI for OR
Single	0.19	0.062	9.59	1	0.002	1.21	[1.07, 1.37]
Constant	−1.36	0.019	5318.32	1	<0.001	0.26	—

Reference category = married

Table 4 Binary logistic regression predicting likelihood of job creation from educational qualification ($n = 19,278$)

Predictor	B	S.E.	Wald	df	p	OR	95% CI for OR
HND	−1.192	0.054	492.84	1	<0.001	0.30	[0.27, 0.34]
First Degree	−20.857	4236.71	0.000	1	0.996	0.00	[0.00, 0.00]
Master's Degree	−0.842	0.064	172.11	1	<0.001	0.43	[0.38, 0.49]
Constant	−0.346	0.049	49.81	1	<0.001	0.71	—

Reference category = Doctorate degree holders

6.2 Gender and likelihood of job creation

A binary logistic regression analysis was conducted to examine whether gender predicts the likelihood of job creation among corps members in Nigeria. The overall model was not statistically significant, $\chi^2(1, N = 19,278) = 0.06$, $p = .802$, indicating that gender did not reliably predict job creation likelihood. The model accounted for virtually none of the variance in job creation (Nagelkerke $R^2 = 0.000$). Specifically, being male was associated with only a 1% increase in the odds of reporting job creation compared to being female (OR = 1.01, 95% CI [0.94, 1.08], $p = .802$); however, this difference was not statistically significant. Therefore, the hypothesis that gender significantly predicts the likelihood of job creation is rejected. This suggests that gender does not have a meaningful influence on the likelihood of job creation among corps members in this study (Tables 2, 3, 4).

6.3 Marital and likelihood of job creation

A binary logistic regression analysis was conducted to determine whether marital status predicts the likelihood of job creation among corps members in Nigeria. The overall model was statistically significant, $\chi^2(1, N = 19,278) = 9.32$, $p = .002$, indicating that marital status contributed meaningfully to the prediction of job creation. However, the proportion of variance explained by the model was very small (Nagelkerke $R^2 = 0.001$). Specifically, single corps members were found to be 21% more likely to report job creation compared to their married counterparts (OR = 1.21, 95% CI [1.07, 1.37], $p = .002$). Therefore, the hypothesis that marital status significantly predicts job creation likelihood is supported. Although the effect size is small, the result suggests that being single slightly increases the odds of reporting job creation compared to being married in this study (Tables 5, 6).

Table 5 Binary logistic regression predicting job creation from graduate attitude (*n* = 19,278)

Predictor	B	SE	Wald	df	*p*	OR	95% CI for OR
Graduate Attitude	0.381	0.026	213.29	1	< 0.001	1.46	[1.39, 1.54]
Constant	−2.203	0.063	1234.29	1	< 0.001	0.11	—

Table 6 Multivariate binary logistic regression predicting likelihood of job creation based on age, gender, marital status, educational qualification, and graduate attitude

Predictor	B	SE	Wald	df	*p*	AOR	95% CI for AOR
Age	–	–	4.21	3	0.240	–	–
16–20 years	0.070	0.069	1.02	1	0.312	1.07	[0.94, 1.23]
21–25 years	0.004	0.049	0.01	1	0.941	1.00	[0.91, 1.11]
26–30 years	0.079	0.047	2.82	1	0.093	1.08	[0.99, 1.19]
Gender (Male)	−0.012	0.037	0.11	1	0.739	0.99	[0.92, 1.06]
Marital Status (Single)	0.155	0.065	5.69	1	0.017	1.17	[1.03, 1.33]
Educ. Qual.	–	–	637.43	3	< 0.001	–	–
HND	−1.417	0.056	636.32	1	< 0.001	0.24	[0.22, 0.27]
First Degree	−20.75	4218.82	0.00	1	0.996	0.000	0.000, 0.000
Master's	−1.181	0.068	303.38	1	< 0.001	0.31	[0.27, 0.35]
Graduate Attitude	0.507	0.028	331.33	1	< 0.001	1.66	[1.57, 1.75]
Constant	−1.316	0.079	275.79	1	< 0.001	0.27	

Reference categories are Age: Above 30 years; Gender: Female; Marital Status: Married; Educational Qualification: Doctorate. *AOR* adjusted odds ratio, *SE* standard error, *CI* confidence interval

6.4 Educational qualification and likelihood of job creation

A binary logistic regression analysis was conducted to examine whether educational qualification predicts the likelihood of job creation among Nigerian corps members. The overall model was statistically significant, $\chi^2(3, N = 19{,}278) = 515.19$, $p < .001$, indicating that educational qualification contributed meaningfully to predicting the likelihood of job creation. However, the model explained only a modest proportion of the variance (Nagelkerke $R^2 = 0.041$). Results showed that educational qualification was a significant predictor. Compared to corps members holding doctorate degrees, those with an HND were about 70% less likely to report willingness to create jobs (OR = 0.30, 95% CI [0.27, 0.34], $p < .001$), while those with a master's degree were about 57% less likely (OR = 0.43, 95% CI [0.38, 0.49], $p < .001$).

The odds ratio for corps members with first degrees was extremely low (OR ≈ 0.00, $p = .996$) with an exceptionally large standard error. This outcome is due to the very small number of respondents in this category, which leads to an unstable estimate. As a result, this specific estimate is not meaningful. Nevertheless, it does not affect the substantive interpretation of the analysis, which focuses on the broader comparison among HND, Master's, and Doctorate holders. These findings support the hypothesis that educational qualification predicts the likelihood of job creation, with higher educational attainment generally associated with a greater likelihood of creating jobs among corps members.

6.5 Graduate attitude and likelihood of job creation

A binary logistic regression analysis was conducted to determine whether graduate attitude predicts the likelihood of job creation among corps members in Nigeria. The overall model was statistically significant, $\chi^2(1, N = 19{,}278) = 213.47$, $p < .001$, indicating that graduate attitude contributes meaningfully to the prediction of job creation. However, the model explained only a small proportion of the variance in job creation (Nagelkerke

R^2 = 0.017). As presented in Table 1, graduate attitude was a significant predictor of job creation likelihood (OR = 1.46, 95% CI [1.39, 1.54], p <.001). This means that for every one-unit increase in positive graduate attitude, the odds of reporting job creation increased by 46%, holding all else constant. Therefore, the hypothesis that graduate attitude significantly predicts the likelihood of job creation is supported. These findings suggest that graduate attitude plays a modest but significant role in influencing job creation among corps members in this study.

6.6 Combined predictors of likelihood for job creation

A multivariate logistic regression was conducted to examine whether age, gender, marital status, educational qualification, and graduate attitude jointly predicted the likelihood of job creation among corps members. The Omnibus Tests of Model Coefficients indicated that the full model was statistically significant, $\chi^2(9)$ = 859.97, p <.001, suggesting that the set of predictors reliably distinguished between corps members likely and unlikely to create jobs.

Model fit statistics showed a –2 Log likelihood of 18,792.32. The Cox and Snell R^2 was 0.044, and the Nagelkerke R^2 was 0.068, indicating that the model accounted for approximately 4.4% to 6.8% of the variance in job creation likelihood. The Hosmer and Lemeshow test was significant, $\chi^2(8)$ = 831.80, p <.001. While this might indicate lack of fit, it is well documented that the Hosmer and Lemeshow test is highly sensitive to large sample sizes, such as the 19,278 participants in this study [45]. Therefore, the significant result does not necessarily imply a poorly fitting model. Alternative assessments, including the classification table and the examination of odds ratios, provide additional confirmation of model adequacy.

The classification table showed that the model correctly classified 79.3% of cases overall. Specificity was excellent, correctly identifying 99.8% of participants who were unlikely to create jobs. However, sensitivity was very low, correctly predicting only 0.7% of those likely to create jobs. This low sensitivity is attributable to the imbalance in the outcome variable, with the majority of respondents indicating they were unlikely to create jobs. As a result, the model tended to prioritise accurate classification of the larger group, which led to high specificity but limited ability to detect likely job creators. Despite this limitation, the model still provides meaningful information about the relative influence of predictors such as graduate attitude, educational qualification, and marital status.

Examining the predictors, age and gender were not statistically significant. Single corps members had higher odds of reporting willingness to create jobs compared to married peers (AOR = 1.17, 95% CI [1.03, 1.33], p =.017). Educational qualification remained a strong predictor: HND holders were less likely to report job creation than doctorate holders (AOR = 0.24, 95% CI [0.22, 0.27], p <.001), as were master's holders (AOR = 0.31, 95% CI [0.27, 0.35], p <.001). The first-degree category produced unstable estimates (AOR ≈ 0.00, p =.996) due to the very small sample in this group. Graduate attitude was the strongest predictor, with a one-unit increase associated with 1.66 times higher odds of reporting likelihood to create jobs (95% CI [1.57, 1.75], p <.001).

These results suggest that graduate attitude and higher educational attainment are the most reliable indicators of a corps member's likelihood to create jobs, while demographic characteristics such as age and gender have minimal predictive value. Despite

the significant Hosmer and Lemeshow test, the overall predictive performance and theoretical consistency support the validity of the model.

After controlling for age, gender, educational qualification, and graduate attitude, marital status was a significant predictor of job creation. Single participants had 17% higher odds of creating jobs compared to married participants (AOR = 1.17, 95% CI [1.03, 1.33], p =.017). Educational qualification also showed a significant independent association with job creation. Compared to participants with doctorates, those with HND qualifications had 76% lower odds of creating jobs (AOR = 0.24, 95% CI [0.22, 0.27], p <.001), and those with a master's degree had 69% lower odds (AOR = 0.31, 95% CI [0.27, 0.35], p <.001). The estimate for first-degree holders was unreliable. Graduate attitude was also a significant independent predictor. A one-unit increase in graduate attitude was associated with a 66% increase in the odds of job creation (AOR = 1.66, 95% CI [1.57, 1.75], p <.001).

6.7 Machine learning analysis

This study applied machine learning methods to examine how age, gender, marital status, educational qualification, and graduate attitude relate to the likelihood of job creation among graduates. The dataset contained 19,278 observations. After data preparation, 70% of the data was used for training and 30% for testing. An Extreme Gradient Boosting (XGBoost) model was implemented with 100 boosting rounds and a binary logistic objective, suitable for classification tasks (Chen & Guestrin, 2016). Model performance was evaluated using accuracy, confusion matrix, and area under the receiver operating characteristic curve (AUC). Accuracy measures the proportion of correct predictions but may not fully reflect performance in imbalanced datasets [69]. Sensitivity, specificity, and AUC were also examined. Sensitivity indicates how well the model identifies graduates likely to create jobs, whereas specificity indicates how well it identifies those unlikely to create jobs [29]. The AUC provides a summary measure of model discrimination that is not affected by any specific threshold [35].

Before tuning, the model achieved an accuracy of 84.25% (95% confidence interval 83.28 to 85.18), which was significantly higher than the no-information rate of 78.92% (p <.001). However, sensitivity was low at 37.49%, meaning the model frequently failed to identify graduates likely to create jobs, despite a high specificity of 96.74%. This low sensitivity was likely due to class imbalance in the dataset, where the number of respondents unlikely to create jobs exceeded those likely to create jobs. As a result, the default model tended to favour the majority class, producing high specificity but poor identification of the minority class. The AUC of 0.833 indicated good overall discriminative ability. The ROC curve in Fig. 2 visualises the diagnostic ability of the initial model, showing the trade-off between true positive rate (sensitivity) and false positive rate (1 – specificity). These results are summarised in Table 7.

To address this, hyperparameter tuning was carried out using random search cross-validation. Tuning specifically aimed to reduce class bias and improve sensitivity by adjusting the learning rate, tree depth, number of boosting rounds, and subsample ratio, allowing the model to better capture patterns in the minority class. The final model used a learning rate of 0.1, a maximum tree depth of 6, 200 boosting rounds, and a subsample ratio of 0.8. After tuning, the model achieved an accuracy of 83.97% (95% confidence interval 83.00 to 84.91) and a slightly improved balanced accuracy of 69.0%. Sensitivity
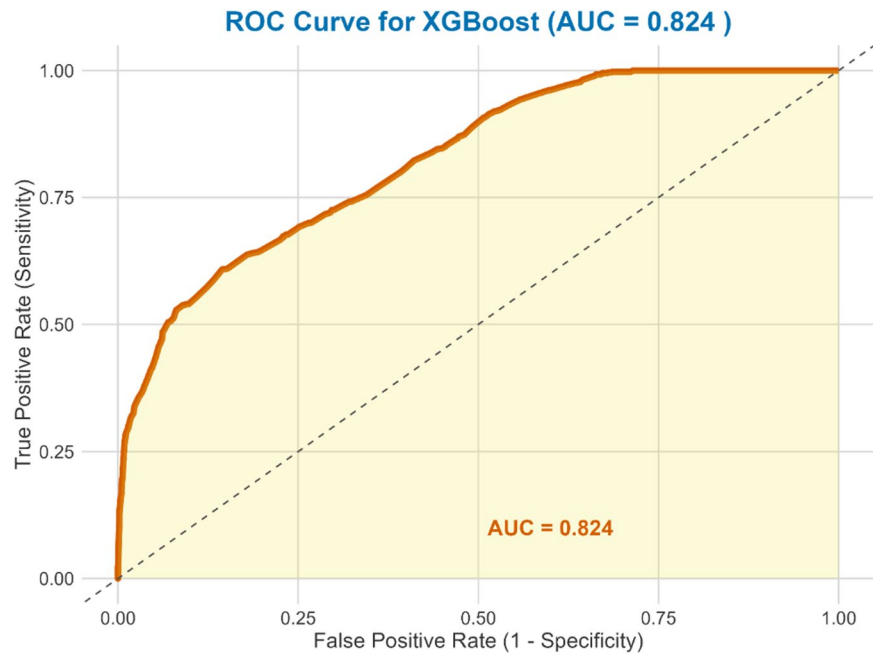
Fig. 2 Receiver Operating Characteristic (ROC) curve for the machine learning model predicting job creation likelihood among corps members. The curve illustrates the model's diagnostic ability by plotting the true positive rate (sensitivity) against the false positive rate (1 – specificity) at various threshold levels. AUC = Area Under the Curve

Table 7 Performance of the XGBoost model before and after hyperparameter tuning

Performance metric	Before tuning	After tuning (Final Model)
Dataset size	19,278 observations	19,278 observations
Data split	70% train, 30% test	70% train, 30% test
Accuracy	84.25% (95% CI: 83.28–85.18)	83.97% (95% CI: 83.00–84.91)
No-information rate	78.92%	78.92%
p-value (Accuracy > NIR)	< 0.001	< 0.001
Cohen's Kappa	0.4196	~0.433
Sensitivity (Recall)	37.49% (Likely job creators, Class = 1)	95.33% (Unlikely job creators, Class = 0)
Specificity	96.74%	41.43%
Positive Predictive Value	75.41%	85.90%
Negative Predictive Value	85.28%	70.33%
Balanced Accuracy	67.11%	69.00%
Area Under Curve (AUC)	0.833	0.824
Key Feature Importance	Graduate attitude, educational qualification (Masters, octorate)	Graduate attitude, educational qualification, marital status
Hyperparameter Tuning	Early stopping (best iteration = 4 of 200), default parameters	Learning rate = 0.1, max depth = 6, rounds = 200, subsample = 0.8

increased substantially to 95.33%, while positive predictive value reached 85.90%. These improvements indicate that the model became much better at identifying both graduates likely and unlikely to create jobs. Graduate attitude remained the strongest predictor, followed by educational qualification and marital status, in agreement with earlier logistic regression analyses [39]. These tuned model results are also presented in Table 7, and the relative contributions of each variable are visualised in Fig. 3.

Feature Importance (Top 10)
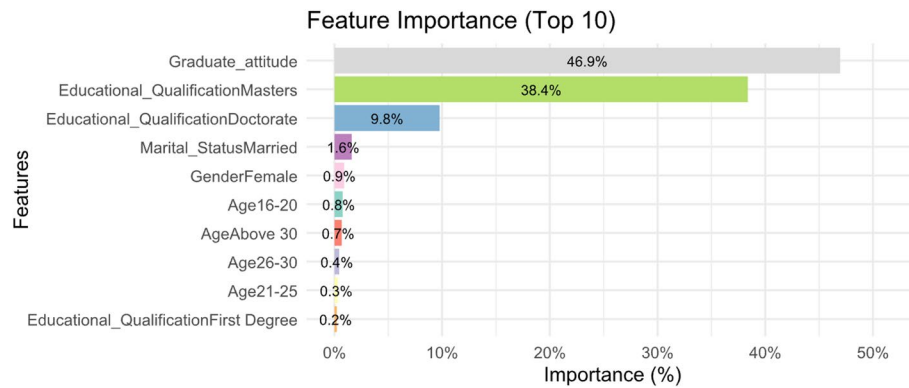
Fig. 3 Feature importance scores derived from the machine learning model predicting job creation likelihood among corps members. The plot ranks predictor variables (age, gender, marital status, educational qualification, and graduate attitude) based on their relative contribution to the model's predictive accuracy. Higher scores indicate greater influence on the model's decision-making process

7 Discussion

This study examined whether certain demographic and attitudinal factors predict the likelihood of job creation among Nigerian corps members. Six hypotheses were tested using both logistic regression and machine learning techniques. The first finding showed that age did not significantly influence the likelihood of job creation. No age group differed meaningfully compared to those above 30 years. This aligns with previous research reporting weak or inconsistent links between age and entrepreneurial behaviour [11, 65]. Within the NYSC programme, corps members experience similar conditions and training regardless of age, which may explain the uniformity of outcomes. The narrow age range also limits the detection of age-related effects. These results suggest that programme designers should prioritise motivation, skills, and readiness rather than age when supporting corps members' entrepreneurial intentions. Policy initiatives could focus on providing targeted skill-building opportunities and guidance that foster self-efficacy and confidence in all age groups, while considering broader economic and regional factors that may affect programme impact.

Gender also did not significantly predict the likelihood of job creation. Male participants were slightly more likely than females to indicate willingness to create jobs, but the difference was not statistically meaningful. This result aligns with prior studies showing no significant gender-based differences in entrepreneurial inclination or intentions [2, 48, 67]. The comparable outcomes may reflect equal access to entrepreneurship training and opportunities within the NYSC programme. Practically, this suggests that training and mentorship programmes can be designed inclusively, without the need for gender-specific differentiation, while still recognising individual needs and preferences. This evidence may also be relevant for similar youth empowerment programmes in other countries, although contextual factors such as local economic conditions and access to capital should be considered when applying these findings internationally.

Marital status had a small but significant effect on the likelihood of job creation. Single corps members were approximately 1.2 times more likely to report willingness to create jobs than married counterparts. This aligns with findings that unmarried individuals often have fewer domestic obligations and may be more willing to pursue entrepreneurial opportunities [2, 46]. Single corps members may have greater flexibility in managing time and resources, whereas married corps members may prioritise steady income

due to family responsibilities. These findings suggest that programmes may benefit from flexible support options, such as mentoring or time-adjusted entrepreneurship modules, and consideration of participants' family and regional circumstances.

Educational qualification significantly predicted the likelihood of job creation. Doctoral holders were more likely to report willingness to create jobs compared to those with lower qualifications. Corps members with an HND were about three times less likely, while those with a master's degree were more than twice less likely. These findings are consistent with prior research showing that higher education enhances entrepreneurial knowledge, opportunity recognition, and decision-making skills [9, 34, 82]. While some studies report a negative or non-significant relationship [16, 36], the present results indicate that advanced education equips graduates with greater preparedness for entrepreneurial initiatives. From a policy perspective, this supports investment in higher-level training, mentoring, and early-stage business support for graduates with different academic qualifications, while considering regional economic differences that may limit opportunities for job creation.

Graduate attitude toward entrepreneurship emerged as the strongest predictor of the likelihood of job creation. Corps members with more positive attitudes were about 1.5 times more likely to report willingness to create jobs than those with less favourable attitudes. This finding aligns with Katz's Functionalism Theory of Attitude Formation ([41]), which explains that attitudes serve practical, protective, and expressive functions. Those perceiving entrepreneurship as useful may act on the utilitarian function, while self-directed individuals may reflect the value-expressive function. Positive attitudes also support the knowledge function by shaping how risks and opportunities are evaluated. Empirical evidence indicates that positive entrepreneurial attitudes increase both intention and actual engagement in entrepreneurial behaviour [15, 30, 37, 68, 70]. These findings suggest that policies and training programmes should actively foster positive entrepreneurial attitudes through practical skill development, motivational workshops, and exposure to success stories, even in regions or sectors with limited economic resources.

In the multivariate model, graduate attitude, educational qualification, and marital status remained significant predictors after adjusting for age and gender. Graduate attitude was the strongest predictor, with a one-unit increase associated with a 1.66 times higher likelihood of job creation. HND and master's holders were less likely to report willingness to create jobs compared to doctoral holders, highlighting the role of education in structuring ideas and decision-making. Single corps members maintained a slight advantage over married peers, reflecting fewer domestic obligations. Age and gender had no significant effects after adjustment, consistent with prior studies [2, 48].

The XGBoost model confirmed these findings, showing strong sensitivity (95.33%) and AUC (0.824). Graduate attitude, education, and marital status consistently emerged as the top predictors, reinforcing the importance of mindset, academic preparation, and life circumstances in influencing corps members' likelihood of engaging in job creation. These results point to practical implications for programme designers and policymakers. Interventions that foster positive attitudes, provide targeted training based on educational background, and offer flexible support for married corps members are likely to be most effective. Additionally, integrating mentoring, access to financial resources, and continuous follow-up could further strengthen participants' readiness to apply

entrepreneurial skills. While the study is specific to Nigeria and the NYSC context, similar youth empowerment programmes in other countries may benefit from considering these individual and demographic factors, adjusting for local economic and infrastructural realities.

7.1 Implications of the study

The findings confirm that Katz's Functionalism Theory remains relevant for understanding how personal attitudes influence employment outcomes. Graduate attitude emerged as the strongest predictor of the likelihood of creating jobs, showing that corps members' motivations, values, and perceptions of potential rewards strongly affect their willingness to pursue self-employment. The theory's focus on the practical, expressive, and knowledge-related functions of attitudes helps explain why some individuals are more inclined to act on opportunities than others. This study therefore reinforces the importance of considering attitude in youth employment research.

Methodologically, the study combined traditional statistical analysis with machine learning to examine the same outcome. This approach clarified the results and allowed stronger conclusions about the relative importance of variables such as graduate attitude, education, and marital status. Future studies could build on this by examining other population groups or including factors such as socio-economic background, access to resources, and prior training exposure. Such additions may improve predictions of the likelihood of job creation among young people.

Policy implications suggest that youth empowerment programmes should focus on personal readiness and educational attainment when designing entrepreneurship tracks. Initiatives such as SAED could assess corps members' attitudes before placing them in specific activities. Graduates with positive attitudes or higher qualifications may benefit from mentoring, financial guidance, or start-up support, while those with lower qualifications or family responsibilities may require customised interventions to encourage engagement in self-employment.

In practice, these findings can inform training design and delivery for corps members. Training content and support could be adjusted to suit individual circumstances, such as marital status and educational level. Married corps members may respond better to flexible scheduling and mentoring, while doctoral graduates may be well positioned for business incubation or early-stage funding opportunities. These insights are relevant not only within Nigeria but also for youth employment programmes in other countries facing high graduate unemployment.

7.2 Limitations and suggestions for future research

This study examined job creation among Nigerian corps members and provides insights that are meaningful and practical. Nevertheless, several limitations should be acknowledged. First, the study relied on self-reported responses, which may reflect personal perceptions or recall errors. To reduce this risk, clear instructions were provided, and responses were submitted anonymously. The use of both statistical and machine learning methods helped strengthen confidence in the results.

Second, the study focused on corps members who served between 2012 and 2021. While this period allowed enough time for job creation to take place, it may not fully capture more recent economic developments or changes in youth employment

initiatives. Moreover, the study did not account for broader external factors, such as national economic conditions, access to capital, or regional variations, which could influence graduates' ability to create jobs. These elements could help explain differences in entrepreneurial outcomes across locations and populations.

Third, the study did not include variables such as mentorship opportunities, availability of business resources, or local market conditions. Future research could incorporate these factors to produce a more comprehensive model for predicting job creation. Extending the analysis to other sectors or youth service schemes could also show whether similar trends apply beyond the NYSC programme.

Finally, the study was conducted solely in Nigeria, which limits direct generalisation to other countries. However, the approach and findings may still be informative for youth empowerment programmes in other regions facing similar challenges with graduate unemployment, provided local economic and social differences are considered. Future studies could test this model in different populations to explore its adaptability and wider relevance.

8 Conclusion

This study examined how demographic and attitudinal factors relate to job creation among Nigerian corps members, using logistic regression and a machine learning method. The findings showed that graduate attitude, educational qualification, and marital status were significant predictors, while age and gender were not. Of these, graduate attitude had the strongest influence, followed by educational level and marital status. These results suggest that a positive outlook on entrepreneurship increases the chances of job creation. Corps members with higher academic qualifications were more likely to create jobs, possibly due to their training, confidence, and broader exposure. Marital status also made some difference, with single individuals appearing more likely to start job-creating activities, likely due to fewer domestic constraints. This study is the first to apply both statistical and machine learning techniques to examine these variables within the NYSC scheme. The use of both methods strengthened the findings and improved predictive accuracy. This approach may guide future research that seeks to improve employment outcomes, especially in low-resource settings. The combined use of statistical and machine learning methods provides a useful model for researchers and programme planners seeking to identify key behavioural and demographic predictors of job creation. This work adds to existing research by showing that combining theory, data analysis, and predictive tools can lead to more useful and applicable findings for both academic and policy use.

Declarations

Ethics approval and consent to participate
This study was approved by the University of Calabar ethics committee, with approval number UC/IRB/2019/0131. All procedures involving human participants were conducted in accordance with the ethical standards of the institutional research committee and the 1964 Helsinki Declaration, as well as its later amendments or comparable ethical guidelines.

Consent for publication
Not applicable.

Informed consent
Informed consent was obtained from all respondents prior to their participation in the study.

Competing interests
The authors declare no competing interests.

References

1. Adelaja AA. Exploring the effects of entrepreneurial education on entrepreneurial intention between genders: A pair-wise methodology approach. Res Square. 2020. https://doi.org/10.21203/rs.3.rs-19289/v1. [Preprint].
2. Adelowo CM, Henrico A. Sustainability and determinants of entrepreneurship propensity among young graduates in Nigeria. SAGE Open. 2025. https://doi.org/10.1177/21582440251314574.
3. Afrobarometer. (2025, June 16). Facing lack of economic opportunity, Nigerian youth want government action on jobs and cost of living (Dispatch AD998). Centre for Democratic Development. https://www.afrobarometer.org/wp-content/uploads/2025/06/AD998-Nigerian-youth-want-government-action-on-jobs-and-cost-of-living-Afrobarometer-16june25.pdf
4. Ahn K, Winters JV. Does education enhance entrepreneurship? Small Bus Econ. 2023;61:717–43. https://doi.org/10.1007/s11187-022-00701-x.
5. Asuquo ME, Chuktu O. Internal school quality assurance practices and undergraduate students' attitude towards academic activities: A case of public universities in cross river State, Nigeria. Int Educ Stud. 2022;15(4):108–16. https://doi.org/10.5539/ies.v15n4p108.
6. Asuquo ME, Eton IC. Undergraduates' perception of the importance of entrepreneurship education in job creation: management implications for sustainable development. Delsu J Educational Res Dev. 2020;17(2):56–61.
7. Atkinson R, Flint J. Accessing hidden and hard-to-reach populations: snowball research strategies. Social Res Update. 2001;33:1–4. https://sru.soc.surrey.ac.uk/SRU33.html.
8. Awotunde OM, Aregbeshola AR. Systemic action learning action research and entrepreneurship momentum development. Action Learning: Res Pract. 2024;1–19. https://doi.org/10.1080/14767333.2024.2377076.
9. Bayar Y, Sart G, Gavriletea MD, Coroş MM. The impact of entrepreneurial education and educational attainment on entrepreneurial activity: evidence from selected high-income economies. J Bus Econ Manage. 2022;23(6):1257–79. https://doi.org/10.3846/jbem.2022.17840.
10. Becker GS. A theory of the allocation of time. Econ J. 1965;75(299):493–517. https://doi.org/10.2307/2228949.
11. Bohlmann C, Rauch A, Zacher H. A lifespan perspective on entrepreneurship: perceived opportunities and skills explain the negative association between age and entrepreneurial activity. Front Psychol. 2017;8:Article2015. https://doi.org/10.3389/fpsyg.2017.02015.
12. Caliendo M, Kritikos AS, Stier C (2023). The influence of start-up motivation on entrepreneurial performance. Small Business Economics, 2023;61(3), 869-889. https://doi.org/10.1007/s11187-022-00722-6
13. Carpenter CJ, Boster FJ, Andrews KR. Functional attitude theory (Chap. 7). In: Dillard JP, Shen L, editors. The SAGE handbook of persuasion: developments in theory and practice. Volume 2. SAGE; 2013. pp. 104–19.
14. Çavuşoğlu S, Demirağ B, Durmaz Y, Tutuş G. Effects of intrinsic and extrinsic religiosity on value-expressive and social-adjustive attitude functions towards product. J Islamic Mark. 2023;14(2):586–606. https://doi.org/10.1108/JIMA-02-2021-0045.
15. Chaitra ST, Mamatha SM. Exploring entrepreneurial intentions and attitudes among postgraduate students: a comparative analysis across gender, region, and course. Int J Res. 2025;13(1):77–85. https://doi.org/10.29121/granthaalayah.v13.i1.2025.5865.
16. Chu T, Wen Q. Does college education promote entrepreneurship in China? J Lab Res. 2019;40:463–86. https://doi.org/10.1007/s12122-019-09293-0.
17. Cichocka A, Marchlewska M, Cislak A. Self-worth and politics: the distinctive roles of self-esteem and narcissism. Polit Psychol. 2024;45:43–85. https://doi.org/10.1111/pops.12897.
18. Cohen J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Routledge. https://www.routledge.com/Statistical-Power-Analysis-for-the-Behavioral-Sciences/Cohen/p/book/9780805802832
19. Contreras-Barraza N, Espinosa-Cristia JF, Salazar-Sepulveda G, Vega-Muñoz A. Entrepreneurial intention: a gender study in business and economics students from Chile. Sustainability. 2021;13:4693. https://doi.org/10.3390/su13094693.
20. Cronbach LJ. Coefficient alpha and the internal structure of tests. Psychometrika. 1951;16(3):297–334. https://doi.org/10.1007/BF02310555.
21. Cui J, Sun J, Bell R. The impact of entrepreneurship education on the entrepreneurial mindset of college students in China: the mediating role of inspiration and the role of educational attributes. Int J Manag Educ. 2021;19(1):100296. https://doi.org/10.1016/j.ijme.2019.04.001.
22. Deebom MT, Daerego IT. The influence of National youth service corps entrepreneurship skill acquisition programmes on youth empowerment in rivers state. Int J Humanit Soc Sci Educ. 2020;7(6):146–55. https://doi.org/10.20431/2349-0381.0706016.

23. Dey SK, Sharma D, Dash S. Impact of entrepreneurship education on entrepreneurial intention among female students of Odisha. Small Enterprises Dev Manage Ext J. 2023;51(1):63–72. https://doi.org/10.1177/09708464231209456.

24. Dupuis M, Meier E, Cuneo F. Detecting computer-generated random responding in questionnaire-based data: A comparison of seven indices. Behav Res Methods. 2019;51:2228–37. https://doi.org/10.3758/s13428-018-1103-y.

25. Dutta N. Female entrepreneurship and marriage: does individualism matter? South Asian J Macroeconomics Public Finance. 2022;12(1):7–28. https://doi.org/10.1177/22779787211064505.

26. Ekong MU, Ekong CU. Skill acquisition and employment reduction in nigeria: A case study of National directorate of employment in Akwa Ibom state. Int J Econ Manage Sci. 2016;5(4):1–10. https://doi.org/10.4172/2162-6359.1000352.

27. Faloye DO, Olatunji OD. Entrepreneurship education and self-employment intentions among fresh graduates in Nigeria. J Econ Sustainable Dev. 2018;9(12):146–58. https://www.iiste.org/Journals/index.php/JEDS/article/view/43149.

28. Faul F, Erdfelder E, Buchner A, Lang A-G. Statistical power analyses using G*Power 3.1: tests for correlation and regression analyses. Behav Res Methods. 2009;41(4):1149–60. https://doi.org/10.3758/BRM.41.4.1149.

29. Fawcett T. An introduction to ROC analysis. Pattern Recognit Lett. 2006;27(8):861–74. https://doi.org/10.1016/j.patrec.2005.10.010.

30. Gaire S, Upadhyaya TP. Entrepreneurial intention of management graduates. Lumbini J Bus Econ. 2023;11(1):59–73. https://doi.org/10.3126/ljbe.v11i1.54317.

31. Gallegos A, Valencia-Arias A, Bravo VDSA, de la Puente RT, Valencia J, Uribe-Bedoya H, et al. Factors that determine the entrepreneurial intention of university students: a gender perspective in the context of an emerging economy. Cogent Soc Sci. 2024;10(1):2301812. https://doi.org/10.1080/23311886.2024.2301812.

32. Goodman LA. Snowball sampling. Ann Math Stat. 1961;32(1):148–70. https://doi.org/10.1214/aoms/1177705148.

33. Green SB. How many subjects does it take to do a regression analysis. Multivar Behav Res. 1991;26(3):499–510. https://doi.org/10.1207/s15327906mbr2603_7.

34. Guo X, Chen W, Yu A. Is college education worth it? Evidence from its impacts on entrepreneurship in the united States. J Small Bus Entrepreunrsh. 2015;28(1):1–26. https://doi.org/10.1080/08276331.2015.1104452.

35. Hosmer DW, Lemeshow S, Sturdivant RX. (2013). Applied logistic regression (3rd ed.). Wiley. https://doi.org/10.1002/9781118548387

36. Huang B, Tani M, Zhu Y. Does higher education make you more entrepreneurial? Causal evidence from China. J Bus Res. 2021;135:543–58. https://doi.org/10.1016/j.jbusres.2021.06.044.

37. Hussain T, Zia-Ur-Rehman M, Abbas S. Role of entrepreneurial knowledge and personal attitude in developing entrepreneurial intentions in business graduates: a case of Pakistan. J Glob Entrepreneursh Res. 2021;11:439–49. https://doi.org/10.1007/s40497-021-00283-0.

38. Ita VE, Bassey JE. Rising youth unemployment and the socioeconomic realities in Nigeria: the Akwa Ibom state experience. Int J Dev Econ Sustain. 2022;10(4):1–14. https://doi.org/10.37745/ijdes.13/vol10n4114.

39. James G, Witten D, Hastie T, Tibshirani R. (2013). An introduction to statistical learning. Springer. https://doi.org/10.1007/978-1-4614-7138-7

40. Joy-Nyiema O, Okon EE, Dijeh AE. NYSC innovative programmes and productivity of ex-corps members in Cross River State. J Entrep Educ. 2023;26(S5):1–21.

41. Katz D. The functional approach to the study of attitudes. Public Opin Q. 1960;24(2):163–204. https://doi.org/10.1086/266945.

42. Kaur M, Chawla S. Understanding the relationship between entrepreneurship education, entrepreneurial attitudes, and entrepreneurial intentions among engineering graduates: the moderating role of gender. J Work-Appl Manage. 2023;15(2):200–15. https://doi.org/10.1108/JWAM-05-2023-0039.

43. Kautonen T, Down S, Minniti M. Ageing and entrepreneurial preferences. Small Bus Econ. 2014;42(3):579–94. https://doi.org/10.1007/s11187-013-9489-5.

44. Khanal K, Prajapati B. Influence of demographic factors on the entrepreneurial intentions of business students in Nepal. J Econ Sci. 2023;2(1):1–12. https://doi.org/10.55603/jes.v2i1.a1.

45. Kleinbaum, D. G., & Klein, M. (2010). Assessing discriminatory performance of a binary logistic model: ROC curves.In Logistic regression: A self-learning text (3rd ed., pp. 345–387).https://doi.org/10.1007/978-1-4419-1742-3_10

46. Layoo N, Raheni C, Djawa SK, Rajindra R, Anggraeni RN. Demographic characteristics and entrepreneurial inclination of university student. Int J Health Econ Soc Sci. 2024;7(1):1–9.

47. Liñán F, Chen YW. Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. Entrep Theory Pract. 2009;33(3):593–617. https://doi.org/10.1111/j.1540-6520.2009.00318.x.

48. Mahlaole ST, Malebana MJ. Effects of gender on students' entrepreneurial intentions: a theory of planned behaviour perspective. Open J Bus Manage. 2022;10:57–76. https://doi.org/10.4236/ojbm.2022.101004.

49. Marsasi EG, Albari, Muthohar M. How utilitarian motivation and trust can increase intention to use based on functional attitude theory. Int J Prof Bus Rev. 2023;8(12). https://doi.org/10.26668/businessreview/2023.v8i12.4086. Article e3993.

50. Marsasi EG, Albari A, Muthohar M. How utilitarian motivation and trust can increase intention to use based on functional attitude theory. International Journal of Professional Business Review. 2023;8(12):e04086. https://doi.org/10.26668/businessreview/2023.v8i12.4086.

51. Muogbo US, Eze SU, Obananya CG. Skill acquisition as tool for solving youth restiveness and unemployment in Nigeria: the role of NYSC. Int J Manage Entrepreneurship Res. 2021;3(4):161–74. https://doi.org/10.51594/ijmer.v3i4.224.

52. National Bureau of Statistics (NBS). (2024). Nigeria labour force survey: Q1 2024 report. National Bureau of Statistics. https://www.nigerianstat.gov.ng/pdfuploads/NLFS_Q1_2024_Report.pdf

53. National Bureau of Statistics. Population of youth in Nigeria. NBS; 2020.

54. Nunez NA, Cornejo-Meza G, Fernández-Concha R. Defying expectations: factors influencing MBA graduates' entrepreneurial intentions. Cogent Bus Manage. 2025;12(1):2473681. https://doi.org/10.1080/23311975.2025.2473681.

55. Ogwuibe CO, Olorunfemi GO. Youth entrepreneurship as a tool for economic development in Nigeria. Nigerian J Public Adm Local Government. 2018;17(1):102–12.

56. Ojinmah ON, Randa AH, Olu-Ojo B. Entrepreneurship education: a tool for job creation and youth empowerment in the 21st century. Kontagora Int J Educational Res. 2025;2(2):192–201.

57. Olofinyehun A, Adeyeye J, Egbetokun A, Olomu M, Oluwadare J, Sanni M, Orisadare M. Pooled longitudinal dataset on the assessment of an apprenticeship-based entrepreneurship intervention in Nigeria. Res Data J Humanit Social Sci. 2023;8(1):1–48. https://doi.org/10.1163/24523666-bja10035.

58. Omotajo JA, Laosebikan JO, Ogunlusi CF, Akinola ET. Gender-related factors and entrepreneurial intentions of undergraduates in selected federal universities in Southwest, Nigeria. Int J Prof Bus Rev. 2024;9(9):e04942. https://doi.org/10.26668/businessreview/2024.v9i9.4942.

59. Onyeukwu PE, Padmavathi T. Gender as a moderator between entrepreneurship intention and its predictors among university graduates in Nigeria and India. Afr J Bus Manage. 2019;13(18):622–9. https://doi.org/10.5897/AJBM2019.8853.

60. Otum NI, Atah CA. Perceived strategies for teaching business education curriculum content for the acquisition of skills competence. Int J Educ Evaluation. 2021;7(5):12–21.

61. Owan VJ, Duruamaku-Dim JU, Odigwe FN, Owan MV. Dataset of the adoption of digital tools for research sharing among academics in African varsities during the COVID-19 pandemic in 2020 [Version 3, peer review: 2 approved]. F1000Res. 2022;11:82. https://doi.org/10.12688/f1000research.54245.3.

62. Owan VJ, Duruamaku-Dim JU, Okon AE, Akah LU, Agurokpon DC, Ubi IO, et al. Interlinking alcohol intake, mental stress, psychotic experiences and job performance of higher institutions' graduates: a structural equation modelling. J Educ Health Promot. 2022;11:312. https://doi.org/10.4103/jehp.jehp_417_22.

63. Owan VJ, Emanghe EE, Denwigwe CP, Etudor-Eyo E, Usoro AA, Ebuara VO, et al. Curriculum management and graduate programmes' viability: the mediation of institutional effectiveness using PLS-SEM approach. J Curric Teach. 2022;11(5):114–27. https://doi.org/10.5430/jct.v11n5p114.

64. Owan MV, Chukwu CO, Owan VJ, Aduma PO. An evaluation of the input, processes, and outcomes of the national youth service corps program in Nigeria. Pedagog Res. 2025;10(3):em0246. https://doi.org/10.29333/pr/16808.

65. Paray ZA, Kumar S. Does entrepreneurship education influence entrepreneurial intention among students in HEIs? The role of age, gender and degree background. J Int Educ Bus. 2020;13(1):55–72. https://doi.org/10.1108/JIEB-02-2019-0009.

66. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. Res Nurs Health. 2006;29(5):489–97. https://doi.org/10.1002/nur.20147.

67. Ramadani V, Rahman Md. M., Salamzadeh A, Rahaman Md. S., Abazi-Alili H. Entrepreneurship education and graduates' entrepreneurial intentions: does gender matter? A multi-group analysis using AMOS. Technol Forecast Soc Change. 2022;180:121693. https://doi.org/10.1016/j.techfore.2022.121693.

68. Sahid S, Norhisham NS, Narmaditya BS. Interconnectedness between entrepreneurial self-efficacy, attitude, and business creation: a serial mediation of entrepreneurial intention and environmental factor. Heliyon. 2024: 10, Article e30478. https://doi.org/10.1016/j.heliyon.2024.e30478.

69. Saito T, Rehmsmeier M. The precision-recall plot is more informative than the ROC plot when evaluating binary classifiers on imbalanced datasets. PLoS One. 2015;10(3):e0118432. https://doi.org/10.1371/journal.pone.0118432.

70. Shahriar MS, Hassan MS, Islam MA, Sobhani FA, Islam MT. Entrepreneurial intention among university students of a developing economy: the mediating role of access to finance and entrepreneurship program. Cogent Bus Manage. 2024;11(1):2322021. https://doi.org/10.1080/23311975.2024.2322021.

71. Shaw K, Sørensen A. Coming of age: watching young entrepreneurs become successful. Labour Econ. 2022;77:102033. https://doi.org/10.1016/j.labeco.2021.102033.

72. Tavakol M, Dennick R. Making sense of cronbach's alpha. Int J Med Educ. 2011;2:53–5. https://doi.org/10.5116/ijme.4dfb.8dfd.

73. Teitcher JE, Bockting WO, Bauermeister JA, Hoefer CJ, Miner MH, Klitzman RL. Detecting, preventing, and responding to fraudsters in internet research: ethics and tradeoffs. J Law Med Ethics. 2015;43(1):116–33. https://doi.org/10.1111/jlme.12200.

74. Tung DT, Hung NT, Phuong NTC, Loan NTT, Chong SC. Enterprise development from students: the case of universities in Vietnam and the Philippines. Int J Manag Educ. 2020;18(1):100333. https://doi.org/10.1016/j.ijme.2019.100333.

75. Uchendu CC. Assessing university students' skill acquisition for employability in Cross river state. Int J Educ Learn Dev. 2015;4(1):45–51.

76. Ullah A, Khan NA, Idrisi A, Saleem I, Arafat MY. From intentions to actions: How entrepreneurial actions and government policies mediate and moderate this link. Journal of Public Affairs, 2025;25(3), e70061.https://doi.org/10.1002/pa.70061

77. Undiyaundeye FA. Entrepreneurship skill acquisition and benefits amongst the undergraduate students in Nigeria. Eur J Soc Sci Educ Res. 2015;5(1):357–62. https://doi.org/10.26417/ejser.v4i1.p9-14.

78. Yaqub RMS, Kausar S, Rehman A, Arif Z. Unveiling entrepreneurial intentions: a study of business graduates in South punjab's higher education institutions with a focus on gender moderation. Bull Bus Econ. 2023;12(3):417–29. https://doi.org/10.61506/01.00050.

79. Ye Z-M, Kang K-W. The impact of entrepreneurial self-efficacy and entrepreneurship on entrepreneurial intention: entrepreneurial attitude as a mediator and entrepreneurship education having a moderate effect. Sustainability. 2025;17:4733. https://doi.org/10.3390/su17104733.

80. Yousaf HQ, Munawar S, Ahmed M, Rehman S. The effect of entrepreneurial education on entrepreneurial intention: the moderating role of culture. Int J Manag Educ. 2022;20(3):100712. https://doi.org/10.1016/j.ijme.2022.100712.

81. Zhao H, O'Connor G, Wu J, Lumpkin GT. Age and entrepreneurial career success: a review and a meta-analysis. J Bus Ventur. 2021;36(1):106007. https://doi.org/10.1016/j.jbusvent.2020.106007.

82. Zhou Y, Li H, Shahzad F. Does college education promote entrepreneurship education in China? SAGE Open. 2021;11(3):21582440211031616. https://doi.org/10.1177/21582440211031616.

83. Zwane HC, Radebe TN, Mlambo VH. Is youth entrepreneurship key to addressing youth unemployment? Interrogating South Africa's youth unemployment dilemma. J Soc Sci. 2021;69(1–3):18–25. https://doi.org/10.31901/24566756.2021/69.1-3.2284.

Publisher's Note