FROM CLASSROOM TO ENTREPRENEURSHIP: ASSESSING KNOWLEDGE AND SKILLS FOR AGRICULTURAL SELF-EMPLOYMENT AMONG SUA'S 2023/24 FINAL-YEAR STUDENTS

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ABSTRACT

This study investigates the preparedness of final-year undergraduate students at Sokoine University of Agriculture (SUA) for agricultural self-employment, with a focus on their perceived knowledge, technical skills, and soft skills. A structured survey was administered to 202 randomly selected students to assess their understanding of essential competencies for entrepreneurial success in agriculture. A t-test analysis identified gender differences, with male students reporting higher confidence than female students ($p = 0.02$). The findings reveal significant gaps in students' perceived knowledge, particularly in business management, financial planning, and marketing, with only 25% of students expressing confidence in these areas Regression analysis indicated that exposure to internships and entrepreneurship training positively impacted students' proficiency in these areas. Participation in internships and entrepreneurship workshops was associated with enhanced self-reported preparedness ($p = 0.01$ for both), highlighting the value of experiential learning. Technical skills, including crop and livestock management, business acumen, and technological literacy, showed moderate proficiency, but over 45% of students lacked proficiency in financial management, and more than 50% rated their technological literacy as low. Marketing and value chain management skills were also underdeveloped, with only 18% reporting high proficiency. Soft skills, such as communication, problem-solving, teamwork, and leadership, were assessed, with students showing confidence in communication and teamwork, while younger students (19-22 years) reported lower problem-solving skills. The study concludes that students possess foundational agricultural skills but require further training in business management, financial literacy, and technological adoption. The study recommends integrating business-focused modules, expanding technological training, and enhancing experiential learning opportunities to better prepare students for agricultural self-employment.

KEYWORDS: Self-employment, Readiness, Agricultural entrepreneurship, Graduate employability, Job market demands, Entrepreneurial skills, technical knowledge, and Youth unemployment.

INTRODUCTION

The transition from academic learning to self-employment is a pivotal phase in the lives of university students, particularly in fields like agriculture where self-employment opportunities abound. Agriculture, as a cornerstone of many economies, offers vast potential for innovation and enterprise, especially in sub-Saharan Africa, where agribusiness contributes significantly to livelihoods and economic growth (World Bank, 2020). However, this transition requires a deliberate cultivation of knowledge and skills to empower graduates to effectively identify and seize entrepreneurial opportunities (Dube & Ndimande, 2020). Equipping graduates with the necessary knowledge and competencies is essential for navigating challenges such as limited access to capital, evolving market demands, and the complexities of the agricultural sector. By leveraging sustainable farming practices and embracing technological innovations, they can better position themselves for success (Lundahl & Matos, 2017). As Sanginga and Woomer (2021) emphasize, without access to critical resources such as mentorship programs, entrepreneurial training, and supportive policies, even well-prepared students may struggle to translate their academic knowledge into viable and sustainable agribusiness ventures.

In many developing nations, self-employment in agriculture is recognized as a viable strategy to address youth unemployment, poverty, and food insecurity (FAO, 2021). Agricultural graduates who engage in entrepreneurial ventures contribute to economic growth, drive agricultural innovation, and improve food systems. Despite ongoing efforts to promote agricultural entrepreneurship through policy initiatives and educational programs, graduates often face challenges in transforming their academic knowledge into practical, income-generating activities. These challenges include limited access to financial resources, inadequate entrepreneurial skills, and insufficient support systems for business start-ups. Programs like the African Development Bank's "Empowering Novel Agri-Business-Led Employment" (ENABLE) equip young people with entrepreneurial skills and access to finance (AfDB, 2020). Similarly, the International Institute of Tropical Agriculture (IITA) provides support through incubation hubs offering training, mentorship, and financial aid (IITA, 2022). In Tanzania, the Agricultural Sector Development Program (ASDP) enhances agricultural productivity and entrepreneurship through subsidies and infrastructure development (URT, 2019). These initiatives highlight the importance of agricultural self-employment as a pathway to economic development and food security.

At Sokoine University of Agriculture (SUA), training programs integrate theory and practice to prepare students for agricultural entrepreneurship. The curriculum emphasizes agribusiness development, sustainability, and innovation, equipping students with skills in financial management, marketing, and modern farming technologies (FAO, 2021). SUA provides hands-on experience through model farms, internships, and field attachments in rural areas. Additionally, the university supports entrepreneurial growth through mentorship, networking with alumni, and competitions that offer seed funding for promising business ideas (World Bank, 2022). These initiatives aim to bridge

the gap between academic knowledge and practical application, empowering graduates to start successful agricultural ventures while contributing to Tanzania's economic and food security goals.

Graduates, often youthful and educated, represent a critical resource for driving agricultural development, particularly in regions where skilled manpower is essential for transforming the sector (FAO, 2021). Their knowledge, energy, and innovative potential align with the growing demand for modern, sustainable farming practices that enhance productivity and address food security challenges (Sanginga & Woomer, 2021). However, harnessing this potential requires a deliberate focus on equipping graduates with the practical skills and entrepreneurial competencies needed to bridge the gap between academic training and the realities of agricultural enterprises (Dube & Ndimande, 2020). As agriculture continues to evolve with advances in technology and market demands, these graduates are uniquely positioned to bring fresh ideas and solutions, provided they receive adequate support through mentorship, financial access, and targeted capacity-building programs (Lundahl & Matos, 2017). Their contribution is not just pivotal for economic growth but also for fostering innovation and sustainability in the agricultural landscape.

One critical area of focus in understanding self-employment readiness is the evaluation of students' knowledge of agricultural principles and industry dynamics. This knowledge forms the backbone of their ability to innovate and sustain businesses within the sector. As noted by Caron et al. (2019), a solid grasp of agricultural concepts and market trends is indispensable for successful entrepreneurial ventures. At SUA, final-year students are expected to demonstrate not only a theoretical understanding but also the ability to apply this knowledge practically, enabling them to address real-world challenges such as food security, climate change adaptation, and market accessibility. An evaluation of their preparedness provides insights into how well academic programs align with industry demands. In addition to knowledge, skills such as communication, problem-solving, and technical proficiency play a critical role in entrepreneurial success. Communication skills, for instance, are essential for networking, negotiating, and articulating business ideas to stakeholders (Adams et al., 2017). Similarly, technical competencies specific to agriculture, such as crop management, agribusiness planning, and the use of innovative technologies, are vital for sustainable business practices (Hutchinson & Torres, 2017. This study explores the level of self-employment readiness among final-year students at SUA, aiming to identify factors that may hinder their entrepreneurial potential and provide insights into curriculum improvements.

PROBLEM STATEMENT

In Tanzania, agriculture contributes nearly 27% of the GDP and employs about 65% of the workforce, yet the sector struggles to attract youth participation beyond traditional subsistence farming (FAO, 2022). Universities such as Sokoine University of Agriculture (SUA) play a critical role in addressing these challenges by equipping students with the knowledge and skills needed to engage in value-adding activities and agribusiness ventures. However, the extent to which SUA graduates are prepared to transition into self-employment and tackle the complexities of agricultural entrepreneurship is not

well-documented, raising concerns about the effectiveness of existing educational interventions. Self-employment in agriculture requires more than academic knowledge; it demands a blend of technical expertise, entrepreneurial skills, and resilience to overcome barriers such as limited access to resources, fluctuating markets, and climate-related challenges (Caron et al., 2019). While SUA has made efforts to integrate practical and entrepreneurial components into its curricula, there is a lack of empirical evidence on whether these efforts have translated into actual readiness among final-year students. Studies suggest that bridging the gap between theory and practice is essential for fostering entrepreneurship, but many graduates still report feeling inadequately prepared for the demands of the agricultural sector (Hutchinson & Torres, 2017). The absence of targeted assessments on students' self-perceptions and skill levels limits the ability of educators and policymakers to design programs that effectively address these gaps. In addition, the agricultural sector presents unique opportunities for innovation and economic growth, particularly in value chain development, agri-tech solutions, and agro-processing (De Long et al., 2016). For Tanzania to leverage these opportunities, a workforce that is skilled, entrepreneurial, and adaptive is essential. However, without a clear understanding of the specific strengths and weaknesses of SUA's final-year students, efforts to align educational programs with market demands may fall short. This disconnects risks perpetuating unemployment and underemployment among graduates, undermining the potential contributions of young professionals to the agricultural economy.

This study intended to address this critical knowledge gap by evaluating the readiness of SUA's 2023/24 final-year students for self-employment in agriculture. Moreover, understanding students' self-perception of their readiness for self-employment provides a window into their confidence and motivation—two factors that are strongly linked to entrepreneurial success (Bandura, 1997). Self-efficacy, or the belief in one's ability to perform specific tasks, significantly influences career decisions and entrepreneurial behavior. Thus, assessing how students perceive their competencies sheds light on their preparedness and informs strategies to enhance their transition to the workforce. This research investigated the readiness of SUA's 2023/24 final-year students for self-employment in agriculture by assessing their knowledge, skills, and self-perceptions. The findings provide valuable insights into the alignment between academic programs and the demands of the agricultural sector, with implications for policy-making and curriculum development at SUA and similar institutions.

Objectives

i. To assess the level of knowledge possessed by final-year undergraduate students at Sokoine University of Agriculture (SUA) regarding self-employment in the agricultural sector.
ii. To evaluate the technical and soft skills of SUA's final-year undergraduate students to transition into self-employment within the agricultural industry.

METHODOLOGICAL ASPECTS
1. Research Design

Study Design

The study utilized a **descriptive survey design.** This design was appropriate as it facilitated the systematic collection of data from a large group of respondents, providing insights into their perceptions, competencies, and readiness. Surveys are particularly effective for studies aiming to capture diverse viewpoints and self-assessments, which were critical for this research. Additionally, the descriptive nature allowed for the identification of trends and patterns in the data that are pivotal for developing interventions or policies.

2. Population

The target population for this study comprised final-year undergraduate students from the College of Agriculture at Sokoine University of Agriculture for the 2023/24 academic year. Data obtained from the Office of the Principal of the College of Agriculture indicated that a total of **1,344 students** were enrolled across 11 undergraduate programs. These programs covered a wide range of disciplines in agriculture and related fields, reflecting the diversity of academic offerings in the College. This population was deemed appropriate for the study as it encompassed students with varying academic backgrounds and practical exposure, which is critical for assessing their readiness for self-employment in agriculture.

Study Area

The study was conducted at **Sokoine University of Agriculture (SUA)** in **Morogoro**, Tanzania, SUA is located in Morogoro, a region which is central to Tanzania's agricultural activities. The study focused on final-year undergraduate students from the **College of Agriculture**, which offers programs in fields such as crop production, animal science, horticulture, aquaculture, and community development. These students were selected as they possess the necessary academic and practical experience to assess their readiness for self-employment in the agricultural sector.

Sample Size and sample Determination

The sample size was determined using the Cochran's Sample Size Formula, which is widely used for survey research in large populations. The formula provides a sample size that ensures a reliable representation of the population with a 95% confidence level and a 5% margin of error. Given a confidence level of 95% (Z-value of 1.96), an estimated proportion of 50% (p = 0.5), and a margin of error of 5% (e = 0.05), the initial sample size was calculated as:

$$n_0 = \frac{Z^2 \cdot p \cdot (1-p)}{e^2} = \frac{(1.96)^2 \cdot 0.5 \cdot (1-0.5)}{(0.05)^2} = 384$$

To account for the finite population (1,344 students), the finite population correction (FPC) formula was applied: $n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} = \frac{384}{1 + \frac{384 - 1}{1,344}} \approx 306$. Thus, a sample size of 306 students was determined to be adequate for the study. However, due to limitations such as incomplete responses, only 202 complete responses were received, which still provided a sufficient level of representation for analysis.

Sampling Procedure

A stratified random sampling approach was used to ensure that the sample accurately represented students from each of the 11 undergraduate programs. Stratified random sampling involves dividing the population into distinct subgroups or strata based on specific characteristics—in this case, the 11 academic programs—and then randomly selecting participants from each stratum. Each of the 11 programs was considered a separate stratum, and students were randomly selected from the list of final-year students in each program. Proportional allocation was used, meaning that the number of students selected from each program was proportional to the total number of students in that program relative to the entire population.

Data Collection Tool

Data for this study was collected using a structured questionnaire administered through Kobo Toolbox, an open-source data collection platform. The questionnaire was designed to capture information on students' knowledge, skills, and self-assessment of their readiness for self-employment in agriculture. The questionnaire included both closed-ended and Likert scale questions to assess students' self-perceived competencies in various areas, such as communication skills, technical knowledge of agriculture, and understanding of the agricultural sector. The instrument was pre-tested with a small group of students (not included in the sample) to ensure clarity, reliability, and validity of the questions. Based on the feedback from the pre-test, the questionnaire was refined and adjusted accordingly.

Data Collection Procedure

The survey was administered online through Kobo Toolbox, which allowed students to respond to the questionnaire at their convenience. Invitations to participate in the survey were sent to the selected students via email and official university communication channels. The data collection period lasted for four weeks, during which follow-up reminders were sent to ensure a high response rate. Despite the initial target sample of 306 students, only 202 completed questionnaires were received due to issues such as incomplete responses and technical problems with the online platform. The response rate was approximately 66%, which falls within the acceptable range for online surveys (Nulty, 2008).

Data Analysis

The data collected from the completed questionnaires was exported from Kobo Toolbox and analyzed using SPSS (Statistical Package for Social Sciences). Descriptive statistics, including means, standard deviations, and frequencies, were used to summarize the students' self-assessments of their knowledge and skills. Additionally, inferential statistical techniques were employed to explore potential relationships between students' academic programs and their self-reported readiness for self-employment. The findings were interpreted within the context of existing literature on agricultural education and self-employment, with comparisons drawn to previous studies on the preparedness of university students for entrepreneurship in the agricultural sector.

Ethical Considerations

Ethical approval for the study was obtained from the Sokoine University of Agriculture's Research Ethics Committee. Participants were informed about the purpose of the study, and their participation was voluntary. They were assured that their responses would remain confidential and used solely for the purpose of this research. Informed consent was obtained from all participants before they started the survey. The anonymity and privacy of the students were maintained throughout the data collection and analysis processes.

STUDY FINDINGS

The survey on the knowledge level of third-year students at Sokoine University of Agriculture for self-employment in agriculture included a total of 202 respondents, with an almost even distribution of gender. Of the respondents, 51.5% (104 students) identified as male, while 48.5% (98 students) identified as female.

Table 1: Cross tabulation of Age Group and Gender

Age Group (Years)	Male (n = 104)	Female (n = 98)	Total (n = 202)
23-27	55 (52.9%)	50 (51.0%)	105 (52.0%)
18-22	35 (33.7%)	30 (30.6%)	65 (32.2%)
28-32	8 (7.7%)	10 (10.2%)	18 (8.9%)
33-37	3 (2.9%)	5 (5.1%)	8 (4.0%)
38 and above	3 (2.9%)	3 (3.1%)	6 (3.0%)
Total	104 (51.5%)	98 (48.5%)	202 (100%)

Survey, (2024)

Study results (Table 1), clearly indicate that the majority age group of respondents is 23-27 years, accounting for 52.0% of the sample. Within this group, the gender distribution is almost balanced, with 52.9% males and 51.0% females, reflecting an equitable representation of genders within this age range. The 18-22 age group represents 32.2% of the respondents, with a slightly higher percentage of males (33.7%) compared to females (30.6%). However, the older age groups, 28-32 years and 33-37 years, have fewer respondents, particularly in the male category. In the oldest age group (38 years and above), there is a relatively small representation of both male and female students, highlighting that the majority of students in this study are relatively young and potentially at an early stage in their careers.

1. Awareness of Self-Employment Opportunities in Agriculture

One of the objectives of this study was to assess the level of awareness among students at Sokoine University of Agriculture regarding self-employment opportunities in the agricultural sector. As indicated in table 2 below, the survey results indicate that students at Sokoine University of Agriculture exhibit varying levels of knowledge regarding self-employment opportunities in the agricultural sector.

While 25% of respondents felt confident in their understanding, a significant 45% expressed uncertainty or lack of comprehensive knowledge, which points to a critical gap in their awareness of agricultural entrepreneurial opportunities. This lack of awareness may hinder their ability to identify viable career paths in agriculture, such as agro-processing, farm management, or rural development. Students may be very focused on academic issues, neglecting to search for opportunities connected to their studies in terms of how they can practically apply their knowledge.

Table 2: Awareness of Self-Employment Opportunities in Agriculture

Awareness Category	Number of Respondents (n)	Percentage (%)	Mean (Gender-based)	Mean (Age-based)
Very Confident (Rating: 4-5)	51	25%	Male: 3.45 (SD = 0.72)	23–27 years: 3.62 (SD = 0.68)
Moderately Confident (Rating: 3)	60	30%	Female: 3.09 (SD = 0.85)	33–37 years: 3.01 (SD = 0.84)
Uncertain (Rating: 1-2)	91	45%	Combined: $t(200) = 3.56$, $p < 0.001$	18–22 years: 2.98 (SD = 0.91)
Total Respondents	202	100%		$F(4, 197) = 5.87$, $p < 0.001$

Field Survey, (2024)

Gender-based analysis reveals notable disparities in self-employment awareness. A t-test showed that male students (mean = 3.45, SD = 0.72) were significantly more confident about their knowledge of entrepreneurial opportunities compared to female students (mean = 3.09, SD = 0.85; $t(200) = 3.56$, $p < 0.001$). This disparity may stem from gendered access to resources and networking opportunities, as noted in studies highlighting the systemic barriers faced by women in agricultural entrepreneurship (De Long et al., 2016). These findings suggest a critical need for targeted interventions, such as mentorship programs and experiential learning opportunities, to bridge the gap and empower female students with the knowledge and skills necessary for successful self-employment.

An ANOVA examining age-based differences found a significant effect of age on self-employment awareness ($F(4, 197) = 5.87$, $p < 0.001$). Students aged 23-27 exhibited the highest mean score (3.62, SD = 0.68), significantly outperforming those aged 18-22 (mean = 2.98, SD = 0.91) and 33-37 (mean = 3.01, SD = 0.84). These results align with research indicating that mid-range age groups tend to have greater exposure to practical experiences and academic readiness (Scholz & Ahrens, 2019). Younger students, likely in the early stages of their studies, and older students, who may face challenges balancing academic commitments with other responsibilities, require tailored support. This could include foundational training for younger students and advanced entrepreneurial workshops for older cohorts to enhance their self-employment readiness.

2. Knowledge of Agricultural Topics

Self-employment in agriculture demands a diverse skill set and a deep understanding of core areas such as crop production, livestock management, sustainability practices, and emerging agricultural technologies. Another objective of this study was to assess the level of knowledge students at Sokoine University of Agriculture possess regarding agricultural topics. The findings, summarized in Table 3, indicate that students rated their knowledge with an overall mean score of 3.36, reflecting a moderate level of understanding.

Table 3: Student Ratings of Knowledge on Agricultural Topics

Agricultural Topics	Mean Score (1-5)	Knowledge Level	Potential Gap Identified
Crop Production	3.45	Moderate	Limited knowledge of advanced techniques
Livestock Management	3.38	Moderate	Basic understanding, lacking depth
Sustainability Practices	3.29	Moderate	Need for focus on climate-smart practices
Emerging Agricultural Technologies	3.12	Moderate	Gap in awareness of precision farming
Overall, Knowledge	**3.36**	**Moderate**	**Gaps in specialized knowledge**

Source: Field Survey, (2024)

As seen in the findings, students demonstrated relatively stronger knowledge in crop production (mean = 3.45) and livestock management (mean = 3.38), which are foundational topics in agricultural studies. However, their understanding of sustainability practices (mean = 3.29) and emerging agricultural technologies (mean = 3.12) was less robust, highlighting gaps in areas that are becoming increasingly crucial for modern agricultural entrepreneurship. The moderate knowledge levels may reflect a curriculum that is still transitioning to incorporate cutting-edge developments, such as climate-smart agriculture and precision farming techniques. These gaps can limit students' ability to innovate and compete in a rapidly evolving agricultural landscape. For example, a lack of awareness about advanced technologies, such as drones for crop monitoring or AI for farm management, could restrict their ability to adopt practices that improve productivity and efficiency. The results suggest that while students have a sound foundation in agricultural topics, there is a critical need to address these gaps through targeted interventions. This could include enhancing the curriculum with practical modules, offering specialized workshops, and increasing exposure to hands-on experiences in innovative agricultural practices.

3. Knowledge of Industry Trends

In addition to agricultural topics, staying updated on industry trends is a vital component of entrepreneurial success in the agricultural sector. Shifts towards organic farming, agribusiness innovations, and sustainable agricultural practices are creating new opportunities for entrepreneurial ventures. This study sought to evaluate students' awareness and understanding of these trends, as summarized in Table 4.

Table 4: Student Ratings of Knowledge on Industry Trends

Industry Trends	Mean Score (1-5)	Knowledge Level	Potential Gap Identified
Organic Farming	3.41	Moderate	Limited knowledge of certification processes
Agribusiness Innovations	3.25	Moderate	Need for exposure to case studies
Sustainable Agricultural Practices	3.32	Moderate	Basic understanding of market potential
Precision Farming	3.14	Moderate	Limited awareness of technological tools
Overall, Knowledge	**3.28**	**Moderate**	**Gaps in alignment with emerging trends**

Source: Field Survey, (2024)

The findings revealed that students' knowledge of industry trends was moderately rated, with an overall mean score of 3.28. Among the specific trends assessed, students showed the highest awareness of organic farming (mean = 3.41), likely due to the growing global emphasis on organic products and sustainable agriculture. However, their knowledge of precision farming (mean = 3.14) and agribusiness innovations (mean = 3.25) was relatively weaker. This indicates that while students are aware of broad concepts, they may lack familiarity with the practical applications and potential benefits of these trends. Understanding industry trends is crucial for aligning entrepreneurial ventures with current market demands and consumer preferences (De Long et al., 2016). For instance, the increasing demand for eco-friendly and organic products presents opportunities for entrepreneurs to tap into niche markets. Similarly, agribusiness innovations, such as value addition through agro-processing or developing digital platforms for market access, require students to not only recognize opportunities but also possess the skills to implement them effectively. These findings underscore the importance of bridging the gaps in students' knowledge through proactive measures, such as introducing courses on agribusiness innovations, organizing industry visits, and facilitating internships with leading agricultural enterprises. Moreover, fostering partnerships with industry stakeholders can help students gain firsthand experience and insights into how these trends shape real-world agricultural practices.

4. Risk Assessment and Management in Agricultural Ventures

Self-employment in agriculture inherently involves various risks, ranging from financial challenges to environmental factors. The survey results indicate that students at Sokoine University of Agriculture have a moderate level of knowledge in assessing these risks, with a mean score of 3.35 (SD = 0.62). The table 5 summarizes the mean scores of students' risk assessment knowledge by age group and sex, along with statistical analysis.

Table 5: Students' risk assessment knowledge by age group and sex

Age Group	Male (Mean Score)	Female (Mean Score)	Overall (Mean Score)	p-value (Independent t-test)
18-22	3.25	3.12	3.19	0.162
23-27	3.49	3.32	3.41	0.075
28-32	3.54	3.45	3.50	0.215
33-37	3.47	3.28	3.37	0.278

Source: Field Survey, (2024)

Findings suggests that while students acknowledge the potential risks in agricultural ventures, their preparedness to effectively manage these risks may be lacking. Financial risks, such as fluctuating crop prices or unforeseen costs, are common concerns for agricultural entrepreneurs. Additionally, climate change poses an increasing threat to agricultural productivity, leading to unpredictable weather patterns that can significantly impact yields (Scholz & Ahrens, 2019). Market fluctuations also represent a major risk, as shifts in demand for agricultural products can affect the profitability of a venture. Operational challenges, such as supply chain disruptions or labor shortages, further complicate the risk landscape for agricultural entrepreneurs. To ensure the sustainability of agricultural ventures, entrepreneurs must be equipped with the knowledge to mitigate these risks through various strategies. For example, **diversification** can reduce dependency on a single crop or market, thereby spreading financial risk. **Insurance** can provide a safety net against losses from natural disasters or crop failures, while **contingency planning** prepares businesses for unexpected disruptions. Incorporating risk management education into the curriculum would further enhance students' preparedness for real-world challenges.

5. Feasibility Assessment and Entrepreneurial Skills

Assessing the feasibility of agricultural business ventures is a critical skill for aspiring entrepreneurs. Survey results as summarized in table 6 indicate that students at Sokoine University of Agriculture rate themselves relatively highly in this area, with a mean score of 3.38. This suggests that students feel fairly confident in evaluating the viability of agricultural business ideas, taking into consideration factors such as financial resources, market demand, and operational capacity.

Table 6: Feasibility Assessment and Entrepreneurial Skills

Entrepreneurial Skill	Mean Score (1-5)	Knowledge Level	Potential Gap Identified
Financial Assessment	3.50	Moderate	Limited knowledge in detailed financial analysis
Market Research	3.32	Moderate	Gaps in understanding of market dynamics and trends
Risk Evaluation	3.30	Moderate	Lack of depth in identifying and mitigating risks
Financial Management	3.15	Moderate	Insufficient knowledge in resource allocation and budgeting
Marketing Skills	3.18	Moderate	Gaps in effective promotional strategies
Leadership Skills	3.28	Moderate	Need for more focus on team management and motivation
Average Mean Score	**3.38**	**Moderate**	**Gaps identified across key areas**

Field Survey, 2024

Feasibility analysis involves conducting a thorough financial assessment, market research, and risk evaluation to determine whether a business idea is likely to succeed. Financial analysis, for example, includes projecting costs, revenue streams, and profitability, while market research involves identifying demand for the product, competition, and target audiences (Smith et al., 2020). Furthermore, risk assessment is necessary to identify potential barriers to success, such as unpredictable weather patterns or market fluctuations. These elements together help ensure that students can make informed decisions about whether to pursue a specific business idea in agriculture. While students display confidence in their ability to assess feasibility, successful agricultural ventures also require a range of other entrepreneurial skills. Beyond financial analysis and market research, key skills such as financial management, marketing, and leadership are crucial for sustaining and growing a business. Financial management ensures that resources are allocated efficiently, while marketing is essential for promoting products and attracting customers. Leadership skills are important for building and maintaining a motivated team, particularly in the labor-intensive agricultural sector. However, the study also highlights potential barriers to accurate feasibility analysis. Gaps in students' knowledge of financial management or market analysis could reduce the effectiveness of their assessments.

6. Awareness Among Students on Industry Trends and Innovations

Awareness of industry trends and innovations is a crucial factor for entrepreneurial success in agriculture. The survey found that students at Sokoine University of Agriculture demonstrated varying

levels of understanding of modern trends, including sustainable agriculture, green technologies, and climate-smart practices as shown in table 7.

Table 7: Awareness Among Students on Industry Trends and Innovations

Age Group	Male (Mean Score)	Female (Mean Score)	Overall (Mean Score)	p-value (Independent t-test)	Standard Deviation (SD)
18-22	3.25	3.12	3.19	0.162	0.88
23-27	3.49	3.32	3.41	0.075	0.74
28-32	3.54	3.45	3.50	0.215	N/A
33-37	3.47	3.28	N/A	N/A	N/A
38 and above	N/A	N/A	N/A	N/A	N/A

Field Survey, 2024

This table captures the levels of awareness of industry trends and innovations among students at Sokoine University of Agriculture. The data show that the mean score for awareness is moderate across all age groups, with the highest awareness found in the 23-27 age group. Statistical analysis, including a **t-test** and **ANOVA**, revealed no significant gender-based differences in awareness, but significant differences in awareness levels across age groups. The findings suggest that younger students (18-22 years old) may benefit from earlier introduction to these trends, with tailored interventions such as workshops on emerging technologies being important to bridge the knowledge gap. Familiarity with these areas is essential as they directly impact profitability and competitiveness in the agricultural sector. For example, knowledge of consumer preferences for eco-friendly and health-focused products can guide students in aligning their entrepreneurial strategies with market demands (Caron et al., 2019).

7. Knowledge and Awareness on Government Policies and Incentives

Awareness of government policies, grants, subsidies, and financial support programs plays a vital role in preparing students for self-employment in agriculture. The survey findings indicate a mixed level of awareness among Sokoine University of Agriculture students. While 30% of respondents expressed familiarity with agricultural policies, grants, subsidies, and financial support programs available for young entrepreneurs, a significant 50% reported limited or no knowledge of these essential resources as seen in table 8.

Table 8: Knowledge and Awareness on Government Policies and Incentives

Variable	Age Group	Mean Awareness Score	Standard Deviation (SD)	Male Awareness Score (Mean)	Female Awareness Score (Mean)	Significance (p-value)	Correlation (r-value)
Government Policies	18-22	3.01	0.88	3.10	2.92	$p < 0.05$ (t-test)	
	23-27	3.35	0.80	3.45	3.26		
	28-32	3.72	0.65	3.89	3.56	$p < 0.001$ (ANOVA)	
							r = 0.48, p < 0.01

Field Survey, 2024

Further analysis using a t-test revealed that male students exhibited a higher awareness of these government programs compared to their female counterparts ($t(200) = 2.18$, $p < 0.05$). This suggests a gender gap in accessing information about financial incentives in the agricultural sector. Additionally, an ANOVA test on age groups showed significant differences in the awareness levels across various age ranges ($F(4, 197) = 6.21$, $p < 0.001$). The age group 28-32 years had the highest mean score (mean = 3.72, SD = 0.65), indicating that older students may be more likely to have encountered or sought out government incentives and policies, possibly due to greater entrepreneurial intentions or prior exposure. Correlation analysis further revealed a positive relationship between students' awareness of agricultural policies and their confidence in pursuing agricultural self-employment ($r = 0.48$, $p < 0.01$). This highlights the critical role that understanding financial support programs and tax incentives plays in boosting students' entrepreneurial readiness. Addressing these gaps through targeted awareness programs and policy workshops could enhance students' ability to leverage available resources effectively (De Long et al., 2016).

8. Key Competencies for Agricultural Self-Employment

Business development knowledge is a crucial component of entrepreneurial readiness, especially in the agricultural sector, where effective planning, resource mobilization, and strategic partnerships can determine the success or failure of a venture. The survey results indicate that while 30% of students at Sokoine University of Agriculture demonstrated a high level of familiarity with business planning, feasibility studies, and resource mobilization for agricultural ventures, a larger proportion (45%) reported only moderate or low understanding in these areas. More findings are summarized in table 9.

Table 9: Key Competencies for Agricultural Self-Employment

Variable	Age Group	Mean Score	Standard Deviation (SD)	Male Score (Mean)	Female Score (Mean)	Significance (p-value)
Business Planning & Feasibility	18-22	3.25	0.85	3.34	3.13	**p < 0.05** (t-test)
	23-27	3.56	0.76	3.60	3.40	
	28-32	3.45	0.72	3.55	3.35	**p < 0.01** (ANOVA)
Networking & Mentorship	18-22	3.12	0.90	3.21	3.02	**p < 0.05** (t-test)
	23-27	3.67	0.74	3.75	3.45	**p < 0.01** (ANOVA)

Field Survey, 2024

ANOVA analysis revealed significant differences between age groups regarding familiarity with networking and mentorship opportunities ($F(4, 197) = 4.84$, $p < 0.01$), with students aged 23-27 years demonstrating greater awareness than their younger or older counterparts (mean = 3.67, SD = 0.74). Gender differences were also observed, with male students showing a stronger understanding of networking and partnership opportunities compared to females ($t(200) = 1.98$, $p < 0.05$). This gap in business development knowledge can hinder students' ability to conceptualize viable business ideas and execute them successfully. Understanding the intricacies of business planning and feasibility studies allows potential entrepreneurs to assess the profitability and sustainability of their ventures, ensuring they can secure financial support and manage resources efficiently. Studies have shown that a comprehensive business plan and a clear feasibility study are essential for attracting investors and mitigating risks (Scholz & Ahrens, 2019). This suggests that many students may not fully grasp the importance of building a professional network or accessing mentorship, which is essential for gaining insights, advice, and resources to launch successful agricultural businesses.

Technical Skills for Self-Employment in Agriculture
The study aimed to assess the technical skills necessary for self-employment in agriculture among final-year undergraduate students at Sokoine University of Agriculture. The sample consisted of 202 respondents, including 104 males (51.5%) and 98 females (48.5%), with data collected using a structured questionnaire. The data were analyzed using both descriptive and inferential statistics to determine proficiency levels in various agricultural domains.

1. Crop and Livestock Management

The study revealed that in terms of crop and livestock management skills, **35% of respondents (71 out of 202)** rated their proficiency as high, **45% (91 out of 202)** rated themselves with moderate proficiency, and **20% (40 out of 202)** reported low proficiency. These results suggest that while a significant portion of respondents possess a good foundation in managing crops and livestock.

Table 10: Proficiency Levels in Crop and Livestock Management

Category	Proficiency Level	Percentage	Statistics
Business Development Knowledge	High	30%	
	Moderate	45%	
	Low	20%	
Networking and Mentorship Confidence	Confident	35%	
	No Confidence	65%	
Proficiency in Crop and Livestock Management	High	35%	$\chi^2 = 15.4$, $p < 0.05$
	Moderate	45%	
	Low	20%	
Age Group Comparison in Networking/Mentorship	23-27	Mean = 3.67	$p < 0.01$
	18-22	Mean = 3.01	
Gender Differences in Networking/Mentorship	Male	$t(200) = 1.98$	
	Female	$t(200) = 1.98$	

Field Survey, 2024

A chi-square test for independence showed a significant relationship between **participation in practical farming internships** and higher proficiency in crop and livestock management ($\chi^2 = 15.4$, $p < 0.05$). This indicates that practical exposure through internships is a key driver of proficiency in agricultural management. Similar findings have been reported by Lundahl and Matos (2017), where hands-on experiences were noted to significantly improve technical competence in agriculture.

2. Business and Financial Acumen

The proficiency levels in business and financial acumen were found to be low, with **45% of respondents (91 out of 202)** reporting low proficiency in this area, **35% (71 out of 202)** with moderate proficiency, and only **20% (40 out of 202)** rating themselves as highly proficient. Respondents expressed challenges in understanding market dynamics, creating business plans, and managing farm finances, all of which are essential for running a successful agribusiness.

Table 11: Proficiency Levels in Business and Financial Acumen

Proficiency Level	Number of Respondents	Percentage	Regression Coefficient (β)
High	40	20%	
Moderate	71	35%	
Low	91	45%	
			0.56 (p < 0.01)

Field Survey, 2024

A regression analysis indicated that **exposure to entrepreneurship training** significantly predicted higher proficiency in business and financial skills (β = 0.56, p < 0.01). These results emphasize the importance of integrating business management and financial literacy training into agricultural curricula to equip students with the skills necessary to run profitable enterprises. This finding is consistent with Dube & Ndimande (2020), who found that entrepreneurship training greatly enhances the financial management skills of smallholder farmers.

3. Technological Literacy

The study also revealed that technological literacy was a major gap, with **55% of respondents (111 out of 202)** indicating low proficiency in using modern agricultural technologies like GPS systems, drones, and automated irrigation systems. **30% (61 out of 202)** rated themselves as moderately proficient, and only **15% (30 out of 202)** reported high proficiency.

Table 12: Proficiency Levels in Technological Literacy

Proficiency Level	Number of Respondents	Percentage	Regression Coefficients (β)
High	30	15%	
Moderate	61	30%	
Low	111	55%	
			ICT Access (β = 0.62, p < 0.01)
			Technology Training (β = 0.42, p < 0.05)

Field Survey, 2024

Multiple regression analysis showed that **access to ICT tools** was the most significant factor influencing technological literacy (β = 0.62, p < 0.01). Additionally, **participation in technology training programs** was a significant predictor of higher proficiency (β = 0.42, p < 0.05). This suggests that improving access to modern technologies and incorporating technology-based training programs into agricultural education would enhance students' technological capabilities. Sanginga & Woomer

(2021) also found that technological adoption boosts agricultural productivity, yet its uptake in rural settings remains limited due to a lack of training and access to ICT infrastructure.

4. Marketing and Value Chain Skills

In the area of marketing and value chain management, **50% of respondents (101 out of 202)** indicated low proficiency, **32% (65 out of 202)** had moderate proficiency, and only **18% (36 out of 202)** reported high proficiency. Respondents particularly struggled with understanding market trends, branding, and the complexities of supply chain management, which are essential for success in the agricultural business.

Table 13: Proficiency Levels in Marketing and Value Chain Skills

Proficiency Level	Number of Respondents	Percentage	Chi-Square Test Results
High	36	18%	
Moderate	65	32%	
Low	101	50%	$\chi^2 = 21.5$, $p < 0.01$

Field Survey, 2024

A chi-square test revealed a significant association between **internship experience in agribusiness** and higher proficiency in marketing and value chain management ($\chi^2 = 21.5$, $p < 0.01$). These results highlight the importance of hands-on exposure to marketing and value chain operations for building competence in these areas. Aina (2021) emphasizes the importance of marketing skills in ensuring agricultural entrepreneurs reach consumers and establish successful businesses. This finding also suggests that agricultural curricula should be restructured to include more business-oriented courses to prepare students for the market realities.

5. Sustainable Farming Practices

Proficiency in sustainable farming practices was higher compared to other technical skill areas, with **28% of respondents (56 out of 202)** rating their proficiency as high, **40% (81 out of 202)** with moderate proficiency, and **32% (65 out of 202)** with low proficiency. Respondents were familiar with basic sustainable practices like crop rotation and organic farming but lacked knowledge in more advanced areas such as agroforestry or climate-smart agriculture.

Table 14: Proficiency Levels in Sustainable Farming Practices

Proficiency Level	Number of Respondents	Percentage	Chi-Square Test Results
High	56	28%	
Moderate	81	40%	
Low	65	32%	**χ^2 = 15.7, p < 0.05**

Field Survey, 2024

Inferential statistics showed that **participation in sustainable farming workshops** was significantly associated with higher proficiency in sustainable farming practices (χ^2 = 15.7, p < 0.05). These findings suggest that agricultural education programs should place more emphasis on environmental sustainability. Garcia et al. (2019) have similarly highlighted that adopting sustainable practices like agroecology helps improve farm productivity while ensuring environmental sustainability. The overall findings from this study indicate that while students exhibit foundational skills in certain agricultural areas, significant gaps remain, particularly in business management, technological literacy, and marketing. These gaps suggest that improvements in agricultural education, including more business-focused modules, technological training, and practical exposure to the agricultural value chain, are necessary to enhance self-employment opportunities in agriculture.

Soft skills of Respondents as a requisite for self-employment in Agriculture

Soft skills are increasingly recognized as essential for success in self-employment, particularly in sectors like agriculture, where technical knowledge must be complemented by effective interpersonal and cognitive abilities. For agricultural students aspiring to become entrepreneurs, proficiency in soft skills such as communication, problem-solving, teamwork, leadership, and adaptability is critical for navigating the complexities of the industry. Another aim of this study is to assess the self-reported soft skills of 202 students at Sokoine University of Agriculture and to examine their preparedness for self-employment in agriculture. The findings, as summarized in Table 15 below.

Table: Self-Assessed Soft Skills of Respondents for Self-Employment in Agriculture

Soft Skill	Average Self-Rating	Significant Findings	Statistical Test Results
Communication Skills	Written: 3.35, Oral: 3.38	No significant difference between written and oral communication (p = 0.45). Significant difference between age groups (p = 0.03), with older students rating themselves higher.	p = 0.45 (Written vs. Oral), p = 0.03 (Age Groups)
Problem-Solving Ability	3.1	Significant differences across age groups (p = 0.02), with older students (23-27 years) showing higher confidence.	p = 0.02 (Age Groups)

Teamwork	3.5	Significant interaction between age and gender (p = 0.04), with older male students rating themselves higher in teamwork.	p = 0.04 (Age and Gender Interaction)
Leadership Skills	3.6	Significant differences between age groups (p = 0.01), with older students (28-32 years) reporting higher leadership confidence.	p = 0.01 (Age Groups)
Adaptability	3.4	Significant differences across age groups (p = 0.03), with students aged 23-27 showing higher adaptability.	p = 0.03 (Age Groups)

Field Survey, 2024

1. Communication Skills

Communication skills, including both written and oral forms, were assessed among students, revealing moderate to high levels of self-confidence. Students generally rated themselves well, with written communication averaging 3.35 and oral communication slightly higher at 3.38. This suggests that students feel fairly capable in both forms of communication, which are crucial in professional settings such as agriculture, where clear reporting, networking, and client interactions are necessary for business success. Inferential statistics indicated no significant difference between written and oral communication scores (p = 0.45). However, an ANOVA test revealed a significant difference in communication skills between age groups (p = 0.03). Students aged 23-27 rated themselves higher, indicating that those with more exposure to professional environments, such as internships or part-time work, had greater confidence in their communication abilities. This highlights the role of practical experience in improving communication skills. As suggested by Adams et al. (2017), communication is a key factor in building relationships and negotiating in the agricultural sector, and opportunities to develop these skills through practical engagements could be beneficial, especially for younger students.

2. Problem-Solving Ability

Problem-solving skills were identified as an important soft skill, with an average self-rating of 3.1. This suggests that while students feel moderately confident in their problem-solving abilities, there is room for improvement. Given the unpredictable nature of the agricultural industry, strong problem-solving skills are vital for addressing challenges such as crop diseases, financial management, and market fluctuations. ANOVA analysis revealed significant differences in problem-solving abilities across age groups (p = 0.02), with older students (23-27 years) reporting higher levels of confidence. The younger group (18-22 years) rated themselves lower, likely due to less hands-on experience in dealing with complex agricultural problems. This finding emphasizes the need for more practical problem-solving opportunities, such as internships, field-based projects, or case studies, to help younger students enhance this skill. As Smith et al. (2020) argue, problem-solving is key to entrepreneurial success, and providing students with real-world challenges could improve their readiness for the agricultural job market.

3. Teamwork

Teamwork was another key soft skill assessed, with an average self-rating of 3.5, indicating that students generally feel confident in their ability to collaborate effectively in group settings. This is particularly relevant in agriculture, where collective efforts are needed for tasks like resource management, farming, and innovation in agribusiness. Two-way ANOVA results showed significant interaction effects between age and gender in teamwork skills ($p = 0.04$). Specifically, male students in the 23-27 age group rated themselves higher in teamwork than their female counterparts. This suggests that older male students, perhaps due to their involvement in more team-based activities or leadership roles, have greater confidence in their ability to work in groups. These results highlight the importance of further encouraging collaborative learning and group projects for all students, regardless of gender, to ensure that teamwork skills are nurtured across the student body. As Scholz & Ahrens (2019) emphasize, teamwork is essential for addressing large-scale agricultural challenges that require collective action.

4. Leadership Skills

Leadership skills were highly rated by students, with an average score of 3.6. The older students, particularly those in the 23-27 age group, reported the highest leadership scores, suggesting that practical experience in leadership roles, such as leading student organizations or participating in group projects, contributes to higher self-assessment in this area. Independent samples t-tests confirmed significant differences between age groups ($p = 0.01$), with older students (28-32 years) reporting the highest confidence in their leadership abilities. This indicates that age and experience play a role in shaping students' self-perception of their leadership skills. Post hoc tests highlighted that students with more years of exposure to leadership roles in academic or extracurricular activities feel better prepared to take on leadership positions in the workplace. To further enhance leadership development, the university could offer leadership training programs, mentorship opportunities, and involvement in leadership roles during internships or student organizations. As Scholz & Ahrens (2019) argue, leadership is crucial in the agricultural sector, where leaders are required to manage teams, resources, and innovation.

5. Adaptability

Students rated themselves with an average of 3.4 in adaptability, indicating a fairly high level of confidence in their ability to adjust to new or changing environments. Adaptability is particularly important in agriculture, where external factors like market dynamics, technological advancements, and environmental changes often require individuals to quickly adjust their strategies or practices. This skill is vital for staying competitive in the constantly evolving agricultural industry. ANOVA results confirmed significant differences in adaptability across age groups ($p = 0.03$), with students aged 23-27 showing higher self-reported adaptability than those in the 18-22 range. This difference suggests that older students have had more opportunities to encounter diverse and unpredictable situations, thus enhancing their ability to adapt to new circumstances. The results emphasize the importance of providing younger students with more opportunities to develop adaptability, such as through

internships or fieldwork. As Smith & Hunt (2018) suggest, adaptability is crucial for success in industries like agriculture, where technological advancements and market shifts require constant adjustment and innovation.

CONCLUSION

The findings of this study reveal critical insights into the preparedness of students for agricultural self-employment:

1. **Knowledge Gaps:** While students exhibit moderate awareness of self-employment opportunities, agricultural topics, and industry trends, their understanding falls short in crucial areas. These include government policies, financial incentives, advanced entrepreneurial strategies, and the practical application of emerging agricultural technologies—key components for successful ventures in modern agriculture.

2. **Technical Skills Deficiencies:** Although students possess moderate proficiency in areas such as crop and livestock management and sustainable farming practices, they lack essential competencies in business management, financial planning, technological literacy, and marketing. These gaps pose significant barriers to their ability to navigate the complexities of agricultural entrepreneurship and value chain development effectively.

3. **Soft Skills Proficiency:** Students show moderate strength in soft skills such as teamwork, adaptability, and communication. However, there is room for growth to meet the demands of collaborative, client-focused, and ever-evolving agricultural environments. Strengthening these interpersonal and professional skills is critical for fostering innovation and resilience in the agricultural sector.

Addressing these gaps through targeted training, policy support, and practical exposure can significantly enhance the readiness of students for self-employment in agriculture. Empowering students with the requisite knowledge, technical expertise, and soft skills will not only bolster their entrepreneurial success but also contribute to the broader goal of sustainable agricultural development.

RECOMMENDATIONS

i. **Enhance Business and Technology Training**: The University's curriculum development team, in collaboration with the **Faculty of Agriculture** and **Faculty of Business**, will design and integrate entrepreneurship, financial literacy, and modern technology training modules. **Industry experts** and **technology providers** can be engaged for workshops and hands-on training.

ii. **Enhance Experiential Learning Opportunities**: the University's **Career Services** and **Partnerships Office** will expand collaborations with agribusinesses, farms, and other stakeholders to create more internship and practical learning opportunities for students.

iii. **Develop Soft Skills through Workshops and Training**: The **Student Affairs Department** and **Academic Faculties** will organize workshops and training sessions focused on communication,

problem-solving, teamwork, and leadership, with support from **external trainers** and **alumni entrepreneurs**.

iv. **Provide Targeted Entrepreneurial Education for Female Students**: Female students should be provided with tailored entrepreneurial education, including mentorship programs, workshops, and support initiatives, to enhance their confidence and participation in self-employment ventures within agriculture. The university's **Gender and Inclusion Office** will oversee these efforts.

REFERENCES

1. Adams, J., et al. (2017). Communication Skills and Entrepreneurial Success: Evidence from Agricultural Enterprises. *Journal of Agricultural Entrepreneurship*, 12(4), 58-72.
2. Adams, J., et al. (2017). The importance of communication skills in agricultural settings. *Journal of Agricultural Education and Extension*.
3. AfDB. (2020). Empowering Novel Agri-Business-Led Employment (ENABLE). African Development Bank. Retrieved from https://www.afdb.org/
4. Aina, O. I. (2021). The role of marketing skills in agricultural entrepreneurship. *Agricultural Economics and Business Review*.
5. Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. W.H. Freeman and Company.
6. Caron, P., et al. (2019). The Role of Agricultural Education in Self-Employment: A Comparative Study of Sub-Saharan Africa. *Journal of Agribusiness Education*, 15(2), 22-33.
7. De Long, J. L., Zhang, L., & Kunkel, D. R. (2016). Gender and Entrepreneurship: A Review of Literature and Future Directions. *Journal of Entrepreneurship*, 41(3), 1-19. https://doi.org/10.1007/s11301-016-0115-2.
8. De Long, J. et al. (2016). The Role of Agricultural Innovation in Economic Development. *Agricultural Economics*, 48(3), 317-328.
9. Dube, L., & Ndimande, M. (2020). The role of entrepreneurship training in improving financial management for smallholder farmers. *Journal of Development Economics*.
10. Dube, S., & Ndimande, S. (2020). Entrepreneurial Readiness Among Agricultural Students in Southern Africa: Challenges and Opportunities. *Journal of Entrepreneurship and Innovation*, 16(1), 45-62.
11. FAO. (2021). The Future of Food and Agriculture: Trends and Challenges. Food and Agriculture Organization of the United Nations. Retrieved from https://www.fao.org/
12. FAO. (2022). Youth and Agriculture: Key Challenges and Opportunities. Food and Agriculture Organization of the United Nations. Retrieved from https://www.fao.org/
13. Garcia, P. R., et al. (2019). Adopting sustainable farming practices for improved productivity and environmental sustainability. *Sustainable Agriculture Research Journal*.
14. Hutchinson, R., & Torres, E. (2017). Technical Competencies for Agricultural Entrepreneurs: Skills for Success. *International Journal of Agricultural Education*, 13(3), 13-29.
15. IITA. (2022). Incubation Hubs and Mentorship Programs for Young Entrepreneurs in Agriculture. International Institute of Tropical Agriculture. Retrieved from https://www.iita.org/
16. Lundahl, D., & Matos, A. (2017). The impact of hands-on experience on technical competence in agriculture. *Agricultural Education Quarterly*.
17. Lundahl, M., & Matos, L. (2017). Sustainable Practices for Agricultural Entrepreneurship. *Sustainable Development in Agriculture*, 21(4), 234-245.

18. Nulty, D. (2008). The Adequacy of Response Rates to Online and Paper Surveys: What Can Be Done? *Assessment and Evaluation in Higher Education*, 33(3), 301-314.
19. Sanginga, P. C., & Woomer, P. L. (2021). Technological adoption and agricultural productivity. *Journal of Technology in Agriculture*.
20. Sanginga, P., & Woomer, P. (2021). Agricultural Innovation and Self-Employment in Africa: What Works? *Agricultural Innovation Review*, 14(2), 101-113.
21. Scholz, R. W., & Ahrens, D. (2019). Agricultural Entrepreneurship: Global and Regional Trends. Springer International Publishing. https://doi.org/10.1007/978-3-319-97366-5.
22. Scholz, T., & Ahrens, A. (2019). Teamwork in agriculture: Collective action for solving challenges. *Agricultural Management and Development Review*.
23. Smith, R. L., Johnson, A. C., & Harris, J. T. (2020). Practical Approaches to Feasibility Assessment and Entrepreneurial Risk Management in Agriculture. *Agricultural Economics Review*, 27(4), 56-69. https://doi.org/10.1080/0303206890200123.
24. Smith, R., et al. (2020). The importance of problem-solving skills for entrepreneurial success in agriculture. *Journal of Agricultural Business and Management*.
25. Sokoine University of Agriculture Field Survey, 2024. *Internal Report*.
26. URT. (2019). Agricultural Sector Development Program (ASDP) II. United Republic of Tanzania. Ministry of Agriculture. Retrieved from http://www.agriculture.go.tz/
27. World Bank. (2020). Agricultural Entrepreneurship in Developing Countries: Building Pathways to Self-Employment. *World Bank Report*, 5(8), 17-39.
28. World Bank. (2020). Agribusiness and Economic Growth: A Review of Sub-Saharan Africa. *World Bank Report*. Retrieved from https://www.worldbank.org/
29. World Bank. (2022). Enhancing Agricultural Education for Youth Employment: A Report on SUA's Contributions. *World Bank Report*. Retrieved from https://www.worldbank.org/