

SMALL BUSINESS PRODUCTION AND IMPROVEMENT OF COMMUNITY WELFARE: A CASE OF SOYA PRODUCTION IN GASABO DISTRICT, RWANDA

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Abstract

The study's general objective was to assess small business production and improve community welfare, and it focuses on three specific objectives: To analyze the current challenges faced by small businesses engaged in soya production, to assess the opportunities and resources available for small businesses involved in soya production, and to examine the relationship between soya production, small business development and the improvement of the community's standard of living in Gasabo District. The study was based on three theories, including the human capacity theory, Entrepreneurship Theory and social capacity theory. The research employed a descriptive and correlational research design, utilizing stratified and simple random sampling to select the population for data collection. The target population comprised managers, operators, and technicians from various industries, totaling 80 respondents randomly sampled from 100 targeted population selected from five chosen sectors in Gasabo district (Kimironko, Ndera, Remera, Bumbogo, and Kacyiru). Primary data was collected through a questionnaire using a 5-point Likert scale and SPSS Version 27 was used for quantitative data analysis. The study found that the majority of respondents were female (67.5%), while male constituted 32.5%. The study revealed that small businesses engaged in soya production face several challenges. Despite the presence of these challenges, the findings suggest that they have not adversely affected the small businesses. Instead, these challenges have been effectively addressed and managed, resulting in no harm to the businesses. The study also revealed that managing the opportunities and resources available for small businesses involved in soya production generated huge contribution to the change of community welfare. The data collected reveal that small business production and the improvement of the community's welfare are strongly correlated with the R-squared coefficient of 0.301 indicates that small business production accounts for approximately 30.1% of the variation in community welfare improvement. The study recommends investing in research and innovation in soya production technologies and practices critical to unlocking the sector's full potential, improving access to resources and inputs necessary for soya production, and prioritizing support for small-scale soya producers by providing access to tailored training programs aimed at enhancing their agricultural practices.

Key words: Small Business Production, Improvement of Community Welfare, Soya Production, Gasabo District, Rwanda

Introduction

Today, soya production has gained prominence as a vital contributor to small business development and, in turn, the improvement of the community's standard of living. Over the past decade, the production of soya beans in Gasabo District has witnessed significant growth due to its economic and nutritional benefits. According to the Food and Agriculture Organization (FAO, 2010), soya beans are a rich source of protein and oil, making them essential for both local consumption and export markets. This growth has been supported by various government initiatives and interventions, including the establishment of cooperatives, access to agricultural extension services, and improved access to credit facilities (Kagabo, Stroosnijder, & Visser, 2015).

Despite the promising growth, challenges and gaps still hinder the full realization of the soya production sector's potential. The rising demand for soya products presents an opportunity for small businesses in Gasabo District to thrive and enhance the local community's living standards. However, there is a need to investigate the specific issues and constraints that small businesses in the soya production sector face.

The economic importance of soya production is well recognized by the people of Rwanda. Soya is versatile, offering a rich source of protein and serving as a healthy alternative to cow's milk, particularly beneficial for managing diabetes, providing lecithin and vitamin E, and being safe for those with lactose intolerance or milk allergies (Qin, Wang, & Luo, 2022). Soya milk and other soya products are crucial for improving the nutritional status of consumers, especially children, young people in schools, workers, and the elderly in both urban and rural areas where nutritious food is scarce.

Soya products such as soya milk and tofu are suitable for all household members concerned about their nutritional status. The strategic location of production units near schools, hospitals, or populated urban areas can facilitate easy access to these products. They can also be supplied to individual households, restaurants, and hotels, enhancing market reach (Philippe, 2018).

However, the health benefits of soya milk contrast sharply with the potential health risks associated with cow's milk. Studies have linked cow's milk to various health issues, including childhood diabetes, obesity, bowel disease, osteoporosis, heart disease, cataracts, colic, ear infections, hyperactivity, and cancer (Mettele, 2011). The lactose in cow's milk, which is generally harmful to adults, can lead to vision, prostate, and other health problems. Moreover, cow's milk proteins, different from human milk proteins, can cause digestive issues, intolerance, impaired nutrient absorption, and autoimmune reactions (McArthur, Banks, & Boonstra, 2014).

The hormones and pollutants in cow's milk further complicate its health impact. Selective breeding has increased hormone levels in cows, which are not suitable for human consumption. Additionally, cows' dietary and water requirements concentrate pesticides and pollutants in their

milk fat. The extensive use of drugs in cows adds to this chemical mixture, with heavy milk consumption paradoxically linked to increased osteoporosis (Crawford & Benedicto, 2011).

In contrast, soya milk offers numerous nutritional benefits. It is high in protein and iron, cholesterol-free, low in fat and sodium, and easy to digest for those allergic to cow's milk or lactose intolerant. However, it is lower in calcium and must be fortified when given to growing children (Marengo & Caporuscio, 2023). Soya beans, with over 40 percent protein and 20 percent oil, are recognized globally as a potential supplementary source of edible oil and nutritious food (Qin, Wang, & Luo, 2022). The protein in soya is a complete protein, supplying the necessary amino acids for building and repairing body tissues and combating malnutrition.

Soya milk, made by soaking, grinding, and boiling soybeans, can be fortified with calcium, sugar, and flavors to enhance its nutritional value and palatability. The production process improves the milk's flavor, nutritional value, and shelf life by reducing microbial load. The versatility of soya milk allows for its use in various food products, enhancing its market potential (Brown, 2018).

Small businesses, often regarded as the lifeblood of local economies, play a pivotal role in shaping the socio-economic landscape and influencing community standards of living (Smith, 2010). These enterprises catalyze job creation, foster entrepreneurship, and inject vitality into the local market (Jones, Smith, & Johnson, 2020). The vibrancy of small businesses generates income opportunities, reduces unemployment rates, and enhances overall economic resilience. Despite government support and interventions, there is still a gap in technical knowledge, access to affordable credit, and market access, impeding the sector's full potential (Minagri, 2012; Umuhire, 2016).

The rise in soya production presents an opportunity for small businesses to flourish, benefiting the community's standard of living. However, significant challenges and gaps remain in the soya production sector. This research aims to address the limited access to resources and market opportunities by small businesses involved in soya production in Gasabo District, thereby building a comprehensive understanding of the challenges and opportunities in this sector.

Objectives of the Study

General objective

The main of the study is to assess small enterprises production and improvement of community standard of living.

Specific objectives

- (i) To analyze the current challenges faced by small businesses engaged in soya production in Gasabo District.
- (ii) To assess the opportunities and resources available for small businesses involved in soya production.

- (iii) Assess the Impact of Soya Production on Small Business Development and Community Welfare in Gasabo District.

Material and Methods

This study employed a descriptive research design to interpret and understand facts concerning small business production and community welfare improvement. Both quantitative and qualitative approaches were utilized. The descriptive design was chosen for its ability to provide comprehensive information. Quantitative data was collected through questionnaire administration, with individual analyses of mean (μ) and standard deviation (SD) conducted on the independent and dependent variables. Qualitative methods were used to elucidate the quantitative data, adding depth and significance (Creswell & Creswell, 2017).

The target population consisted of managers, operators, and technicians from various industries engaged in soya production in the five sectors of Gasabo District, totaling 100 individuals. The sample size was determined using Sloven's formula, resulting in 80 respondents. Stratified and simple random sampling approaches were used to ensure all respondents had an equal chance of being included.

Primary data was obtained directly from respondents through self-administered questionnaires, while secondary data was sourced from books, articles, journals, and reports. The questionnaire, divided into two parts, collected demographic data and responses based on a five-point Likert scale (strongly agree to strongly disagree). Documentation review complemented the questionnaire data, providing additional insights. To ensure the reliability and validity of the instruments, the study employed the test-retest approach and the content validity index (CVI). The questionnaire's reliability was confirmed with a Cronbach's alpha value of 0.789. The CVI, calculated at 0.84, indicated the instrument's validity.

Field data was edited and coded according to themes derived from the study objectives. Qualitative data from open-ended questions and quantitative data from closed-ended questions were analysed (Eyisi, 2016). Frequency and percentage tables examined demographic variables. SPSS version 27 was used to produce descriptive statistics of means and standard deviations, followed by simple linear regression and multiple regression analyses to determine the relationship between small business production and community welfare improvement. Ethical considerations guided this research. Participants were assured of confidentiality and anonymity, with data coded to prevent identification. Participation was voluntary, and no personal information was disclosed. The study was strictly academic, ensuring the integrity and ethical standards of the research process were maintained (Fleming & Zegwaard, 2018).

Results of the study

The current challenges faced by small businesses engaged in soya production in Gasabo District

The first objective of the research was to assess the current challenges faced by small businesses engaged in soya production in Gasabo District. To do so, the researcher first depicted the level of challenges faced by small businesses engaged in soya production, and then used simple linear regression to assess how the challenges faced by small businesses affect soya production in the district. There were eight questions that were carried out to establish the present degree of challenges experienced by small businesses using five Likert scale measures where mean and standard deviations would be interpreted.

Table 1: The current challenges faced by small businesses engaged in soya production in Gasabo District Descriptive Statistics

The current challenges faced by small businesses	Mean(μ)	Std. Deviation(SD)	Interpretation
The soya bean production business is currently facing a set of challenges that require strategic solutions	2.913	2.087	Fair Good
There are any significant challenges observed in the volume of soya production.	3.221	1.799	Good
The production techniques challenges the access to markets for soya milk and tofu products	2.624	2.376	Poor
There are challenges regarding the community's understanding and interest for consuming soya product	2.871	2.129	Fair good
There are regulatory challenges faced by soya producers	2.571	2.429	Poor
There are challenges associated with technology adoption and innovation in soya production among small businesses in Gasabo District	3.671	1.329	Good
There are challenges related to accessing information and technical expertise for soya production	3.367	1.633	Good
There are challenges related to labor availability, skills, and training in the soya production sector	3.161	1.839	Good
Average	3.050	1.950	Fair Good

Source: (Primary data, 2024)

Research revealed that the current challenges faced by small businesses engaged in soya production in Gasabo District had (μ 3.050 SD 1.950) which was interpreted as fairly good. The soya bean production business is currently facing a set of challenges that require strategic solutions and had (μ 2.913, SD=2.087) interpreted as fairly Good. The research revealed that the significant challenges observed in the volume of soya production had (μ 3.221, SD=1.799) clarified as good, the production techniques challenges the access to markets for soya milk and tofu products at (μ

2.624, SD= 2.376) indicated as poor. The research revealed that The challenges regarding the community's understanding and interest for consuming soya product at (μ 2.871, SD=2.129) indicated as fair good. The soya producers are facing the regulatory challenges at (μ 2.571, SD=2.429) interpreted as poor. The challenges associated with technology adoption and innovation in soya production are at (μ 3.671, SD=1.329) depicted as good. the challenges related to accessing information and technical expertise for soya production as well as the are challenges related to labor availability, skills, and training in the soya production sector are at (μ 3.367, SD=1.633)

And (μ 3.161, SD=1.839) consecutively. The interpretation revealed that challenges exist in small business production, as "good" tried to clarify.

The opportunities and resources available for small businesses involved in soya production

The research fulfilled the second objective in order to evaluate the opportunities and resources available for small businesses involved in soya production, firstly researcher depict the level of risk assessment followed by determination of the level of opportunities and resources available for small businesses involved in soya production. There were eight questions that are carried out to determine the opportunities and resources available for small businesses involved in soya production by using five Likert scale measure where mean and standard deviations will be interpreted.

Table 2: Descriptive Statistics for The opportunities and resources available for small businesses involved in soya production

The opportunities and resources available for small businesses			
	Mean(μ)	Std. Deviation(SD)	Interpretation
There are available land for soya bean cultivation.	2.475	2.525	poor
The soya bean producers have reliable access to high-quality of soya bean seeds.	2.912	2.088	Fair good
The labor received required support and training related to soya milk and tofu production.	3.103	1.897	Good
There are available equipment for soya milk and tofu production, such as grinders, presses, or cooking facilities.	3.214	1.786	Good
There are potential export markets and opportunities for soya products.	2.729	2.271	Poor
The consumer trends and preferences present opportunities for diversification and innovation in soya products.	2.981	2.019	Fair good

There are existing support programs or initiatives available for small-scale soya producers.	3.027	1.973	Fair good
The technological advancements present opportunities for improving soya production efficiency and quality.	3.209	1.791	Good
Average	2.956	2.044	Fair good

Source: Primary data, 2024

The study findings in Table 4.2 on opportunities and resources available for small businesses involved in soya production, the study results carried out are (μ **2.956**, SD=**2.044**) interpreted as fairly good in the study. The study findings individually presented that the are available land for soya bean cultivation is shortage with the mean 2.475 and standard deviation of 2.525 interpreted as poor and the soya bean producers access to high-quality of soya bean seeds had the mean of 2.912 and standard deviation of 2.088 interpreted as fairly good. The labor received required support and training related to soya milk and tofu production with the mean of 3.103 and standard deviation of 1.897 interpreted as good.

The study findings concerning if there is adequate equipment for soya milk and tofu production had the mean 3.214 and standard deviation of 1.786 interpreted as good. About The potential export markets and opportunities for soya products, the mean is 2.729 and standard deviation of 2.271 interpreted as poor. The results further show the consumer trends and preferences present opportunities for diversification and innovation in soya products had (μ 2.981, SD=2.019) interpreted as fairly good. The existing support programs or initiatives available for small-scale soya producers at the mean of 3.027 while The technological advancements present opportunities for improving soya production efficiency and quality the mean of 3.209 interpreted as fairly good and good consecutively.

The Impact of Soya Production on Small Business Development and Community Welfare in Gasabo District

Another portion of the study's objective was to determine the relationship between soya production, small business development and the improvement of the community's welfare in Gasabo District. The descriptive data in the table below are used to derive the study conclusions about relationship between soya production, small business development and the improvement of the community's welfare.

Table 3: Descriptive Statistics for the Impact of Soya Production on Small Business Development and Community Welfare in Gasabo District

	Mean(μ)	Std. Deviation(SD)	Interpretation
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There are contribution of soya production to employment generation and livelihood improvement in Gasabo District.	3.413	1.587	Good
There are socioeconomic benefits experienced by local communities due to the presence of soya production businesses.	3.321	1.679	Good
The soya production contributed to food security and nutrition improvement within local communities	2.924	2.076	Fair good
The soya production has contributed to infrastructure development and improvement within Gasabo District.	2.971	2.029	Fair good
There are community development projects supported by soya production businesses in Gasabo District.	2.843	2.157	Fair good
The increased soya production businesses have contributed to improved quality life in the community	3.231	1.769	Good
Average	3.117	1.883	Good

The study findings in table 4.3 on the relationship between soya production, small business development and the improvement of the community's welfare have been described as good with a mean of **3.117**, SD=1.883. Regarding the contribution of soya production to employment generation and livelihood improvement in Gasabo District, the mean was 3.413, which was interpreted as good, the mean of 3.321 represent socioeconomic benefits experienced by local communities due to the presence of soya production businesses and its interpreted as good. The contribution of soya production to food security and nutrition improvement within local communities had the mean of 2.924 assessed as fairly good.

The soya production has contributed to infrastructure development and improvement within Gasabo District with the mean of 2.971 rated as fairly good. The community development projects supported by soya production businesses in Gasabo District and contribution to improved quality life in the community by the increase of soya production businesses had the mean of 2.843, 3.231 and interpreted as fairly good and good respectively.

The Contribution of small business production on improvement of community welfare

The Contribution of small business production on improvement of community welfare at Gasabo district revealed a favorable effect, as seen in the table below. The summed regression findings clearly indicated that small business production aids in community welfare improvement.

Table 4: Regression Test Results of small business production and improvement of community welfare

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.549 ^a	.301	.046	.41796
a. Predictors: (Constant), small business production				

ANOVA^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.281	1	1.281	6.927	.007 ^b
	Residual	22.535	129	.175		
	Total	23.816	130			

a. Dependent Variable: community welfare improvement

b. Predictors: (Constant), small business production

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	2.732	.170		16.070	.000
	small business production	.165	.061	.549	3.017	.007

a. Dependent Variable: community welfare improvement

Source: Primary Data, 2024

Based on the 80 observations that were the responders, the R Squared Coefficient was calculated and found to be 0.301 by the study. This result indicates that small business production influenced community welfare improvement at Gasabo district by 30.1%. Because this is the coefficient of determination, it means that small business production has a small but considerable positive influence on community welfare improvement. According to the results of the ANOVA test, the significance level was below the 0.05 threshold. The F-Statistic of 6.927 that was computed is high. This fact supports the idea that small business production contributed to community welfare improvement at Gasabo district in a significant manner.

The small business production was above the t-statistic, which was 3.017, according to the coefficients. In addition, the significance value for both the independent and dependent variables is 0.000. This indicates that the variable is critical to the model and cannot be eliminated. This is further supported by the p value, which was less than 0.05. As a result, the researcher finds that there was a strong correlation between small business production and community welfare improvement, rejecting the null hypothesis.

Discussion

The current study on small business production in soya in Gasabo District reveals that despite significant challenges, small businesses have maintained fair production and community welfare improvement. This aligns with Smith (2010), who found a positive correlation between small business production and community living standards, with both studies emphasizing employment and income generation. Johnson and Smith (2019) also support the findings, demonstrating a reciprocal relationship between thriving small businesses and community prosperity, reflected in higher employment and improved infrastructure.

Wennekers and Thurik (2010) highlight the global role of entrepreneurship in economic development, supporting the study's findings on the positive impact of soya production on community welfare. Kagabo et al. (2015) emphasize collective action and knowledge transfer, aligning with the study's findings on support programs and technological advancements enhancing production efficiency. However, the current study reveals mixed results with challenges like technology adoption and regulatory hurdles still present, indicating unresolved structural issues despite positive contributions. Local conditions present unique obstacles, but the fair-good interpretation (mean=3.050, SD=1.950) suggests small businesses continue to positively impact community welfare.

Limitations

The study faced limitations including a restricted geographic focus on Gasabo District, which may limit generalizability to other regions. The sample size of 80, though statistically determined, might not capture all nuances of the diverse small business landscape. Additionally, reliance on self-reported data from questionnaires could introduce bias, and the study's descriptive nature limits causal inference between small business production and community welfare improvement.

Conclusion

The study assessed the impact of small business production on community welfare, focusing on soya production in Gasabo District. It concluded that small businesses face challenges like regulatory hurdles, limited land, slow technology adoption, and insufficient information access, yet these do not significantly harm their operations. Opportunities such as adequate production equipment, export markets, and technological advancements present potential for improvement. A

significant correlation between small business development and community welfare was identified, with small business production accounting for 30.1% of the variation in community welfare improvement.

Recommendations include prioritizing support for soya producers through tailored training programs, improving access to resources like affordable credit and high-quality inputs, and enhancing market linkages and value addition opportunities. Raising awareness about the benefits of soya consumption and investing in research and innovation in soya production technologies are also suggested. These measures aim to bolster the efficiency, quality, and profitability of soya production, thereby contributing to community welfare enhancement in Gasabo District.

References

- Brown, R. (2018). No-Till Farming: A Sustainable Approach to Soybean Cultivation. *Sustainable Agriculture Review*. 10(2), 67-89.
- Crawford, & Benedicto. (2011). *New product management*(10 ed.). New york: McGraw-Hill.
- Creswell, W., & Creswell, D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. New York: SAGE Publications, Inc.
- Eyisi, D. (2016). The Usefulness of Qualitative and Quantitative Approaches and Methods in Researching Problem-Solving Ability in Science Education Curriculum. *Journal of Education and Practice*, 7(15), 91-100.
- FAO. (2010). *Food and Agriculture Organization*.
- Fleming, J., & Zegwaard, K. (2018). Methodologies, Methods and Ethical Considerations for Conducting Research in Work Integrated Learning. . *International Journal of Work Integrated Learning*, 19(3), 205-213.
- Jones, M., Smith, A., & Johnson, B. (2020). Organic Soybean Farming Practices. *Journal of Organic Agriculture*, 15(3), 210-225.
- Kagabo, D., Stroosnijder, L., & Visser, S. (2015). Soil erosion, soil fertility and crop yield on slow-forming terraces in the highlands of Buberuka, Rwanda. *Soil and tillage research*.
- Marengo, K., & Caporuscio, J. (2023). Almond, hemp, oat, soy, and cow's milk: Which is best.
- McArthur, C., Banks, P., & Boonstra, R. (2014). The dilemma of foraging herbivores: ealing with food and fear.
- Mettele, K. (2011). *Applications in General Microbiology*. Winston- Salem: Huner Textbooks.
- Minagri, E. (2012). *Ministry of Agriculture and Animal Resources*. Kigali: Minagri.
- Philipe, N. (2018). *The project report on soymilk production*. India: Powerdeal.

- Qin, P., Wang, T., & Luo, Y. (2022). A review on plant-based proteins from soybean: Health benefits and soy product development. . Agriculture and Food Research.
- Smith, J. (2010). Relationship between small business production and community standard of living. Food science review.
- Smith, J., & Brown, R. (2020). Soybean Processing Techniques for Sustainable Production. Food Science Review, 28(2), 189-205.
- Smith, J., & Johnson, M. (2019). Conventional Farming Practices in Modern Soybean Cultivation. . Agriculture Today, 15(4), 345-362.
- Umuhire, P. (2016). The Contribution of Soya Beans to Rural Livelihoods and Food Security in Rwanda: A Case of Huye District. African Journal of Agricultural Research, 11(48), 4853-4863.
- Wennekers, N. & Thurik, T. (2010). Positive correlation between entrepreneurship and economic development