The Nexus Between Food Production and Socioeconomic Livelihoods of Female-Headed Households: Evidence from Uganda

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Abstract

This study was set out to examine the nexus between food production and socioeconomic livelihoods of female-headed households in Mbarara District, Southwestern Uganda. The study adopted a cross-sectional survey design with a quantitative study approach to data collection and analysis. A sample size of 186 respondents was selected randomly from 360 households in Mbarara district. In the survey, respondents were subjected to a questionnaire survey method of data collection. Data from the questionnaires was coded, entered into SPSS, and analysed using descriptive and inferential statistics. Results show that there is a positive significant relationship between food production and socioeconomic livelihoods of female-headed households (r=.491, p<.01). The control variables of Age and level of education were found to contribute a statistically significant explanatory power of 3.4% in explaining socioeconomic livelihoods of female-headed households. The model results also show a significant relationship between food production and socioeconomic livelihoods of female-headed households (β= .378; p<05). The variables entered in the regression model explain an overall 28.4% (AdjR^2 = .284) of the variance in socioeconomic livelihoods of female-headed households, implying that the remaining 71.6% is explained by factors not considered in this study. The study concluded that there is a significant positive relationship between food production and the socioeconomic livelihoods of female-headed households in the Mbarara district. Therefore, the study recommends that there is a need to advocate for women's empowerment to improve their status in decision-making at the family level.

Keywords: Food Production, Socioeconomic Livelihoods, female-headed households

Introduction

Food production is an important aspect of the global socioeconomic agenda particularly on the socioeconomic livelihoods (Ogunniyi, et al., 2021; Rahut, et al., 2022). The issue of socioeconomic livelihood, in particular, food security at the household level has been at the forefront of the global agenda (Ferreira, et al., 2021). Studies on socioeconomic livelihoods particularly on food security have put female-headed households at a disadvantage (Ndagire, 2021; Oduniyi & Tekana, 2020; Ozioko, et al., 2020). Despite the efforts by the global leadership through agencies like UNDP, World Bank, and FAO among others, improving the socioeconomic livelihoods of female-headed households hasn't yielded desirable results (Botreau & Cohen, 2020). In Uganda, the government in collaboration with

development partners has put in place initiatives to empower women in socioeconomic spheres such as the Women Entrepreneurship Programme (UWEP) and Operation Wealth Creation (OWC) at the grassroots (Acosta, 2021) to improve socioeconomic livelihoods at household level. These initiatives coupled with the girl-child education movement registered a mark though major gaps still exist particularly in the case of female-headed households (Acosta, Wessel, Bommel, & Feindt, 2021). However, the situation is not as desired, a study by Adem, Namatovu and Farrelly, (2022) revealed that women lack access to resources and knowledge of their rights to resources such further found that land that could enhance their socio-economic growth and development. Though women provide a significant part of the labour required in agriculture for household food production, they face difficulties when it comes to ownership of productive resources such as finance, land, credit and productivity-enhancing inputs and services as compared to men (Bamwesigye, et al., 2020; Ndagire, 2021).

In effect, the food security situation has continuously worsened in female-headed households, whose attachment to extended families has drawn them into conflicts in the utilization of resources (Ndagire, 2021). The family system which is embedded in an extended family setup has in most cases rendered the would-be female heads, to remain without a say on resources they are theirs (Adem, et al., 2022). Incidentally, there happens to be poor utilization of productive resources, particularly land and the most outstanding outcome in rural communities is always food insecurity (Acosta, et al., 2021). Available evidence reflects the dominance of males in access to, control over, and ownership of production resources in Uganda (Mpuuga, Bulime, & Ogwang, 2021)

Studies by Busingye, Kazooba, and Tumuhimbise, 2018, Rwangire and Muriisa (2021) and Nyakato, Rwabukwali and Kools, (2020)on women's socioeconomic livelihoods, found that women are socioeconomically disadvantaged in terms land rights, access to finance and decision making at the family level. Eventually, this affects socioeconomic livelihoods within their households and general lifestyle. Though these studies were able to point out issues underneath the issue of female-headed households about food production and socioeconomic livelihoods did not stand out, this leaves a knowledge gap that requires further investigation. It is from this background that this study is based on examining the nexus between food production and socioeconomic livelihoods of female-headed households in the Mbarara District.

Study objective

To examine the nexus between food production and socioeconomic livelihoods of female-headed households in Mbarara District.

Rationale

Studies by Acosta, et al (2021), Bamwesigye et al (2020), Ndagire (2021), and Nyakato et al (2020) among others show that female-headed households are prone to socioeconomic vulnerabilities particularly food insecurity and its associated effects. What has been known from the previous studies is that gender relations predict food production among female-headed households, in the same stance as food production. The current study found that food production was found to have a significant positive relationship with socioeconomic livelihoods. The findings from the current study are important in refocusing the policy interventions towards addressing factors of food production since it affects the socioeconomic livelihoods of female-headed households. The study further brought up an issue of socio-demographic variables of age and education as significant predictors of socioeconomic livelihoods in the

context of food production. With these new revelations, policymakers biased towards gender and socioeconomic livelihoods have the pointers to build on, to formulate new interventions to address livelihoods among female-headed households.

Methods
Data Collection
Through a survey approach, the study employed a cross-sectional research design to collect data from 186 respondents who were selected randomly from 360 female-headed households in Mbarara District. These were selected using a stratified sampling of seven sub-counties Bubaare, Bukiro, Rwanyamahembe, Rubaya, Kashare, Kagongi and Rubindi. Respondents were selected using a simple random sampling technique using the female-headed household lists obtained from the respective subcountries.

Survey Tools
A structured questionnaire rated on a five-level Linkert scale was administered to the respondents by the researcher assisted by the research assistants. Before administering this questionnaire, quality control was ensured through the reliability and validity of the instrument. Reliability was ensured by pre-testing the tools on a group of 10 respondents from Bwizibwera Town Council found in Mbarara District. These respondents have similar characteristics to the study population, the items administered to them were rated to determine the Cronbach Alpha Coefficient and were found to be above 0.7, affirming that the tools were feasible. The validity of the instruments was achieved by determining the Content Validity Index. Five experts from the Faculty of Interdisciplinary Studies were consulted to rate the designed tool. The rating given was analysed using SPSS to determine CVI which was found to be above 0.7 affirming that the tools were valid. Collected data from the survey was analysed using SPSS version 26. The statistical significance of the study findings was examined using frequencies, percentages, mean and standard deviations. In addition, Pearson product correlation and hierarchical regression were employed to determine the relationship between variables.

Ethical Considerations
The research sought clearance from MUST-REC and a research permit to conduct this study in Uganda from the Uganda National Council for Science and Technology (UNCST). Before embarking on data collection, informed consent was obtained from each respondent. These were explained their rights and assured confidentiality and anonymity. Where works of others have been used in this study, citations and references have been provided.

Demographic Characteristics of Respondents
In this study, we considered sex, age, education, marital status, number of people in the household as well as land ownership as the main demographic characteristics.

Table 1: Demographic Characteristics of Respondents

Characteristics	Frequency	Per cent
Sex		
Male	79	42.5

Female	107	57.5
Age		
18-30	20	10.8
31-40	48	25.8
41-50	64	34.4
51+	54	29
Education		
Primary	142	76.3
High school	35	18.8
Tertiary	6	3.2
University graduate	3	1.6
Marital status		
Separated	85	45.7
Widowed	64	34.4
Married	37	19.9
Religion		
Anglican	82	44.1
Catholic	87	46.8
Pentecostal	17	9.1
Land Ownership		
Yes	167	89.8
No	19	10.2

Results from Table 1 indicate that the majority of the respondents 57.5% were female. Most of the respondents 34.4 were aged between 41-50. A significant number of the participants 76.3% had a primary level of education. On the side of marital status, the majority of the respondents 45.7% had separated from their spouses. The highest number of participants 46.8% were Catholics. And, 89.8% of the respondents owned land.

Descriptive statistics for the Global Variables

The descending order of mean was used to rank the variables in descending order. The scores for each variable were obtained by computing all the items measuring that variable into a single variable under the cash reconciliation, cash control, expense forecasting and financial performance. Mean was also used to analyze the findings, where a mean of 3.00 implies an average score, a mean above 3.00 implies that the variable scored above average while a mean below 3 means implies that the variable scored below average. In addition, the standard deviation was also used where the standard deviation close to one implied that the score was above the score and the standard deviation close to zero implied that the score was below the average.

Table 2: Showing the Descriptive Statistics for the Global Variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Food production	186	1.00	5.00	3.733	0.734
Socioeconomic livelihoods	186	1.00	5.00	3.724	0.716

Variables	N	Minimum	Maximum	Mean	Std. Deviation
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Socioeconomic livelihoods	186	1.00	5.00	3.724	0.716
Valid N (listwise)	186				

From the Global variables, a mean feedback of 3.733 was obtained from the variable of food production indicating an agreement from the participants to most of the responses. And, a mean feedback of 3.724 was obtained from the variable of socioeconomic livelihood, also portraying an agreement with most of the statements on the checklist.

Pearson Correlation

Pearson's Correlation analysis was conducted to measure the strength of linear associations between the study variables and is denoted by r. The Pearson correlation coefficient, *r*, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable. A value less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variable decreases. The study variables were measured on a continuous scale, and thus Pearson correlation was found to be the most appropriate to test the relationships between the variables. Results on this are presented in Table 2.

Table 3: The Correlation results

Variable	1	2	3	4	5
Access to resources (1)	1				
Access to finance and other resources (2)	.161	1			
Decision-making on resource utilization (3)	.148	.451**	1		
Food production (4)	-.021	.189	.181	.136	.831**
Socioeconomic Livelihoods (5)	-.045	.151	.234*	**.491**	.366**
**. Correlation is significant at the 0.01 level (2-tailed).					

The relationship between food production and socioeconomic livelihoods of female-headed households

To understand how food production influences the socioeconomic livelihoods of female-headed households, the Pearson correlation was applied to determine this relationship. The results in Table 3, show that there is a positive significant relationship between food production and socioeconomic livelihoods of female-headed households (r=.491, p<.01). This means that any positive change in food production is associated with a positive change in socioeconomic livelihoods of female-headed households. In addition, all the dimensions of food production have a positive significant relationship with the socioeconomic livelihoods of female-headed households in Mbarara District.

The effect of food production on socioeconomic livelihoods in Mbarara District

Hierarchical regression analysis was used to determine the predictive power of the separate variables on the dependent variable (socioeconomic livelihoods). The results are presented in Table 4.

Table 4: Hierarchical Regression Results

Variable	Model 1			Model 2			Model 3		
	B	SE	B	B	SE	B	B	SE	β
Constant	3.291	.210		2.895	.512		.987	.587	
Age	.172	.117	.166	.153	.120	.147	.169	.104	.163
Level of education	-.050	.064	.088	-.050	.064	-.088	-.073	.056	-.128
Food production							.646	.129	.498**
R		0.184			0.207			0.533	
R^2		0.034			0.043			0.304	
Adj R^2		0.008			0.005			**0.284**	
R^2-Change		**0.034**			**0.009**			**0.241**	
F-Change		1.33			0.721			24.949	
Sig. F-Change		0.271			0.398			.000	
***. Correlation is significant at the .000 level (2-tailed).									
B. Unstandardized coefficient									
β. Standardized coefficient									
Dependent Variable: Socioeconomic livelihoods									

Results of Model 1 in Table 4 indicate that the control variables (Age of the respondents and level of education) contribute a statistically significant explanatory power of 3.4% in explaining the socioeconomic livelihoods of female-headed households.

Model 2 shows that the addition of gender relations to the equation accounts for an extra 0.9% of the variance explained by the model ($R^2\Delta=.009$; f$\Delta= 0.721$; p<.05). The findings further confirm a positive and insignificant relationship between gender relations and socioeconomic livelihoods of female-headed households (β= .098; p<05). The addition of food production in Model 3, reveals an extra 24.1% of the variability in socioeconomic livelihoods of female-headed households ($R^2\Delta=.241$; f$\Delta=24.949$, p<.05). The model results also show that there is a significant relationship between food production and socioeconomic livelihoods of female-headed households (β= .378; p<05).

Lastly, the variables entered in the regression model explain an overall 28.4% (AdjR^2 = .284) of the variance in socioeconomic livelihoods of female-headed households, implying that the remaining 71.6% is explained by factors not considered in this study. Nonetheless, considering the two predictors in this study, the results show that food production has a better contribution effect on the socioeconomic livelihoods of female-headed households in Mbarara District.

The results from regression analysis are also to a greater extent in line with qualitative results because the respondents indicated that the largest part of their socioeconomic livelihoods is largely dictated by the availability of food in the home. This indicated that though food production plays a key role in determining the socioeconomic livelihoods of female-headed households, to a large extent, other factors do explain 71.6% of the socioeconomic livelihoods of female-headed households in Mbarara District.

Discussion

Findings on the mediating effect of food production on the socioeconomic livelihoods of female-headed households underscore the importance of recognizing the multifaceted role that food production plays in empowering and improving the well-being of women-led households. Policy efforts should focus on

enhancing women's access to resources, markets, and support services, as well as addressing gender-based disparities to maximize the positive impact of food production on their livelihoods. A study by Debela and Abebe (2017) emphasizes that food production is not only crucial for food security but also plays a central role in the economic livelihoods of female-headed households. Women's involvement in agriculture significantly affects their household income and overall well-being, which are all components of socioeconomic livelihoods. When women participate in agriculture production, they eventually gain a stand-in position of ensuring that the household's economic livelihoods are secure irrespective of the challenges they meet in pursuit of this. These views are also shared by Abo and Kuma (2015) highlights that income generated from food production activities has a substantial impact on the socioeconomic status of female-headed households. Increased agricultural income generated through female involvement can contribute to greater financial independence and reduce vulnerability to poverty among female-headed households.

Findings from this study revealed that participants agreed with the fact that food production is closely linked to nutritional outcomes. The findings are in agreement with Ndagire (2021) who found that female-headed households engaged in food production tend to have better access to diverse and nutritious foods, leading to improved health and well-being. The nutritional component affirms the existence of food security at the household level. In this regard, members of the family gain access to foods they wish, eat more often and can change their diet any time they so wish. This helps to bridge the health gap of socioeconomic livelihoods as members may not experience food insecurity stressors and malnutrition diseases.

From the study, the findings revealed that there is a positive significant relationship between food production and the socioeconomic livelihoods of female-headed households in the Mbarara district. These are in agreement with other studies done elsewhere including Ashagidigbi, Afolabi and Adeoye (2017) who expressed that 59.1% of the surveyed female-headed households were food insecure in Abuja Nigeria. In contrast, Ibeagwa et al (2020) in a study done in Imo state Nigeria among both female and male-headed households, found that female-headed households were more food secure. This study was a unique aspect among other studies done especially in Sub-Saharan Africa. For instance, another study by Ndagire (2021) in rural Southwestern Uganda agreed with the findings of the present study emphasizing the association between food production and the socioeconomic livelihoods of female-headed households. These findings show that aspects of food production among female-headed households determine the level of socioeconomic livelihoods among which are food security and access to other basic needs.

Conclusion

It was established that there is a positive but insignificant relationship between gender relations and the socioeconomic livelihoods of female-headed households in the Mbarara district. On the whole, we found that all the dimensions of food production have a positive significant relationship with the socioeconomic livelihoods of female-headed households in the Mbarara District. On the control variables (Age of the respondents and level of education) contribute a statistically significant explanatory power of 3.4% in explaining the socioeconomic livelihoods of female-headed households. Though food production plays a key role in determining the socioeconomic livelihoods of female-headed households at 28.4% according to the regression model, to a large extent, other factors do explain 71.6% of the socioeconomic livelihoods of female-headed households in Mbarara District.

Recommendations

We found out that females have no absolute rights to land utilization and harvested produce in the home. This calls for advocacy and sensitization by civil society organizations and government agencies focused on improving community development at the family level.

There is a need to advocate for women's empowerment to improve their status in decision-making at the family level. For the last three decades, the Government of Uganda and its partners in development have invested a lot in gender mainstreaming but the gaps are still existing as have been revealed by the current study. This calls for new approaches to tackle this challenge that has persisted for so long.

There is a need to enhance the agency of women to participate in asset ownership and household economic decision-making, expand female literacy and education, and diversify income sources to include off-farm wage employment in Mbarara District.

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References

1. AboTagese, & Kuma Berhanu. (2015). Determinants of food security status of female-headed households: the case of Wolaita Sodo town, South Nations, Nationalities and Peoples Region, Ethiopia. *International Journal of Scientific Footprints, 3*(2), 8-24.

2. Acosta Mariola. (2021). Placing meaning-making processes at the centre of gender equality strategies in rural development. *Gender, Place & Culture, 29*(5), 736-740. doi:10.1080/0966369X.2021.1941789

3. Acosta Mariola, Wesselvan Margit, Bomme lvan Severine, & Feindt H. Peter. (2021). Examining the promise of 'the local' for improving gender equality in agriculture and climate change adaptation. *Third World Quarterly, 42*(6), 1135-1156. doi:10.1080/01436597.2021.1882845

4. Adem Andrew, Namatovu Rashidah, & Farrelly Michael. (2022). Women's land rights as a pathway to food security in Uganda. *African Journal of Land Policy and Geospatial Sciences, 5*(1), 234-245. doi:10.22004/ag.econ.334483

5. Ashagidigbi Mobolaji Waheed, Afolabi Adewale Olaniyi, & Adeoye Bosede Iyabo. (2017). Food insecurity status among female-headed households in Nigeria. *Scientific Papers Series Management, Economic Engineering in Agriculture & Rural Development, 17*(3).

6. Bamwesigye Dastan, DoliAzdren, Adamu Jonathan Kyom, & Mansaray Kemoh Sheku. (2020). A review of the political economy of agriculture in Uganda: Women, property rights, and other challenges. *Universal Journal of Agricultural Research, 8*(1), 1-10. doi:10.13189/ujar.2020.080101

7. Botreau Hélène, & Cohen J. Marc. (2020). Gender inequality and food insecurity: A dozen years after the food price crisis, rural women still bear the brunt of poverty and hunger. Barling David, & Fanzo Jessica, Advances in Food Security and Sustainability (53-117). Elsevier. doi:10.1016/bs.af2s.2020.09.001

8. Busingye John, Kazooba Tushabomwe Charles, & Tumuhimbise Manasseh. (2018). Challenges facing female-headed households in accessing and utilizing microfinance lending among selected municipalities of South West Uganda. *International Journal of Sciences Basic and Applied Research (IJSBAR), 37*(1), 185-193.

9. Debela Mulu, & Abebe Workneh. (2017). Determinants of Rural Female-headed Households' Food Security in Ambo District, West Shewa Zone, Oromia Regional State, Ethiopia. *Journal of Science and Sustainable Development, 5*(1), 73-87. doi:10.20372/au.jssd.5.1.2017.068

10. Ferreirade Pinho Raquel, Guinéde Pinho Ferreira GuRaquel, Pato Lúcia de Jesus Maria, Costa Amaro da Cristina, Costade Vasconcelos Teixeira Aguiar da Daniela, Silva Barracosa Correia da Paulo, & Martinho João Pereira Domingues Vítor. (2021). Food Security and Sustainability: Discussing the Four Pillars to Encompass Other Dimensions. *Foods, 10*(11), 2732. doi:10.3390/foods10112732

11. Ibeagwa B., I. U. AO., Nuwawu I I., Ukoha N M., Osuji A U., Essien C, Chikeze, & Nwachuku U. E. (2020). Comparative analysis of food security status of Male and Female-headed farming Households in Imo State, Nigeria. *Journal of Agricultural Science and Practice, 5*(5), 193-201. doi:10.31248/JASP2024.461

12. Mpuuga Dablin, Bulime W N Enock, & Ogwang Ambrose. (2021). Gendered Effects of Land Ownership on Household Food Security and Welfare: Empirical evidence from Uganda. Rome: International Fund for Agricultural Development (IFAD).

13. Ndagire Lilian. (2021). Food security inequality between female and male-headed households: evidence from Northern and South Western Uganda. Makerere.

14. Nyakato N. Viola, Rwabukwali Charles, & Kools Susan. (2020). Women's Land Rights and Maternal Healthcare in Southwestern Uganda: Exploring the Implications of Women's Decision-Making Regarding Sale and Use of Land on Access to Maternal Healthcare. *African Journal of Reproductive Health, 24*(1). doi:https://www.ajol.info/index.php/ajrh/article/view/195554

15. Oduniyi Samuel Oluwaseun, & Tekana Sylvia Sibongile. (2020). Status and Socioeconomic Determinants of Farming Households' Food Security in Ngaka Modiri Molema District, South Africa. *Social Indicators Research, 149,* 719–732. doi:10.1007/s11205-020-02266-2

16. Ogunniyi Isaiah Adebayo, Omotoso Opeyemi Samuel, Salman Kayode Kabir, Omotayo Olusola Abiodun, Olagunju Oluseyi Kehinde, & Aremu Oladapo Adeyemi. (2021). Socio-economic Drivers of Food Security among Rural Households in Nigeria: Evidence from Smallholder Maize Farmers. *Social Indicators Research, 155*, 583–599. doi:10.1007/s11205-020-02590-7

17. Ozioko I. Remigius., Nwigwe C. Blessing., Asadu N. Anthonia., Nwafor I. Miracle., Nnadi I. Onyinyechi., Onyia C. Chukwuemeka., Oluwasegun OFelix. (2020). Food security situations among female-headed households in Enugu East Senatorial Zone of Enugu State, Nigeria. *Journal of Agricultural Extension, 24*(4). doi:10.4314/jae.v24i4.11

18. Rahut Bahadur Dil, Aryal Prakash Jeetendra, Manchanda Navneet, & Sonobe Tetsushi. (2022). Expectations for household food security in the coming decades: A global scenario. Future Foods: Global Trends, Opportunities, and Sustainability Challenges (107-131). Academic Press. doi:10.1016/B978-0-323-91001-9.00002-5

19. Rwangire Milton, & Muriisa Kabeba Roberts. (2021). Dynamics of Women's Secure Land Rights for Sustainable Rural Household Food Security in Uganda. *Journal of African Interdisciplinary Studies, 5*(1), 4-31.