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Contribution of Poultry Farming on Socio-Economic Development in Rural Areas

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ABSTRACT
Poverty alleviation is a long process and it has been a concern for the world and country policies for the last few decades. Poverty in Sub-Saharan countries including Rwanda is exacerbated by population rise specifically in rural areas where agriculture is the main source of income. However, livestock especially poultry farming, have shown to provide a practical and effective first step in alleviating abject rural poverty. Poultry production accounts for the major part of all meat produced in many developing countries. The study analyzed the contribution of poultry farming in socio-economic development in Rusororo Sector of Gasabo district in Rwanda. The research design used was a correlation and cross sectional survey methodology basing on the use of qualitative and quantitative approaches to establish the relationship between poultry farming and socio-economic development in rural areas. It also used a sample size of 38 respondents doing poultry farming. The findings revealed that the majority of respondent (84%) used intensive system while 16% used semi-intensive. For socio-economic indicators; it has proven that 76% were accessible to the market, 84% their children could access to schools easily and 87% could access to health centers while all respondents demonstrated that they have health insurance and 82% have non-farm activities. For the suggestion of improving poultry farming productivity; majority (53%) of them suggested that inputs should be available at low cost, 26% suggested the need of being trained, 21% suggested to use modern techniques and technology. Poultry production has supreme contribution to the income of rural households in general and specifically in Rwanda.

Key words: Poultry farming, household, social-economic development

I. INTRODUCTION

Poverty alleviation is a long process and it has been a concern for the world and country policies for the last few decades (Ravallion, 2004). While poverty can constrain economic growth, some countries have succeeded in fighting it though African countries, especially in Sub-Saharan Africa, seem to have failed (Yamagata and Shiraishi, 2009). Poverty in Sub-Saharan African is exacerbated by population rise specifically in rural regions characterized by agriculture as the main source of income. Consequently, fighting poverty in Sub-Saharan Africa needs to focus on agricultural production improvement by using techniques that consider the effects of high population density on scarce agricultural land (Hirano, 2009).

Rwanda is among Sub-Saharan Africa countries. It is a small land-locked country with a hilly terrain, land area of 26,338 km2 with 11,809,295 million of population and the majority (87 %) lives in rural areas (NISR, 2017). Rwanda met most of the Millennium Development Goals (MDGs) by the end of 2015. Strong economic growth was accompanied by substantial improvements in living standards, evidenced by a two-thirds drop in child mortality and the attainment of near-universal primary school enrolment. A strong focus on homegrown policies and initiatives contributed to a significant improvement in access to services and in human development indicators. The poverty rate dropped from 44% in 2011 to 39% in 2014 while inequality measured by the Gini coefficient reduced from 0.49 in 2011 to 0.45 in 20143. development group and below the average of 0.518 for countries in Sub-Saharan Africa. Regardless it has experienced great progress, especially in Life expectancy at birth placed at 64.2 years (2014) above the sub-Saharan average of 58.5 and Low-HDI countries of 60.6 (Republic of Rwanda, 2017).

Rwanda's economy which still depends heavily on rain-fed agriculture grew 1.7 percent in the 2017, and GDP reached Frw 1,817 billion, up from Frw 1,593 billion in 2016. Agriculture sector contributed 32 percent to GDP. Agriculture increased by 3 percent, Food crops increased by 4 percent due to harvest of Season A of 2017 (NISR,

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2017). Vision 2020 is the primary socio-economic policy document of Rwanda on which all national and sectorial policies and strategies are based. It describes modernization of agriculture and animal husbandry as one of the six pillars for building a diversified, integrated, competitive and dynamic economy. Vision 2020 seeks to transform Rwanda's economy through a rapid increase in agriculture growth and a significant reduction in poverty. Agriculture is a priority sector, with an emphasis on moving the sector from subsistence to commercial production through attracting increased investment. The target for agricultural growth until 2020 has been revised upward to 8.5 % per year (Republic of Rwanda, 2017).

Although the livestock sub-sector in Rwanda contributes significantly to the national economy, however its potential has been limited by several constraints such the use of animals with poor genetic potential, inadequate feeding, animals' pests and diseases and poor management, rangeland reduction and deterioration due to fast growing human population, over-utilization of land and soil erosion, causing low farm level productivity. The objective of reducing poverty and malnutrition cannot be achieved by one single intervention and, in isolation: no single activity will have a major impact. However, livestock, especially poultry species, have shown to provide a practical and effective first step in alleviating abject rural poverty. Poultry production accounts for the major part of all meat produced in many developing countries, and are an integral component of nearly all rural and urban households. It is of considerable significance to the rural as well as the national economy and is also an important source of animal protein (FAO 1999).

It is also generally recognized that poverty is the greatest constraint to global harmony and the wellbeing of the peoples of the world. Poverty is a problem of extraordinary proportion, with an estimated 2.8 billion of the world's 6 billion people living on less than US$ 2 day-1, and 1.2 billion on less than US$ 1 day-1. But this is not a static situation and during the next 25 years, the human population was predicted to grow by a further 2 billion, 97% of which will be in the countries of the developing world (World Bank, 2001). Poverty in Sub-Saharan African is exacerbated by population rise specifically in rural regions characterized by agriculture as the main source of income (Hirano 2009).

Consequently, fighting poverty in Sub-Saharan Africa needs to focus on agricultural production improvement by using techniques that consider the effects of high population density on scarce agricultural land. Poverty is not reflected in low levels of income alone but it is, rather, multidimensional. According to the Multidimensional Poverty Index, which measures the nature and magnitude of deprivations in health, education and living standards at the household level, 1.6 billion people were living in multidimensional poverty in 2016, which is nearly twice the number of people living in extreme poverty measured by income alone (UNDP, 2017).

The challenge to reduce poverty and malnutrition cannot be achieved by one single intervention and, in isolation; no single activity will have a major impact. However, livestock, especially poultry species, have been shown to provide a practical and effective first step in alleviating abject rural poverty. Livestock provide a renewable asset, a ready source of cash, quality nutrients in the human diet, and are often essential for meeting important social and cultural needs and obligations. Targeting small-scale, family-based poultry systems as an effective entry point for poverty alleviation programmes is gaining widespread acceptance. Provision of an enabling environment that allows vulnerable and disadvantaged people access to credit, improved husbandry practices, goods, services, improved genotypes and better market opportunities can make a real difference. Unfortunately, there are policy distortions and trade practices that marginalize and exclude the poor; these need to be addressed to take advantage of the opportunities livestock offers for rural development and poverty alleviation (The Embassy of the Netherlands in Rwanda, 2017) In this regard, this research analyzed the contribution of poultry farming in socioeconomic development especially in rural areas of Gasabo district.

II. MATERIAL AND METHODS

The research design used is a correlation and cross sectional survey methodology. The study was to analyze the correlation in order to determine in quantitative terms the degree to which the variables are related. The focus of the research was to obtain some qualitative and quantitative data would facilitate the conclusion to be made about the contribution of poultry farming in socio-economic development of Rwandan rural areas. The research was using a cross sectional survey design basing on the use of qualitative and quantitative approaches to establish the relationship between poultry farming and socio-economic development in rural areas. This study was also

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adopting the case study approach in view of its advantages.

The survey conducted in Rusororo sector of Gasabo district. The total population of the study was 38 households doing poultry farming. Given the small number of target population the research has taken the whole population as sample therefore the sample size for this study was 38 respondents.

This study used purposive sampling technique because all respondents were taken for this study as poultry farmers due to their small number and have much information for responding to the questionnaire of this research. The research respondents were given instructions by the researcher to make sure that they have good and proper understanding of the research methodology and the data collection tools (Bell and Bryan, 2007).

We used a questionnaire, which included the general identification of the respondents and other questions related to the targets of the research. They were designed with open-ended questions which the respondents will answer according to their common understanding and close questions which the respondents were given with alternative solutions and choose the convenient answer.

III. RESULTS AND DISCUSSION

3.1. Demographic Profile

Table 1: Gender, Age groups Marital Status, Education of respondents

Item	Frequency	%
Gender		
Male	32	84
Female	6	16
Age Groups		
31-40 years	22	58
41-50 years	12	32
51-60 years	4	10
Marital Status		
Married	36	95
Widowed	2	5
Education		
Illiteracy	1	3
Primary	9	24
Secondary	23	60
Tertiary	5	13

The male dominance (84%) in poultry farming suggests traditional gender roles may still influence agricultural entrepreneurship in rural areas. The concentration of farmers in the 31-40 age bracket (58%) is particularly significant as it represents the most productive working years, indicating that poultry farming is viewed as a viable primary occupation. The high percentage of married participants (95%) suggests poultry farming serves as a family enterprise, potentially providing employment and income for multiple household members. The educational distribution, with 60% having secondary education, indicates that farmers have sufficient literacy and numeracy skills to handle modern farming techniques and business management.

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3.2. Experience and Acquisition

Table 2: Periods that respondents started to keep poultry and the way respondents received their chickens

	Frequency	%
Keep poultry		
1-3 years	34	89
3-5years	4	11
Source of chickens (poultry		
Bought	32	84
Entrust	1	3
Gift	4	13

The predominance of new farmers (89% with 1-3 years experience) suggests a recent surge in poultry farming adoption, possibly due to government initiatives or market opportunities. The high percentage of purchased chickens (84%) versus gifts (13%) or entrusted birds (3%) indicates that farmers are approaching this as a serious business investment rather than a traditional or supplementary activity.\

3.3. Breed Selection and Purpose

Table 3: The breed of poultry that respondents keep and their reasons of keeping poultry

Breed Selection		
Method	**Frequency**	**%**
Local breed	6	16
Rhode Red Island (Exotic layers)	21	55
Local x Rhode Red Island	11	29
Reasons of keeping poultry		
Reason	**Frequency**	**%**
Making income	35	92
Fighting against malnutrition	3	8

The preference for Rhode Red Island breeds (55%) and hybrids (29%) over local breeds (16%) demonstrates a strategic choice for higher productivity. This aligns strongly with the overwhelming focus on income generation (92%) versus nutrition (8%), showing that farmers are prioritizing commercial viability over subsistence farming.

3.4. Production and Marketing.

Table 4: Quantity of eggs & chickens produced and the markets of their production

Production		
Quantity of eggs	**Frequency**	**%**
5000-10,000	2	5
10,000-20,000	6	16
20,000-30,000	25	66
>30,000	5	13
Marketing		
Market	**Frequency**	**%**
Hotels	13	34
Restaurants	18	48
Other clients	7	18

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The tables No 4 present data on egg production and marketing patterns in rural poultry farming, offering valuable insights into the socio-economic dynamics of this agricultural sector.

In terms of production, the data reveals that the majority of poultry farmers (66%) produce between 20,000-30,000 eggs, indicating a medium-scale operation size is most common in rural areas. A smaller proportion (16%) operates at the 10,000-20,000 egg production level, while only 5% produce at the lower range of 5,000-10,000 eggs. Notably, 13% of farmers achieve production levels exceeding 30,000 eggs, suggesting some successful scaling of operations in the rural context.

The marketing data provides interesting insights into the distribution channels for these eggs. Restaurants emerge as the primary market, accounting for 48% of sales, followed by hotels at 34%. This strong presence in the hospitality sector indicates that rural poultry farming plays a significant role in supporting local tourism and food service industries. The remaining 18% of sales go to "Other clients," which might include local retail markets, individual consumers, or small businesses.

The distribution pattern suggests a well-established commercial network between rural poultry farmers and the hospitality sector, potentially contributing to rural economic development through stable business relationships. This market structure also implies that rural poultry farmers have managed to integrate themselves into formal business supply chains, moving beyond traditional informal market systems. Such integration can lead to more stable income streams and better economic outcomes for rural communities.

These findings indicate that poultry farming in rural areas has evolved into a structured business activity with clear market orientations, contributing significantly to rural socio-economic development through both production activities and established marketing channels.

3.5. Management Practices

Table 5: production system used in poultry farming

Production system		
Production system	**Frequency**	**%**
Semi-intensive	6	16
Intensive	32	84
Feed practices		
Problem	**Frequency**	**%**
Maize and Maize bran	22	58
Maize and Rice bran	10	26
Maize	6	16
Use of medicines in poultry farming		
Use of medicines	**Frequency**	**%**
Yes	36	95
No	2	5
Cleaning of poultry cage		
Period of cleaning	**Frequency**	**%**
4 times per month	20	53
2 times per month	15	39
Sometimes	3	8

This table 5 reveals important insights into the management practices adopted by rural poultry farmers, which directly influence their economic success and contribution to rural development. The strong preference for intensive farming systems (84%) over semi-intensive methods (16%) indicates a significant shift towards modern, commercial-scale production methods, suggesting that farmers are treating poultry farming as a serious business venture rather than a subsistence

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activity. The feed practices demonstrate a clear reliance on maize-based feeds, with 58% using maize and maize bran, 26% using maize and rice bran, and 16% using maize alone. This standardization of feed practices indicates the development of consistent farming methods, though it also suggests potential vulnerability to maize price fluctuations, which could impact farm profitability and rural economic stability.

The near-universal adoption of medicines (95%) reflects a professional approach to disease management and animal health, which is crucial for maintaining productive and profitable operations. This high percentage suggests good access to veterinary services and an understanding of their importance in modern poultry farming. The cleaning practices are particularly telling, with 53% of farmers cleaning four times per month and 39% cleaning twice monthly, indicating strong adherence to hygiene protocols. Only 8% report irregular cleaning ("sometimes"), suggesting that most farmers understand the importance of sanitation in successful poultry operations. These management practices collectively demonstrate a professionalization of poultry farming in rural areas, which contributes to its reliability as a source of income and its potential for driving rural economic development through sustainable business practices.

3.6. Economic Impact

Table 6: Achievements gotten by respondents through poultry farming

Economic benefits		
Achievements	**Frequency**	**%**
To find basic needs (food, clothes, house)	11	29
To pay medical insurance	10	26
To pay school fees for children	9	24
Able to make savings	5	13
To find investment for business	3	8

The table no 6 presents data on the economic benefits derived from poultry farming in rural areas, highlighting how this agricultural activity contributes to various aspects of farmers' socio-economic wellbeing.

The data reveals that meeting basic needs is the primary economic benefit, with 29% of farmers indicating they can provide for fundamental requirements such as food, clothing, and housing through their poultry farming income. This suggests that poultry farming serves as a crucial means of sustaining basic living standards in rural communities.Healthcare accessibility appears as the second most significant benefit, with 26% of farmers able to pay for medical insurance through their poultry farming income. This is particularly noteworthy as access to healthcare can be a significant challenge in rural areas, and the ability to maintain medical insurance represents a substantial improvement in quality of life.Education also emerges as a key benefit, with 24% of farmers able to pay school fees for their children. This indicates that poultry farming is contributing to long-term social development by enabling access to education for the next generation, potentially breaking cycles of poverty and creating opportunities for upward social mobility.

The data also shows that 13% of farmers can generate enough surplus income to make savings, while 8% can find investment capital for business expansion. Though these percentages are lower, they demonstrate that poultry farming can, in some cases, move beyond subsistence-level benefits to create opportunities for wealth accumulation and business growth.Overall, these findings indicate that poultry farming plays a multifaceted role in rural development, not only supporting immediate needs but also enabling investments in health, education, and business growth, thereby contributing to sustainable socio-economic development in rural areas.

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3.7. Income Impact.

Table 7: Incomes gotten before and after making poultry farming per year.

Income	Before		After	
	Frequency	%	Frequency	%
100,000- 500,000 RWF	21	55	0	0
500,000- 1,000,000 RWF	14	37	4	11
1,000,000- 3,000,000 RWF	3	8	28	74
3,000,000- 5,000,000 RWF	0	0	5	13
>5,000,000 RWF	0	0	1	2
Total	**38**	**100**	**38**	**100**

The table presents a compelling comparison of income levels before and after engaging in poultry farming, measured in Rwandan Francs (RWF), demonstrating significant economic transformation in rural areas.

Prior to poultry farming, the majority of respondents (55%) were earning between 100,000-500,000 RWF, while 37% earned between 500,000-1,000,000 RWF, and only 8% reached the 1,000,000-3,000,000 RWF bracket. Notably, no respondents earned above 3,000,000 RWF in this period, indicating relatively low income levels across the sample.

The "after" data reveals a dramatic shift in income distribution following involvement in poultry farming. Most striking is the complete elimination of the lowest income bracket (100,000-500,000 RWF), suggesting that poultry farming has effectively lifted all participants above this poverty level. The majority of farmers (74%) now earn between 1,000,000-3,000,000 RWF, representing a substantial increase in income for most participants. Furthermore, 13% now earn between 3,000,000-5,000,000 RWF, and 2% have reached earnings above 5,000,000 RWF – income levels that were previously unattained.This transformation in income distribution strongly indicates that poultry farming has served as an effective vehicle for economic advancement in rural areas. The shift from predominantly lower income brackets to significantly higher earnings suggests that poultry farming not only provides sustainable income but also has the potential to create considerable wealth in rural communities. This upward mobility in income levels likely contributes to improved living standards, greater financial security, and enhanced capacity for investment and savings among rural farmers.The consistent total number of respondents (38) before and after adds credibility to the comparative analysis, showing clear evidence of economic progression within the same sample group through poultry farming activities.

3.8. Profit Levels.

Table 8: profits levels

Level of profit	Frequency	%
Very good	6	16
Good	30	79
Poor	2	5
Total	**38**	**100**

The overwhelmingly positive assessment of profits (95% rating good or very good) validates the economic viability of poultry farming as a rural enterprise.

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3.9. Socio-Economic Accessibility.

Table 9: socio-economic indicators accessibility

Socio-economic indicators	Frequency	%
Market	29	76
Schools	32	84
Hospitals	33	87
Health Insurance	38	100
Employment	31	82

This table 9 reveals the significant impact of poultry farming on key socio-economic indicators in rural areas, demonstrating its role as a catalyst for broader community development. The most striking finding is the universal access to health insurance (100% of respondents), suggesting that poultry farming provides sufficient income stability for farmers to maintain healthcare coverage for their families. The high accessibility to hospitals (87%) and schools (84%) indicates that poultry farming enterprises are predominantly located in areas with essential social services, or that the income from poultry farming enables families to access these crucial facilities.

3.10. Challenges and Solutions

Table 10: Constraints

Challenges		
Constraints	**Frequency**	**%**
High cost of inputs	24	63
Mortality of chicks	9	24
Inadequate skills in poultry farming	5	13
Solutions		
Suggestions	**Frequency**	**%**
Availability of inputs at low cost	20	53
Facilities to find trainings.	10	26
To use modern techniques and technology	8	21

This table no 10 provides crucial insights into the challenges and proposed solutions in poultry farming, directly impacting its contribution to rural socio-economic development. The primary challenge faced by farmers is the high cost of inputs, affecting 63% of respondents, which significantly impacts the profitability and sustainability of their operations. This is followed by chick mortality at 24%, which represents a direct economic loss and threatens farm viability. The presence of inadequate skills among 13% of farmers suggests a need for better training and capacity building in the sector.

The proposed solutions demonstrate a clear understanding of these challenges and their impact on rural development. More than half of the respondents (53%) suggest making inputs available at lower costs, which would improve profit margins and make poultry farming more accessible to rural entrepreneurs. The emphasis on training facilities (26%) indicates recognition of the need for skill development to improve farm management and

reduce losses. Additionally, 21% of respondents advocate for the adoption of modern techniques and technology, suggesting an awareness that technological advancement could enhance productivity and efficiency.

These findings are particularly relevant to rural socio-economic development as they highlight both the obstacles to successful poultry farming and potential pathways for improvement. Addressing these challenges, particularly through cost reduction and skill enhancement, could significantly boost the sector's contribution to rural economic growth, job creation, and poverty reduction. The solutions proposed are practical and directly aligned with the goal of making poultry farming a more viable tool for rural development.

IV. CONCLUSION

In conclusion, poultry farming plays a significant role in the socio-economic development of rural areas, particularly in Rwanda. The study conducted in the Rusororo Sector of Gasabo district revealed that poultry farming contributes to improved household income, access to education, healthcare, and employment opportunities. The majority of farmers have adopted intensive farming methods, demonstrating a shift toward commercial poultry production. Income levels have significantly increased among farmers, allowing them to meet basic needs, pay for education and healthcare, and even invest in other non-farm activities. However, challenges such as high input costs, chick mortality, and inadequate training hinder further growth. Addressing these issues through cost reduction, skill development, and the adoption of modern farming techniques can enhance productivity and further improve rural livelihoods. Overall, poultry farming serves as an effective means of poverty alleviation and economic empowerment in rural communities.

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