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Bridging the skills gap in the Fourth Industrial Revolution: A case study of the Samaru College of Agriculture Students Multipurpose Cooperative Society (SCASMUCS)

***Folorunso, L.A.; Ibrahim, U; Ahmed, S. and Abdullahi, M.**

Samaru College of Agriculture, Division of Agricultural Colleges, Ahmadu Bello University, Zaria, Kaduna State

Corresponding Author: *f4ace2000@yahoo.com; lafolorunso@abu.edu.ng. Phone Number: 08037185335*

Abstract

Technological advancement has evolved workforce expectations at an unprecedented pace and the inability of the educational curriculum to keep up with these rapid changes has resulted in a gap between what students are taught and what professional world demands. This disconnect has contributed to a growing crisis of underemployment among graduates, where acquired academic knowledge fails to translate into the practical competencies required by employers. Thus, there is an urgent need for students to develop both hard and soft skills that align with modern industry requirements. Recognizing this need, Samaru College of Agriculture Students Multipurpose Cooperative Society (SCASMUCS) was established and officially registered in 2023. This student-led initiative serves as a dynamic platform for experiential learning and economic empowerment. By leveraging crowdfunding mechanisms, SCASMUCS generates capital, which is then strategically invested in various agricultural ventures. These activities not only yield financial returns but also provide students with practical exposure to agribusiness, entrepreneurship, project management, and financial literacy which are key hard skills that enhance employability. Simultaneously, students cultivate essential soft skills such as teamwork, leadership, problem-solving, adaptability, and effective communication. Through active participation in the cooperative's operations, they gain hands-on experience that fosters personal growth and professional readiness. This innovative model of learning while earning presents a replicable framework for other academic institutions. By integrating practical, real-world engagements into the academic experience, schools can better prepare students for life after graduation, bridging the gap between theoretical education and industry competency, and ultimately contributing to a more skilled and self-reliant workforce.

Keywords: *hard skills, soft skills, agriculture, cooperative, learning, earning*

Introduction

Graduate unemployment remains a persistent and pressing economic challenge across Africa, with the issue becoming even more pronounced in the face of rapid technological advancement. The emergence of machine learning, artificial intelligence, and automation has significantly reshaped labor markets, reducing employment

opportunities for young graduates, including those in the agricultural sector (Seti *et al.*, 2025). A growing body of research suggests that many graduates in agriculture lack the requisite skills demanded by the industry (Offia & Udoka, 2020), a shortfall largely attributable to insufficient practical exposure during their academic training (Ugochukwu *et al.*, 2019).

This deficiency in competence is further exacerbated by the widening gap between the dynamic nature of contemporary work environments, characterized by interdisciplinary collaboration and an increasing emphasis on specialized, high-level skills, and the relatively stagnant curricula offered by many tertiary institutions (Ibrahim, 2022). As the demands of the labor market evolve, particularly within the context of the Fourth Industrial Revolution, graduates must be equipped not only with technical knowledge but also with adaptive and transferable skills.

Skills, broadly defined as the ability to perform tasks and responsibilities associated with a specific role, are commonly categorized into hard (technical and measurable) and soft (behavioral and interpersonal) competencies (Sakamoto & Sung, 2018; Martins, 2025).

In agriculture, the breadth of career opportunities requires a hybrid skill set that combines both hard and soft skills. Of the hard skills, technical competence remains paramount, as technology continues to drive innovation and productivity across virtually all agricultural domains (Juhasz & Horváth-Csikós, 2021). Institutions have been making efforts to expose students to these essential skills, both formally and informally, within various departments. These efforts should be sustained, as they go a long way in helping students gradually bridge the gap in technical skills required in today's job market. The soft skills in question include communication, teamwork, adaptability, problem-solving, emotional intelligence, time management, active listening, leadership, strategic thinking, conflict resolution, critical thinking, and interpersonal skills (Martins, 2025).

This soft skills gap is a major concern because research shows that many university graduates fail to meet the demands

of the labour market. This is largely because of the wrong assumption that business and career success are based only on technical know-how. This misconception affects agriculture students, who need to understand and acquire these soft skills in preparation for life after school.

Atoma *et al.* (2023) reported that students of agriculture require various soft skills, such as creative thinking, teamwork, decision-making/problem-solving, leadership and management, digital literacy, communication, adaptability, critical thinking, time management, and interpersonal skills. Since soft skills have now become key requirements during job interviews—even in the agricultural sector—there is need to prioritize their development and integration into tertiary education curricula (Juhasz & Horvath-Csikos, 2021).

Although the B. Agric, B. Fisheries, B. Forestry, and B. Wildlife programmes under the Faculty of Agriculture include a one-year Students Industrial Work Experience Scheme (SIWES), feedback from industry players has shown that this alone is not sufficient to equip students with the survival skills needed in today's competitive world. This has been corroborated by Seti *et al.* (2025) who observed that the misalignment between academic curricula and industry needs contributes to the growing rate of graduate unemployment. Therefore, universities must provide more industry exposure and prepare students adequately for the ongoing industrial revolution. Previous researchers have identified a gap in graduate employability and suggested stronger collaboration between academia and industry (Ibrahim, 2022).

Several models have been proposed to promote innovation. Leydesdorff and Etzkowitz (1996) introduced the Triple Helix Model involving Government–Industry–

University collaboration. Here, the government provides funding and policies; academia drives research and knowledge-sharing; and the industry supplies skills and markets. Carayannis and Campbell (2009) expanded the model to the Quadruple Helix by including the public, and Peris-Ortiz et al. (2016) later extended it further to the Quintuple Helix by adding the environment. These helix models have been adapted in different ways to bridge the gap between academia and the job market. One such example is the Samaru College of Agriculture Students Multipurpose Co-operative Society (SCASMUCS).

The potential departments within a typical Faculty of Agriculture and some likely technical skills that can be acquired are presented in Figure 1.

The German Federal Ministry for Economic Cooperation and Development (BMZ) commissioned the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH to implement the Green Innovation Centre for the Agriculture and Food Sector (GIAE) in rural Nigeria. The aim was to improve incomes for smallholder farmers, create jobs in agriculture and food value chains, and boost local food supply. As part of this project, GIZ collaborated with the Green Colleges—including Samaru College of Agriculture, DAC, ABU Zaria; Federal College of Agriculture, Akure; Federal College of Agricultural Produce Technology, Kano; and Agricultural and Rural Management Training Institute (ARMTI), Ilorin—to develop a

curriculum on inclusive contract farming. During the closing of the project in 2023, it was agreed that for sustainability, contract farming should be embedded in the colleges' curriculum, training should be organised, and students should be formed into cooperatives. This gave birth to SCASMUCS.

The opportunity to implement this came during the teaching of Entrepreneurship Education (EED 413) on 6th September 2023, where students were required to carry out the practical. Students were encouraged to form a cooperative, pool funds, invest in agriculture-related ventures, manage the businesses, and report back.

As it started as part of a course, many students joined, believing participation would guarantee them an “A” grade. Over 100 students registered. The course lecturer guided the group to elect executives (Chairman, Secretary, Financial Secretary, Treasurer, and Publicity Secretary) and the lecturer was appointed Staff Advisor. Their intention was communicated to the Provost through the Students' Affairs Officer. Each student contributed ₦200 as membership fee, which was used to initiate registration with Kaduna State Cooperatives Societies and to open an account with Ahmadu Bello University Microfinance Bank. Various committees (procurement, investment, marketing) were formed to handle different responsibilities. To make the cooperative independent of the course and accommodate other students, they fixed their weekly meetings for Fridays at 3pm.

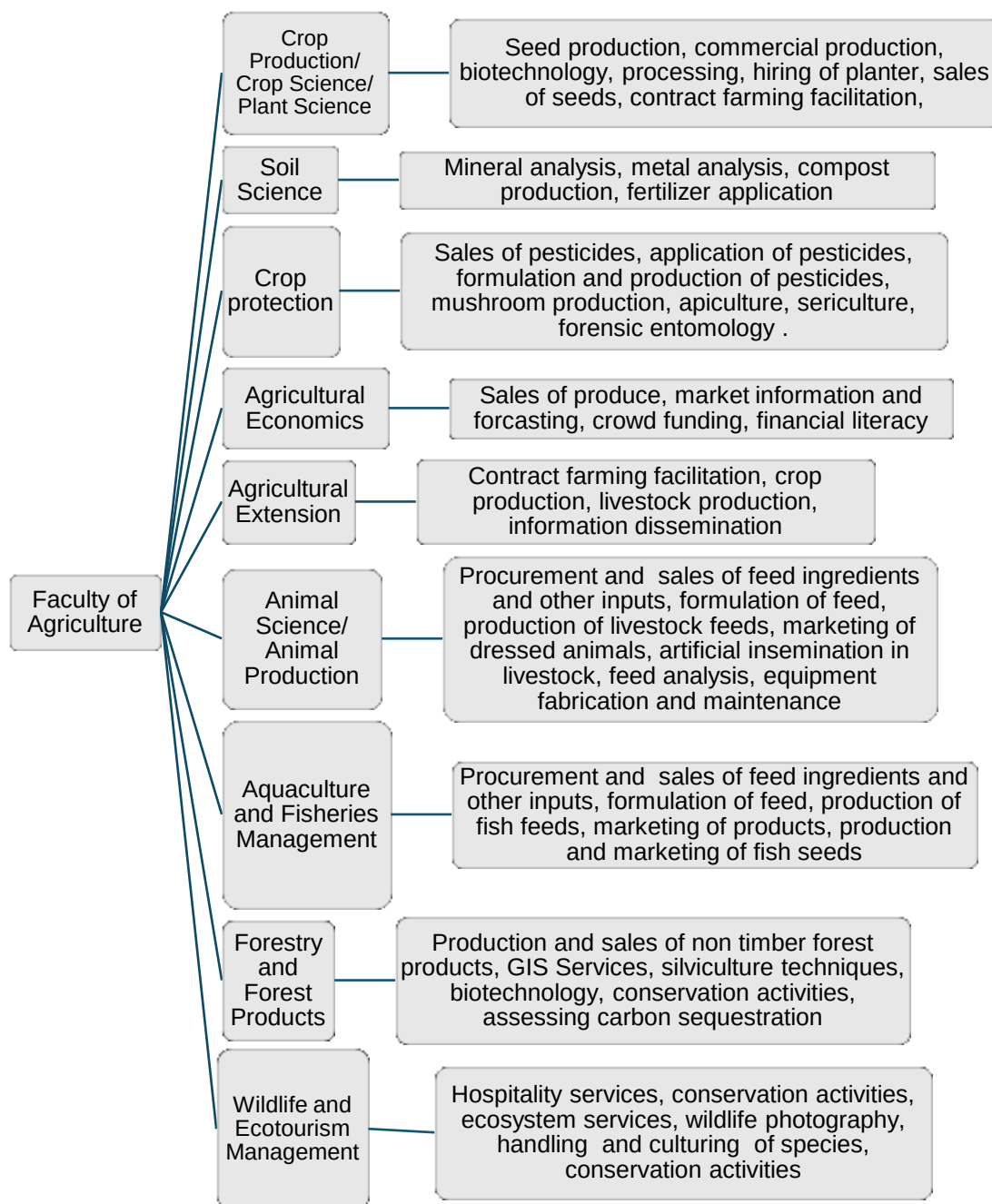


Figure 1: Potential departments in a typical Faculty of Agriculture and the likely technical skills that can be acquired by the students.

Case Study: Samaru College of Agriculture Students Multipurpose Cooperative Society (SCASMUCS)

During one meeting, the Investment Committee proposed solving the problem of limited access to good bread on campus. They raised funds and attempted baking, but unfortunately, the bread didn't rise. Though they shared and ate it among themselves, the failed attempt discouraged many. Later, they brainstormed and agreed to plant sweet corn and rear 100 broilers. They raised ₦297,650 through share sales. A plot of land and a poultry pen were provided by the College. They also received support from East West Seeds Nigeria Ltd, who gave them seeds, a crop calendar, and agronomic guidance. Sadly, due to low participation in field work, the sweet corn did not perform well. So, for the poultry, they hired a student to take care of the birds. An advert was circulated and applicants were interviewed. One was selected and engaged under the following terms:

Duties:

- Ensure proper feeding, hygiene, and overall welfare of the birds.
- Monitor and report any health issues promptly.

Compensation:

- ₦5,000 during the period of engagement.
- 5% of profits from bird sales.

The broilers were raised for 7 weeks and sold. They also planted onions on the remaining land and sold the harvest to the college community. By December 2024, at the end of the investment cycle, 20% of the gross profit was retained, and each ₦1,000 invested yielded a dividend of ₦254.57. The dividend and share capital were paid to students on 11th February 2025. For continuity, they proposed an alumni network to continue investing and mentoring current students.

Challenges faced by SCASMUCS and Solutions

1. Short stay of students (ND/HND):

Solution: Junior students were invited to observe and learn the process for continuity.

2. Tight academic schedule affecting meetings:

Solution: Flexible meetings were held every Friday at 3 pm, and updates shared via WhatsApp.

3. Wrong assumption that participation influences grades:

Solution: Clarified from the onset that joining the cooperative has no bearing on course grades.

4. Bank network issues preventing payment into cooperative account:

Solution: Treasurer's personal account was used temporarily; financial secretary gave daily updates.

5. Skepticism towards financial contributions:

Solution: Staff Advisor paid first and shared receipt publicly to reassure others.

6. Inflation and rising costs of materials:

Solution: A letter was written to the Provost for financial support, which was later refunded after sales.

Okolie *et al.* (2020) reported that problem-based learning has positive implications because it enables integrating theory with practice thereby enhancing graduate competencies and employability while Ibrahim (2022) also noted that to thrive in the 4th Industrial Revolution (4IR), individuals need a balanced mix of hard and soft skills. Participation of students in the activities of SCASMUCS enables students to combine academic and vocational learning and this is expected to positively impact their survival strategies after graduation.

Conclusion and Recommendations

The SCASMUCS model has proven useful in teaching students both (hard and soft) types of skills. They have learned how to self-organise, manage their time and funds, solve problems, and market products, demonstrating that critical skills can be gained through both formal and informal learning settings. No doubts, there are teething problems but the SCASMUCS model is something that can be adapted by training institutions.

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