

Promoting Self-Employment in the Building Construction Industry Through an Integrated Competency-Based Learning Model

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Abstract

The persistent rise in graduate unemployment has become a major socio-economic challenge in developing countries, particularly in Nigeria, where the formal labour market has become increasingly incapable of absorbing the growing number of graduates. The building construction industry presents enormous opportunities for self-employment through contracting, consultancy services, project management, building maintenance, and specialized construction trades. However, many graduates of Building Technology Education programmes lack the technical, entrepreneurial, workplace, and digital competencies required for successful enterprise establishment and sustainability. This study examined the role of an Integrated Competency-Based Learning for Self-Employment Development (ICBLSED) Model in promoting self-employment in the building construction industry. A descriptive survey research design was adopted. The study was conducted in public universities in Southern Nigeria offering Building Technology Education programmes. The population comprised 186 lecturers, and a census approach was adopted. Data were collected using a structured questionnaire. Mean and standard deviation were used to answer the research questions, while independent t-test was used to test the hypotheses at 0.05 level of significance. The findings revealed that technical, entrepreneurial, workplace, and digital competencies significantly influence self-employment readiness and enterprise sustainability. The study concluded that an integrated competency-based learning model provides an effective framework for preparing Building Technology Education graduates for sustainable self-employment in the building construction industry.

Keywords: Competency-Based Learning, Construction Entrepreneurship, Self-Employment, Building Technology, Digital Competencies, ICBLSED Model.

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INTRODUCTION

Graduate unemployment has become one of the most significant developmental challenges confronting many developing nations. Despite substantial investments in higher education, a growing number of graduates continue to experience difficulty securing gainful employment. This situation has raised concerns regarding the relevance of university curricula and their ability to equip learners with competencies that are responsive to contemporary labour market demands. The challenge is particularly pronounced in technical and vocational disciplines where graduates are expected to possess practical competencies capable of supporting self-employment and enterprise development. According to the World Bank (2023), educational systems must increasingly focus on employability and entrepreneurship-oriented competencies to address the growing mismatch between graduate skills and labour market requirements.

In this regard, the building construction industry remains one of the most viable sectors for employment generation and economic growth. The industry contributes significantly to infrastructure development, wealth creation, and national productivity. According to the International Labour Organization (ILO, 2024), the construction industry accounts for a substantial proportion of employment opportunities globally and continues to serve as a major source of livelihood for skilled and semi-skilled workers. Within the Nigerian context, the industry provides numerous opportunities for self-employment in building contracting, quantity surveying, consultancy services and site supervision. Others include, project management, building maintenance, carpentry, plumbing, masonry, roofing, and building materials supply. Consequently, the industry presents a strategic platform through which graduates can create sustainable livelihoods and contribute to national development.

Given the increasing scarcity of formal wage employment, self-employment has emerged as a strategic response to graduate unemployment. Schumpeter (1934) described entrepreneurship as a driving force for economic development through innovation, resource mobilization, and enterprise creation. Similarly, Gibb (2002) argued that entrepreneurial learning environments are essential for fostering enterprise creation and self-reliance among graduates. Self-employment enables individuals to create their own jobs, generate income, and contribute to economic growth while reducing dependence on limited wage employment opportunities. In the building construction industry, self-employment provides graduates with opportunities to apply acquired competencies in establishing sustainable enterprises capable of generating additional employment opportunities.

The ability of graduates to succeed in self-employment, however, depends largely on the competencies they acquire during their educational training. Consequently, the concept of competency occupies a central position in discussions relating to employability and entrepreneurship. Competency refers to the combination of knowledge, skills, attitudes, values, and behaviours that enable effective performance in specific occupational tasks (World Bank, 2023). According to Miller (2018), competency-based learning emphasizes mastery of occupational competencies through practical engagement and performance-based assessment. Likewise, UNESCO (2022) observed that competency-based education promotes employability and entrepreneurship by aligning learning outcomes with workplace requirements. Therefore, educational programmes seeking to promote self-employment must prioritize the development of relevant occupational competencies.

Building on this premise, the present study is anchored on the integrated competency-based learning for self-employment development (ICBLSED) model. The model proposes that self-employment development in the building construction industry depends on the integration of

four major competency domains: technical competencies, entrepreneurial competencies, workplace competencies, and digital competencies. Technical competencies include construction technology, quantity estimation, building maintenance, project supervision, and site management. Entrepreneurial competencies involve business planning, financial management, leadership, innovation, opportunity recognition, and marketing skills. Workplace competencies encompass communication, teamwork, ethical conduct, adaptability, and problem-solving abilities. Digital competencies include proficiency in computer-aided design (CAD), building information modelling (BIM), project management software, online procurement systems, and digital communication technologies. The integration of these competencies is expected to enhance graduates' capacity to establish and sustain successful self-employment ventures within the construction industry.

The theoretical foundation of this study is drawn from human capital theory and experiential learning theory. human capital theory, advanced by Becker (1993), posits that investment in education and training enhances individual productivity and improves economic outcomes. The theory suggests that individuals who acquire relevant competencies are more likely to succeed in both employment and entrepreneurial activities. Complementing this perspective, experiential learning theory developed by Kolb (1984) emphasizes learning through direct experience, reflection, experimentation, and practical application. The theory supports competency-based learning because occupational competencies are more effectively acquired through active participation in authentic work-related experiences. Supporting this view, Dewey (1938) maintained that meaningful learning occurs through experience, while Lave and Wenger (1991) argued that knowledge acquisition is most effective when situated within real-life contexts and communities of practice. Furthermore, Raelin (2008) emphasized the importance of work-based learning in bridging the gap between theoretical knowledge and workplace application.

Beyond theoretical considerations, recent developments within the global construction industry have further reinforced the need for integrated competencies. The increasing adoption of digital technologies, automation, and innovative construction practices has transformed workforce requirements. The organisation for economic co-operation and development (OECD, 2023) emphasized that future workforce competitiveness will depend on the combination of technical, entrepreneurial, and digital skills. Similarly, the european commission (2023), through the EntreComp framework, identified entrepreneurial competence as an essential lifelong learning skill required for innovation, adaptability, and enterprise creation. Despite these developments, many building technology education programmes continue to place greater emphasis on theoretical instruction than on practical competency development (Okorie, 2010; Olaitan, 1996). Consequently, graduates often lack the competencies necessary for successful self-employment within the building construction industry.

It is against this background that the present study examined the role of the integrated competency-based learning for self-employment development (ICBLSSED) model in promoting self-employment in the building construction industry. Specifically, the study sought to determine how the integration of technical, entrepreneurial, workplace, and digital competencies can enhance graduates' preparedness for self-employment and contribute to sustainable employment generation within the construction sector.

Statement of the Problem

The building construction industry offers numerous opportunities for self-employment and enterprise development. However, unemployment among graduates of building technology

education programmes remains high despite these opportunities. Many graduates continue to depend on limited government and private-sector jobs because they lack the competencies required to establish and sustain successful construction enterprises. Existing educational programmes often emphasize theoretical knowledge while paying insufficient attention to entrepreneurship, workplace readiness, and digital construction technologies. Consequently, graduates frequently possess academic qualifications without the practical competencies required for self-employment. The problem of this study, therefore, is the inadequate integration of technical, entrepreneurial, workplace, and digital competencies within building technology education programmes, resulting in limited self-employment capacity among graduates.

Purpose of the Study

The purpose of this study was to examine the effectiveness of an integrated competency-based learning for self-employment development model in promoting self-employment in the building construction industry.

Specifically, the study sought to:

1. Determine the influence of technical and entrepreneurial competencies on self-employment readiness in the building construction industry.
2. Examine the contribution of workplace and digital competencies to sustainable self-employment among building technology education graduates.

Research Questions

Two research questions that guided the study were as follows:

1. To what extent do technical and entrepreneurial competencies influence self-employment readiness in the building construction industry?
2. How do workplace and digital competencies contribute to sustainable self-employment among building technology education graduates?

Hypotheses

Two hypotheses formulated at 0.05 level of significance include:

H₀₁: There is no significant relationship between technical and entrepreneurial competencies and self-employment readiness in the building construction industry.

H₀₂: There is no significant relationship between workplace and digital competencies and sustainable self-employment among building technology education graduates.

METHODOLOGY

The study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researcher to obtain the opinions of building technology education lecturers regarding competencies required for promoting self-employment in the building construction industry through the integrated competency-based learning for self-employment development model (Nworgu, 2015; Krejcie & Morgan, 1970). The study was conducted in

public universities in Southern Nigeria offering building technology education programmes. The area was selected because it hosts several institutions responsible for producing building technology education graduates and possesses a vibrant construction industry capable of supporting entrepreneurial activities. The population of the study comprised all lecturers in public universities offering building technology /education programmes in Southern Nigeria. Available departmental records indicated a total population of 186 lecturers. Since the population was manageable, a census approach was adopted and all 186 lecturers were included in the study.

Data were collected using a structured questionnaire developed by the researcher. The instrument consisted of 25 items grouped under technical competencies, entrepreneurial competencies, workplace competencies, digital competencies, and self-employment development indicators. Responses were measured using a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). The instrument was validated by two experts in building technology education and building technology departments of Enugu State University of Science and Technology (ESUT). Their observations were incorporated into the final draft of the instrument. Reliability was established through a pilot study involving 20 lecturers from public universities in South-South Nigeria. Cronbach alpha coefficient of 0.89, was obtained.

The researcher administered the instrument with the assistance of trained research assistants. Out of 186 copies distributed, 178 were properly completed and returned, representing a response rate of 95.7%. Mean and standard deviation were used to answer the research questions, while independent t-test was employed to test the hypotheses at the 0.05 level of significance.

Proposed ICBLSED Model Characteristics

The integrated competency-based learning for self-employment development model is founded on the assumption that sustainable self-employment in the building construction industry depends on the integration of technical, entrepreneurial, workplace, and digital competencies within a competency-based learning environment. The model posits that technical competencies provide the occupational expertise required for effective construction practice, while entrepreneurial competencies enable individuals to identify opportunities, mobilize resources, and manage successful enterprises. Workplace competencies facilitate effective interaction, professionalism, leadership, and problem-solving, whereas digital competencies enhance productivity, innovation, and competitiveness in modern construction practice.

The model assumes that when these competencies are acquired through practical instruction, project-based learning, industrial attachment, entrepreneurship education, and workplace experiences, graduates become adequately prepared for self-employment. The outcome of the model is enhanced entrepreneurial readiness, improved business start-up capability, enterprise sustainability, income generation, and job creation within the building construction industry.

RESULTS

Table 1: Mean and standard deviation of responses on technical and entrepreneurial competencies (N = 178)

S/N	Item statements	$\bar{X}_1$	SD ₁
1	Technical competencies enable graduates to establish building contracting businesses.	4.32	0.71
2	Quantity estimation skills enhance self-employment readiness.	4.18	0.76
3	Construction technology skills improve entrepreneurial capability.	4.25	0.69
4	Building maintenance competencies create employment opportunities	4.28	0.72
5	Site supervision skills support independent construction practice	4.31	0.67
6	Project management skills increase business success.	4.35	0.66
7	Business planning skills facilitate enterprise establishment.	4.41	0.63
8	Financial management competencies improve business growth.	4.37	0.70
9	Marketing competencies increase customer patronage.	4.22	0.74
10	Leadership skills support business expansion	4.26	0.72
11	Opportunity recognition skills facilitate business startup.	4.30	0.69
12	Integrated technical and entrepreneurial competencies enhance self-employment success.	4.46	0.61

Table 1 shows that the respondents agreed that technical and entrepreneurial competencies strongly influence self-employment readiness in the building construction industry, hence mean value for all the items were more than 3.50

Table 2: t-test on the mean ratings of building technology/education Lecturers on the technical and entrepreneurial competencies that influences self-employment readiness in the building construction industry

Variable	N	Mean	Std. Deviation	t-test	df	Sig.	Dec.
Technical & Entrepreneurial Competencies	178	4.31	0.69	15.84	177	0.001	Reject H ₀₁

The result in table 2 shows that respondents recorded a mean score of 4.31 (SD = 0.69), which is significantly higher than the criterion mean of 3.50. The calculated t-value of 15.84 with 177 degrees of freedom produced a p-value of 0.001, which is less than the 0.05 level of significance. Therefore, the null hypothesis was rejected. This implies that technical and

entrepreneurial competencies significantly influence self-employment readiness in the building construction industry.

Table 3: Mean and standard deviation of responses on workplace and digital competencies (N = 178)

S/N	Item statements	$\bar{X}_1$	SD ₁
1	Communication skills improve client relationships in construction businesses.	4.36	0.68
2	Teamwork competencies enhance project execution efficiency	4.28	0.72
3	Professional ethics support business sustainability.	4.45	0.60
4	Problem-solving skills improve construction productivity.	4.34	0.67
5	Adaptability enhances enterprise growth and survival.	4.26	0.73
6	Time management skills improve project delivery.	4.32	0.70
7	CAD competencies improve design quality and competitiveness.	4.30	0.71
8	BIM competencies support modern construction Practices	4.21	0.75
9	Digital marketing skills increase business visibility.	4.19	0.78
10	Project management software improves operational Efficiency	4.27	0.74
11	Digital communication tools improve client interactions.	4.35	0.69
12	ICT competencies support business innovation and Growth	4.33	0.71
13	Integrated workplace and digital competencies improve sustainable self-employment.	4.44	0.61

Table 3 shows that all the items had mean scores above the criterion mean of 3.50, indicating that the respondents agreed that workplace and digital competencies contribute significantly to sustainable self-employment among building technology education graduates. Therefore, workplace competencies such as communication, teamwork, professional ethics, and problem-solving, as well as digital competencies including CAD, BIM, digital marketing, and ICT skills, are considered essential for promoting sustainable self-employment in the building construction industry.

Table 4: t-test on the mean ratings of building technology /education Lecturers on the workplace and digital competencies contribution to sustainable self-employment among Building Technology Education graduates

Variable	N	Mean	Std. Deviation	t-test	df	Sig.	Dec.
Workplace and Digital Competencies	178	4.32	0.70	16.27	177	0.001	Reject H ₀₂

Table 4 reveals that respondents obtained a mean score of 4.32 (SD = 0.70), which exceeds the criterion mean of 3.50. The calculated t-value of 12.27 with 177 degrees of freedom yielded a

p-value of 0.001, which is less than the 0.05 significance level. Consequently, the null hypothesis was rejected. This indicates that workplace and digital competencies significantly contribute to sustainable self-employment among building technology education graduates.

DISCUSSIONS

The findings revealed that technical competencies significantly influence self-employment readiness among building technology education graduates. Competencies such as quantity estimation, project supervision, building maintenance, and construction technology were identified as critical determinants of entrepreneurial success. This finding supports Becker's (1993) human capital theory, which emphasizes the economic value of skill acquisition.

The study further established that entrepreneurial competencies significantly contribute to self-employment development. Competencies such as business planning, financial management, leadership, and marketing enhance graduates' ability to establish and sustain successful construction enterprises. This finding corroborates Schumpeter's (1934) view that entrepreneurship serves as a catalyst for economic development.

The findings also indicated that workplace competencies positively influence enterprise sustainability. Communication, teamwork, ethical conduct, and problem-solving abilities enable entrepreneurs to maintain productive relationships with clients and employees while improving organizational effectiveness. This finding agrees with Raelin (2008) and Lave & Wenger (1991), who emphasized the importance of workplace learning and professional interaction.

Furthermore, digital competencies were found to be significant predictors of entrepreneurial success. Competencies in CAD, BIM, project management software, and digital communication technologies enhance productivity and competitiveness within contemporary construction practice. This finding supports OECD (2023) and World Bank (2023), who identified digital competence as a critical requirement for workforce competitiveness.

CONCLUSION

The study established that self-employment development in the building construction industry depends on the effective integration of technical, entrepreneurial, workplace, and digital competencies. The integrated competency-based learning for self-employment development model provides a holistic framework for preparing building technology education graduates for successful entrepreneurial engagement. The model offers a viable strategy for reducing graduate unemployment while promoting enterprise development and economic growth.

RECOMMENDATIONS

The following recommendations were put forward by the researcher:

1. Universities offering building technology education programmes should redesign their curricula around the integrated competency-based learning for self-employment development (ICBLSED) model to ensure the systematic development of technical, entrepreneurial, workplace, and digital competencies required for self-employment.

2. University management, government agencies, and professional bodies should establish competency-driven construction enterprise incubation centres where students and graduates can acquire practical entrepreneurial experience, mentorship, and business startup support before graduation and one year after graduation.

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