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An Economic Analysis of the Impact of Contract Farming of Broccoli Production on Youth Development: A Case of Musanze District

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Abstract: Majority of population engaged in agricultural activities are more aged and still predominantly practise traditional and subsistence farming systems. The decreasing number of young people involved in farming as a business is a national signal of distress in the agricultural sector. This is already negatively influencing the economy. The global objective of this paper was to analyse the impact of contract farming of broccoli production on youth development. The study was conducted in Musanze district, Muko, Remera, Kinigi, and Nyange sectors. A multi-stage sampling technique, purposive sampling, and stratification random sampling were employed due to the location and distribution of both individuals and cooperatives farmers growing this crop. Hundred and twenty 120-broccoli farmers were interviewed. The results indicated that age, education level, extensions services, amount of fertilisers used, contracted price, improved seeds used, irrigation system employed by respondents growing broccoli showed a positive influence on quantity of production of broccoli as expected and were statistically significant at ($P<0.01$). Experience of grower, pests and diseases control had positive influence to the quantity of broccoli produced at ($P<0.05$). The land reserved to broccoli farming had not significantly influenced broccoli production in the study area while labourers had a negative influence on broccoli production in study area. The results of the study indicated that contract farming system in agriculture sector contributed much more on the development of youth in Rwanda particularly in study area. It has contributed on youth income increase, jobs creation, inputs provision, access to the extension services, access to information, reduced the youth migration. However, the results also indicated the major constraints faced by youth to be involved in contract farming such as lack of support, Lack of access to credits, Lack of access to land, Lack of farming experience, Lack of information, Lack of youth policies, Transaction costs, Shortage of production, Limited technical knowledge, Lack of decision-making, and Lack of market accessibility.

Keywords: Economic Analysis, Impact, Contract Farming, Broccoli Production, Youth

1. Introduction

Agriculture plays a fundamentally important role in the economic growth and development prospects of a vast majority of developing countries including Rwanda where this sector is a main source of livelihood, providing direct employment. In Rwanda, the sector occupies 79.5 percent of the labor force, contributes one-third of GDP and generates more than 45.0 percent of the country's export revenues. Agriculture is also important for national food self-sufficiency, accounting for well over 90.0 percent of all food consumed in the country [16, 38].

Though the Rwanda's agriculture sector has been growing at 5% on average during the past five years (2015 to 2019), the sector is still characterized by different challenges, including scarce land, abundant labour and small-scale production with limited use of mechanization. In general, fragmentation characterizes agricultural production. Currently, the Rwanda Government is promoting specialized production and provided financial support to larger-scale operations [27]. Small-scale farming remains the main source of livelihood for most households. Horticulture accounted for an estimated 3.2 percent of 2013 national GDP and 9.7 percent of agricultural GDP [27].

The sector is characterized by low productivity due to limited access to the relevant inputs and services, poor management and inadequate skills. The subsistence approach to agriculture rather than commercialization coupled with limited capital investment in the sector further exacerbates the problem. In addition, the limited value addition and domestic processing of agricultural commodities in the sector has a specific constrain for the youth making it less profitable where most of agricultural produce are either sold in its raw form in the local markets without any form of value addition.

In 2018, the Ministry of Agriculture and Animal Resources adopted two key important policy documents, which are the new agriculture policy and the fourth strategic plan for agriculture transformation (PSTA 4). These two documents indicate areas of focus needed to transform the sector from a subsistence sector to a modern, commercial sector, by tackling the above-mentioned issues. PSTA 4 focuses on promoting youth entrepreneurship in agribusiness, through skills development and access to finances. The Gender and youth mainstreaming strategy also emphasizes on the need of Supporting youth engagement and participation in the agriculture sector.

Broccoli (*Brassica oleracea var. italic*) is one of the many vegetables grown in Rwanda. It has its origins in Italy and this vegetable is considered one of the most nutritious vegetables in the world. The vision of broccoli farmers in Rwanda was to produce the highest quality products for export markets. This vision was mostly achieved because of the favourable natural environment for broccoli production fertile soil and year-round high rainfall water.

Global population is expected to increase from 7 billion to 9 billion by 2050, with youth (aged 15-24) accounting for about 14% of this total [22]. With the rapidly rising population, there is an equal increase in demand for food hence worsening the global food insecurity especially in developing countries. Youth unemployment rate in Sub-Saharan Africa was 11.8% in 2012 and was projected to drop to 11.7% in the years to come. While agriculture plays a vital role in Africa's economic growth and social improvement contributing the highest percentage of the workforce population (about 65%, and about 30% of GDP in most African Countries), the current trend of youth participation in the sector is on the decline [1].

The agriculture sector is critical in creating employment and uplifting the living standards of the Rwandan people. Considering high rate of youth unemployment and underemployment, the agricultural sector offers multiple livelihood and employment opportunities. The decreasing number of young people involved in farming business is a national signal of distress in the agricultural sector. This is already negatively influencing the economy development.

In Rwanda, according to the 2019 labour force survey, unemployment rate is higher among youth (19.4%) compared to adults of 31 years and above (12%), and above the overall national unemployment rate of 15.2% [29]. Youth unemployment is primarily a problem of labour demand. The Rwanda economy tries to create new jobs but are not sufficient to cater for the increasing number of young labour market entrants. The youth unemployment challenge is therefore primarily a challenge of economic growth and job creation in Rwanda. It requires bold and coordinated efforts to stimulate economic transformation and business sector development [37].

Despite the interventions, agricultural sector is yet to fully exploit the potential of the youth and remains largely unattractive for them. In Sub-Saharan African the main challenges faced by youth have been identified including negative perception to agricultural activities, large population of youth have inadequate skills, knowledge and information, limited participation of youth in agricultural innovations, limited access to land for agribusiness, limited access to financial services**,** limited access to market information, inadequate policies to support youth in agri-business, and low levels of value addition. Smallholder farmers are subject to market access problems, and as consequence, they receive relatively low prices for their produce. In addition, market risk in terms of fluctuating prices is a great problem concerning smallholders in SSA countries [2].

In Rwanda, main challenges faced by the youth with regards to the agriculture sector are mainly limited land availability, lack of collateral and other productive resources needed for agriculture, low levels of financial literacy, poor access to information [13]. Efforts to fight poverty and promote food security in developing countries need to take into account that agriculture remains the major livelihood for large numbers of poor farmers and rural families worldwide. Smallholder agriculture in particular is the main source of the food consumed in many developing countries, engaging some 500 million farmers globally and providing an income source for an estimated two billion people [19].

According to [9], "Contract farming usually follows one of

five broad models, depending on the product, the resources of the sponsor (the buyer) and the intensity of the relationship between farmer and sponsor that is necessary." While CF schemes may take various forms and involve different actors, a formal contract concluded between the farm and an agribusiness firm is common to all types of schemes, thus forming a distinctive difference.

Based on the foregoing, the Strategies and approaches have been developed for youth to increase their engagement in agribusiness and related value chains. Among these, the question of whether contract farming (CF) could be an effective institutional mechanism to enhance prospects for the inclusion of small farmers in modern market channels stands out as one of special relevance. Contract farming has been instrumental in providing farmers access to supply chains with market and price stability, as well as technical assistance, especially in the developed countries. For low-income farmers, production input and farm investment on credit are often provided by firms [3].

Contract farming has been an important step to help small producers gain access to resources and improve competitiveness. By linking farmers to the value chain, CF offers a path from subsistence to commercial agriculture for some smallholders, and can provide access to credit, technology and markets. Agribusinesses, whether parastatal or private, have the capital and resources needed. For the agribusiness, CF also obviates the need to acquire land and will significantly reduce urban youth migration which many times increase food price fluctuation.

Theoretically, CF is often explained using the lens of new institutional economics (NIE) or, more specifically, transaction cost economics (TCE). Central to NIE and TCE is the idea that all transactions between economic actors involve transaction costs. These costs relate to finding a market/customer, negotiating, signing a contract, controlling contract compliance, switching costs in case of premature termination of the contract, and all lost opportunities. In order to economize on production and transaction costs, transaction parties (bilaterally or unilaterally) choose the most efficient institutional and organizational structure [36]. The Specific objectives of the study were identified as follow:

1. To identify social economic factors influencing broccoli production in study area.
2. To determine the impact of broccoli contract farming on youth development in study area.
3. To determine the constraints faced by youth to be involved in broccoli contract farming.

2. Review of Literature

2.1. Review of Literature

Small farms are frequently the most efficient agricultural producers, and have advantages over large farms in terms of labor related transaction costs, in particular supervision and motivation. However, small farms often suffer from capital constraints, and a lack of capacity to adopt technological innovations. Moreover, and as we have seen, smallholders often lack the ability to meet exacting standards from actors further down the value chain. Contract farming can overcome the limitations it can deliver the scale benefits typically associated with large-farm production systems. Economies of scale through the firm decrease the cost of inputs and transport. In addition, firms have a comparative advantage in marketing and technical knowledge, and product trace ability and quality [17]. In terms of poverty reduction, contracting with smallholders can reap large dividends: small farms are generally owned and operated by the poor, often using locally hired labor, and often spend income within nearby locales, creating multipliers [17]. Overall, there are good reasons why contract farming with smallholders can succeed.

Contract farming (CF) is defined as forward agreements specifying the obligations of farmers and buyers as partners in business. Legally, farming contracts entail the sellers' (farmers') obligation to supply the volumes and qualities as specified, and the buyers' (processors/ traders') obligation to off-take the goods and realise payments as agreed. Furthermore, the buyers normally provide embedded services [19].

According to [10], "Contract farming usually follows one of five broad models, depending on the product, the resources of the sponsor (the buyer) and the intensity of the relationship between farmer and sponsor that is necessary." While CF schemes may take various forms and involve different actors, a formal contract concluded between the farm and an agribusiness firm is common to all types of schemes, thus forming a distinctive difference.

1) The main types of contact farming are as follow:
2) Market specification (or marketing) contract: Pre-harvest farmer-contractor agreement on terms of delivery (e.g. varieties, qualities, quantities/ quota, time of delivery) that are crucial for farmers' production decisions. The farmers maintain most of the decision rights over farming activities and farm assets. The farmers bear the production risk; the marketing risk is partly transferred to the buyer [6].
3) Production management contract: The farmers delegate a substantial part of decision rights over production/ harvesting practices to buyers by agreeing to follow contractor is farming specifications. The contractor specifies and inspects production processes and bears most of the marketing risk [6].
4) Resource providing contract: The contractor provides inputs as in-kind credits with costs being recovered upon product delivery. The level of transfer of decision-making and risks from farmers to buyers ranges from production management by farmers up to full production management by contractors [6].

The surveys conducted by IFAD in Kenya, Zambia and Mozambique to study agricultural marketing companies as sources of smallholder credit in eastern and southern Africa. The study showed that credit by agri-marketing companies is an important source of funding for small-scale producers in all the three surveyed countries [18].

On their study FAO and NAMC "contract farming in Africa" used two case studies of Seed Companies in Kenya "FRESHCO Seeds", and Mali "Faso Kaba". the case studies show that contract farming not only promote agricultural development in modern and commercial context with regards to rural farmers but also, the advantages farmers get through direct link to commercial agriculture and agribusiness in which one among many advantages they source is "provision of inputs and credits" [11].

In his study (Bellemare, M.) in Madagascar found that CF had a significant positive impact on total household income, net household income, income net of contract farming, income per adult equivalent and household income from livestock [4]. [6] also found that a CFA with certified organic coffee farmers in Uganda increased gross revenue and net profit from coffee [21], compared the CF profits of four commodities with profits from alternative markets using cross-sectional survey data in India's Punjab state.

IFAD Studied contract farming between supermarkets and vegetable and fruit growers in Nicaragua using historical data spanning eight years and concluded that the contact farming did not benefit small farmers. They found that farmers contracted by domestic supermarkets were receiving the same mean prices paid by traditional markets. While international supermarkets provided insurance against volatile prices, farmers were paid disproportionately low mean prices [20].

2.2. Theories of Contract Farming

Institutional economics approach to contract farming. Theoretically, contract farming is often explained using the lens of New Institutional Economics (NIE) or, more specifically, Transaction Cost Economics (TCE). Central to NIE and TCE is the idea that all transactions between economic actors involve transaction costs. These costs relate to finding a market/customer, negotiating, signing a contract, controlling contract compliance, switching costs in case of premature termination of the contract, and all lost opportunities.

This study will focus on transaction cost theory. Transaction costs are overwhelmingly present in rural economies, particularly in developing countries, not only because of missing input markets and substantial information asymmetries in output markets, but also because of the small scale of most farming production units compared with the size of their trading and processing customers. In order to economize on production and transaction costs, transaction parties (bilaterally or unilaterally) choose the most efficient institutional and organizational structure [36].

In neo-classical approaches, transaction costs are ignored since it is assumed that prices within perfectly competitive spot markets carry all the information that economic actors require to make decisions [31]. Transaction costs are influenced by the characteristics of the transaction, product and environment within which transactions occur [5]. In his study identified asset specificity, frequency and uncertainty as the three most important characteristics of transactions that alter the cost of engaging in an exchange [28].

An agribusiness firm incurs very high transaction costs when engaged in informal markets in developing countries where quantity, quality and regularity in delivery are unpredictable owing to high levels of environmental and behavioral risk [9]. These uncertainties discourage investment in assets required to add value to products. The seasonality and perishability of agricultural products also increases the complexity of transacting, particularly when markets require specific quality standards and credence attributes in products. Complexity increases transaction costs by increasing the uncertainty of supply, by increasing information and monitoring costs, by increasing the need for assets that have little value in alternative uses, and by increasing the cost of renegotiating incomplete contracts *ex post* [5].

At the same time, smallholders face high transaction costs when selling their products in thinly traded informal markets where reliable information is scarce and marketing costs are high due to poor physical and legal infrastructures. Although [33] posit that, the higher transaction costs and investment constraints would tend to limit smallholder participation in contract farming.

2.3. Conceptual Framework

The reviewed theory and empirical literatures provide insights on the contributions of contract farming on agricultural on youth development in Rwanda. The contributions observation is identified based on contract farming theories such as Transaction cost and New Institutional Eeconomics (NIE). The independents and dependent variables are well summarized in figure below.

3. Methodology

3.1. Study Area

The study will be conducted in Musanze district, Muko, Remera, Kinigi, and Nyange sectors. The sectors were purposively selected due to the location and distribution of both individuals and cooperatives farmers growing this crop under contract with Garden fresh company Lt and those who grow without contract farming.

3.2. Sampling Design

The targeted population are broccoli farmers located in Musanze district in Northern Province of Rwanda. A multi-stage sampling technique, purposive sampling, and stratification random sampling will be employed. The multi-staged sampling will be used because it took into cognizance the delineation of the study area into districts, sectors, wards and villages scattered in a wide geographical area [28], cited by [23].

A purposive sampling technique was used to select broccoli-cultivating divisions in Musanze district, where broccoli individual farmers, groups, and cooperatives are currently more active. The random sampling will be used to select broccoli farmers from their respective primary cooperative societies. Then broccoli farmers were stratified according to the land size of broccoli grown.

3.3. Sample Size

The study aimed to interview 120 broccoli farmers. This sample is made of 40 youth broccoli farmers from cooperatives with contract farming, 40 broccoli farmers from cooperatives with no contract farming and 40 individuals' and 40 individuals outside of cooperative.

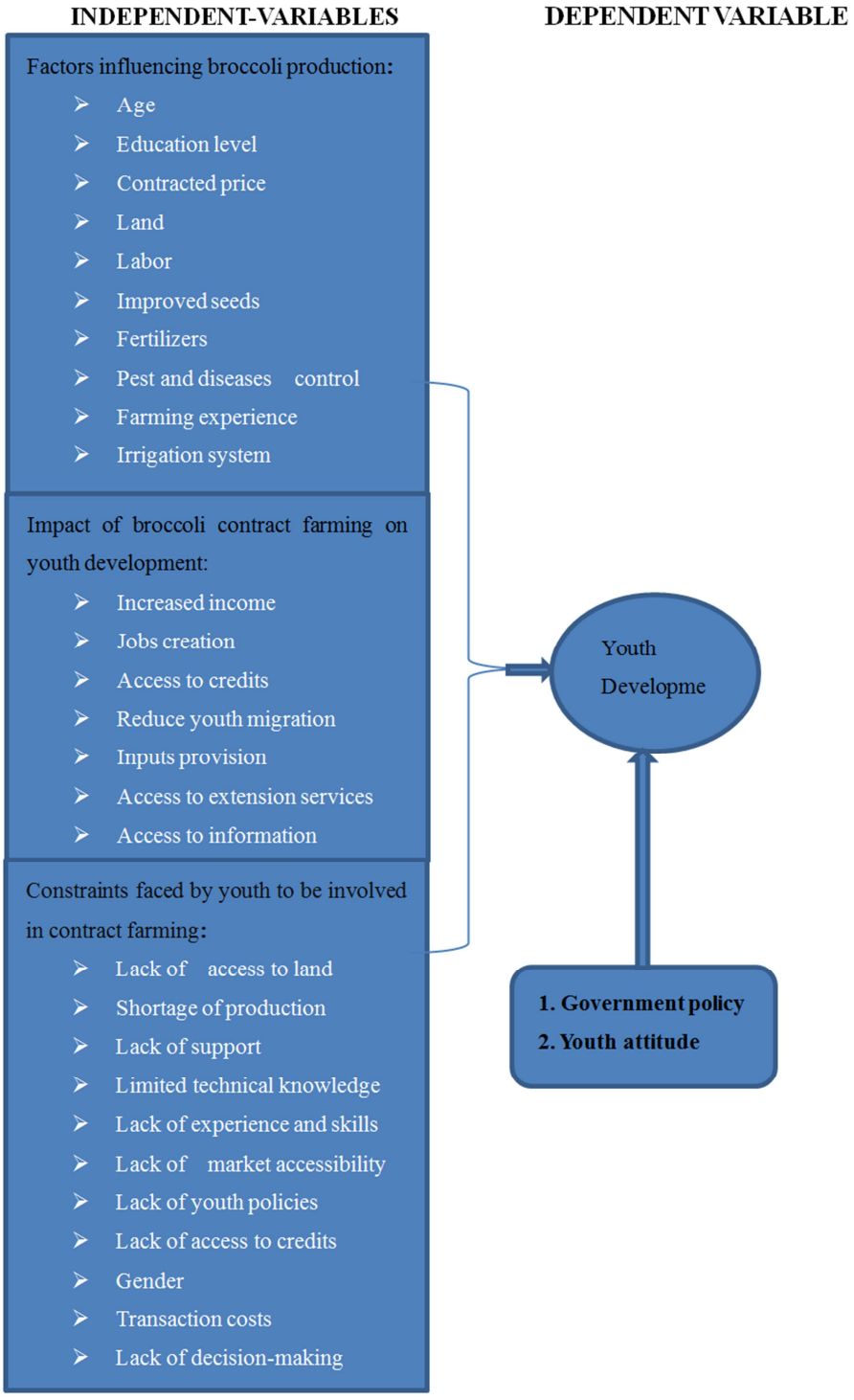

Figure 1. *Conceptual framework.*

3.4. Data Collection

The informal and formal surveys such as focus group discussions that were carried out to get an in depth understanding of issues related to all the primary cooperatives. The formal survey involved personal interviews using pre-tested questionnaire. The information collected included socio-economic data, organization of primary cooperatives, nature of contracts, farming inputs and practices as well as outputs and productivity. Secondary data

significant to this study were collected to complement the information obtained from the sample farmers. Reports and other documentary materials were obtained from the relevant institutions such as local and central government. The secondary data aimed at forming an overview on what has been done in relation to the interest of the study and identified gaps in information.

3.5. Data Analysis

Data was analyzed using statistical package for social scientists (SPSS version 20) and STATA vision 13 computer program both descriptive and quantitative analysis were carried out.

3.6. Model for Regression Analysis

Regression analysis was applied to assess the significance of responsiveness of production yield to the factor of production and contract farming characteristics for the broccoli farmers in contract farming. To analyze the estimated production of broccoli yield, Cobb-Douglas production function model below was adopted. The regression coefficients equal the elasticities of output with respect to the various input used in the production. The elasticities are also independent of the unit of measurements.

$$Y = AX\iota^{\beta i}\mu \quad (1)$$

Where:

A=constant term of the regression

Y_i=total output of broccoli of the i^{th} farm (kg/ha)

$_{i\,i}$=elasticity of production with respect to the i^{th} input

X_i=i^{th} input used in the production process

μ=is the error term.

The following is the general form of the Cobb-Douglas production function that was adopted in this study. For the sake of estimation, the equation was log transformed to become a linear form. The following linear model was specified for the purpose of statistical estimation of the parameter of the Cobb-Douglas production function.

$$lnY=\ln A +_{\beta 1} ln\ \text{LAND} +_{\beta 2} ln\ \text{LAB} +_{\beta 3} \ln SEED +_{\beta 4} \ln FERT +_{\beta 5} \ln PEST +_{\beta 6} \ln EXP +_{\beta 7} ln\ \text{IRR} +_{\beta 8} ln\ \text{CP} + U... \quad (2)$$

Where:

Ln=natural logarithm

Y=Yield production of broccoli (kg/ha)

LAND=Land area reserved to broccoli vegetables (Ha)

LAB=Hired labor (man per day)

SEED=Improved seeds (Kg/ha)

FERT=Fertilizers (kg)

PEST=pesticides applied (litter/ha)

EXP=Experience in broccoli farming (Number of years)

IRR=Irrigation system used (1=yes, 0=no)

CP=Contracted price (Rwf/kg)

With Company in contract (LC) as dummy variable and *U* is the error term while

β_1-β_8=are the regression coefficients of factors inputs.

4. Results and Discussions

The results from 120 respondents sampled in this study are. Among the interviewed respondents, 69 (57.5%) were female and 51 (43.5%) were male. This indicated that females in study area are in agriculture sector than male and it indicated female understand contract farming system in horticulture sector than men. Men prefer other sectors that are traditional commercial than horticulture. For this reason female are currently profit contract farming system than men. The results also showed that in study area the majority of respondents are presented by 47 (39, 2%) with age ranged between 31-40 years followed by the range of 41-50 years with 40 (33.3%). The majority of the respondents were within the working age class. It was also indicated that youth in agriculture contract farming is currently at very low level (15.8% of respondents were less than 30 years old). This is because this class is composed of respondents with no own land for agriculture and other support from oldest persons. In other word, this class do not prefer agriculture sector due to low return from this sector. Based on results the majority in study area indicated that 56 (46.7%) of respondents had primary school education followed by secondary with30 (25%). The university represent 10 (8.3%) while illiterate represent 24 (20%). This means that in study area respondents will be more understand contract farming system quickly because many of them know to read and write which facilitate them to get innovations than the area where respondents are illiterate.

Table 1. *Social economics characteristics of sampled respondents.*

Descriptive characteristics	Frequency	Percentage
Gender of respondents		
Male	69	57.5
Female	51	42.5
Total	120	100
Age		
≤ 30	19	15.8
31-40	47	39.2
41-50	40	33.3
≥ 51	14	11.7
Total	120	100
Education level		
Illiterate	24	20
Primary	56	46.7
Secondary school	30	25
University	10	8.3
Total	120	100

4.2. Estimation of Production Function in Broccoli Production in Study Area

The model summary presented in Table 2 shows the linear regression result of the Cobb-Douglas production function for broccoli farmers in study area. The production model was used to determine the factors influencing broccoli production in study area.

The results indicated that the R-square of the production model shows that observed independent variables were able to explain about 77.7% of the factors that influence broccoli

production. The return to scale parameter which is summations of coefficients for all variables in the production model was 1.154 and is significantly more than a unit, which indicated increasing returns to scale, implying the efficiency of variables included in the broccoli contract farming production model. The results indicate the value of the constant in the analysis being very high 16.178 implying the predicted mean level of broccoli production if units of independent variables used in broccoli production were valued to zero.

Table 2. *Regression Analysis Results for Sampled Broccoli Farmers.*

Variables	Coefficient	Standard Error	t	P-value
Constant	16.178	3.45	4.689	0.000
Age	0.003	0.008	0.375	0.005
Education	0.052	0.136	0.382	0.000
Contracted price	0.059	0.133	0.444	0.003
Land	0.207	0.056	3.696	0.251
Labor	-0.009	0.007	-1.286	0.030
Improved seeds	0.033	0.008	4.125	0.000
Fertilizers	0.560	1.109	0.505	0.007
Pest and diseases control	0.063	0.032	1.968	0.059
Irrigation system	0.097	0.062	1.564	0.001
Farmers experience	0.085	0.070	1.214	0.038
Extension services	0.004	0.010	0.400	0.000
Number of Obs=120	Prob > F=0.0000			
F (1, 108)=38.75	R-squared=0.776			

The results indicated that age of respondents growing broccoli had a positive influence on quantity of production of broccoli as expected and was statistically significant at (P<0.01). It implies that older farmers performed better compared to young farmers due to their experience in agriculture sector as well as their access to resources to practice farming activities. A few number of young people in the study area were only involved in broccoli farming as hired laborers.

The results revealed that education level of respondent had a positive influence on the quantity of broccoli produced and was statistically significant (P<0.01). This imply that majority of broccoli growers had basic education needed to facilitate them on new broccoli farming technologies offered by extension officers and also quickly understanding the importance and procedure of contracting farming agreements. Education level have positive impact on sustainable use of farm inputs as well as the efficiency production of cultivated crops. Experience of grower has been cultivating broccoli under contract farming had positive influence to the quantity of broccoli produced at (P<0.05). The results indicated that the number of years spent in broccoli production under the contract farming had a positive impact on increasing production yields. The results showed that the amount of fertilizer used by broccoli grower in broccoli production had a positive significant influence on quantity of yield produced by farmers under contract farming (P<0.01). The result indicates that as amount of fertilizer used increases the yield of tobacco.

The land reserved to broccoli farming had not significantly influenced broccoli production in study area. This implies that production should only depend on big farm while the small farm should more produce high yield due to different factors. The results also revealed that laborers had a negative influence on broccoli production in study area. However, the results imply inefficient use of labor as broccoli farmers in the study incurred higher labor costs due to broccoli being high labor intensive crop. The results revealed that the extension services of respondent had a positive influence on the quantity of broccoli produced and was statistically significant (P<0.01).

The contract price between broccoli farmers and companies had positive influence on broccoli production and was statistically significant at 1% level. This implies that farmers know the premium price for their product before the marketing period which influences them to cultivate aiming to achieve that price hence getting high profit as better price stimulates efficient production. The results showed that the improved seeds used by farmers had a positive influence on the quantity of broccoli produced and was statistically significant (P<0.01). The results indicated that the irrigation of broccoli farm regularly by farmers had a positive influence on the quantity of broccoli produced and was statistically significant (P<0.01). This means that the quantity and quality of broccoli production is mean depend on how much farmers irrigate the farm.

The findings showed that pest and diseases control for farmers had a positive influence on the quantity of broccoli produced and was significant (P<0.05). It implies that majority of broccoli growers had basic good agricultural practice in pests and diseases control and help them to harvest high production needed in both quality and quantity. This also was achieved due to the farm inputs provides by the company contractor and the extension services offered by agronomist or technicians. This was the case in certain Indonesian villages, where contracting enabled input and credit markets to develop, and stimulated entrepreneurial farmers to cultivate oil palms independently of any processor [14]. Contracting may also enable the agribusiness to access subsidized credit from donors [29].

CF must be of benefit to them. They will farm under contract only if the expected gains exceed a certain utility

threshold, which is the opportunity cost [3]. In addition to providing a market, contracting can reduce price risk, if farmers can rely on a guaranteed price at harvest, rather than the spot price. This risk management is a fundamental motivation for those farmers whose crops face volatile prices [24]. Contract farmers have significantly higher incomes than other farmers, ranging from 10 percent to as much as 100 percent higher in certain countries [34].

4.3. Impact of Broccoli Contract Farming on Youth Development

The results of the study indicated that contract farming system in agriculture sector contributed much more on the development of youth in Rwanda particularly in study area. In support of results in figure 2 above, (100%) of respondents sampled indicated that contract farming system in agriculture sector increased youth income. The respondents said that the difference in broccoli production output between contract and non-contract farmers is statistically significant. Output for contract farmers (9500kg/ha) is much higher than that of non-contract farmers (7500kg/ha). For this reason, productivity of labour is also higher and the net return is higher indicating the increase of income for youth. As the per capital incomes of youth increased in the extent that they can easily afford the basic needs it is the main indicator of youth development.

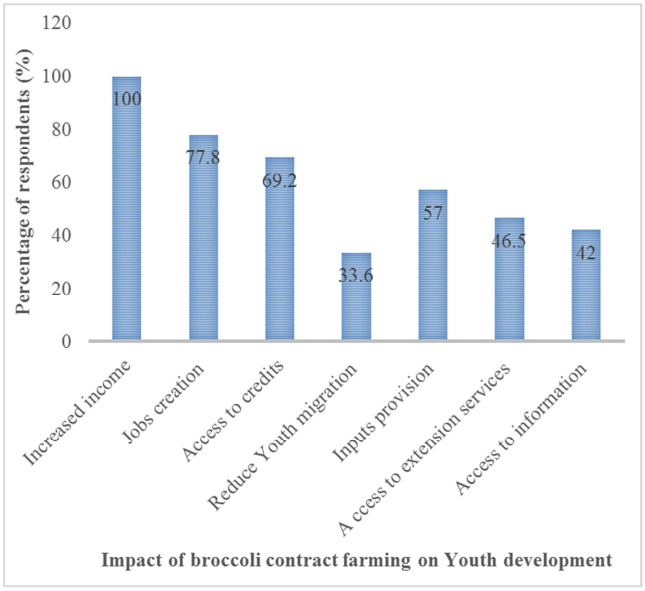

Figure 2. *Impact of broccoli contract farming on youth development.*

In this study (77.8%) of respondents asked indicated that contract farming created different jobs to youth, which improved youth livelihood as also a good indicator of youth development. People in study area argued that when there is contract farming, agriculture losses is directly reduced and youth should benefit from both contractor and farmers at the same time this facilitates them to better change the lifestyle as quickly as possible. It was revealed that contract farming facilitated youth to access the agricultural credits. It was represented by (69.2%). The results indicated that contract farming contributed to the inputs provision (57%), access to the extension services (46.5%), access to information (42%) and (33. 6%) reduced the youth migration in study area. For example, youth grow broccoli for export markets. This is because; youth are more facilitated by government as well as to reduce the number of employment in the country. In general, multinationals prefer to contract with larger farms because transaction costs are lower. For example the procurement policies of Nestlé are alleged to have forced 60 000 smallholder dairy farmers out of business in Brazil [34].

All above factors indicated the main impact of broccoli contact farming in the improvement and development of youth. Effective involvement of youth in agriculture sector will significantly eliminate hunger, reduces poverty through the increased production and productivity of agriculture sector. The study was supported by [15] who indicated that contract farming in developing countries has experienced mixed fortunes. Positive views maintain that contracts are a viable mechanism for incorporating small farmers into dynamic modern markets, in terms of substituting failing markets for credit, insurance, information, production factors, product outlets, and of diminishing transaction costs as well as enhancing technology transfer.

4.4. Constraints Faced by Youth to Be Involved in Contract Farming

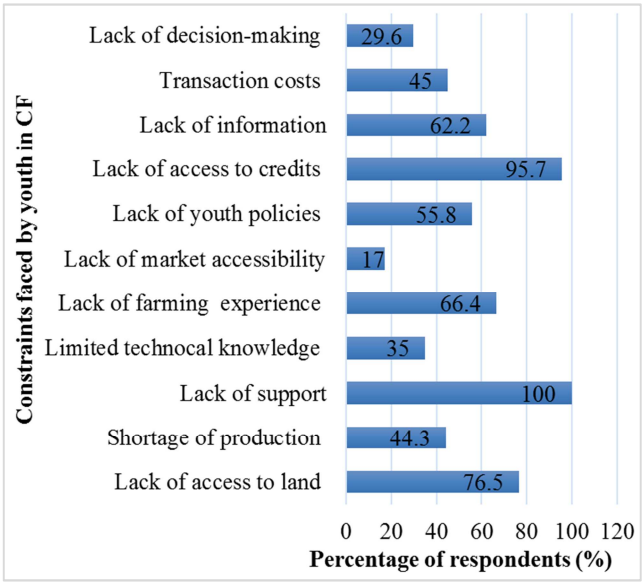

Figure 3. *Constraints faced by youth to be involved in contract farming.*

Agriculture production should be increased with the increase of youth involvement in agriculture sector try contract farming system, but different constraints limit a big number of youth to be involved in this sector. The results in figure 3 indicated that there are economic, social and environmental factors faced and significantly reducing rural youth involvement in agricultural production or agribusiness in Rwanda.

The principal challenge in the agricultural sector is ensuring

optimal involvement of youth in agriculture sector as well as to achieve food security, income generation, decent employment and jobs creation. The impact of youth involvement and participation in agribusiness contract farming and be evident in creation of youth employment, sustainable economic growth and in the reduction of poverty and malnutrition across the country. The major constraints faced by farmers under contract farming were lack of support (100%), Lack of access to credits (95.7), Lack of access to land (76.5%), Lack of farming experience (66.4%), Lack of information (62.2%), Lack of youth policies (55.8%), Transaction costs (45%), Shortage of production (44.3%), Limited technical knowledge (35%), Lack of decision-making (29.6), and Lack of market accessibility with (17%) respectively. These are major constraints faced by youth to be involved in contract farming in many developing countries including Rwanda.

This difficulty in accessing land is reflected in limited ambitions. When young female coffee and tea farmers in Rwanda were asked what they would be or be doing in 10 years' time if they had the choice, they largely focused on very modest agricultural projects [20]. In addition to land, credit is also seen as a major barrier for young people. More than 70 percent of young farmers surveyed stated that access to credit is their principa l challenge [21]. In Kenya smallholders cite the lack of capital and access to affordable credit as the key cause of low agricultural productivity [32].

Those constraints have negative impact on agriculture sector production and productivity and consequently hind the development of GDP of these developing countries through the increased of youth unemployment particularly in study area. The results further confirmed that, regardless of the difficulties in finding employment, the majority of rural youths preferred living in urban areas than the rural areas which consequently increase urban migration as well as the overpopulation of urban urea.

5. Conclusion and Recommendations

The global objective of this paper was to analyse the impact of contract farming of broccoli production on youth development. The results from the regression analysis indicated that age, education level, extensions services, amount of fertilisers used, contracted price, improved seeds used, irrigation system employed by respondents growing broccoli showed a positive influence on quantity of production of broccoli as expected and were statistically significant. Experience of grower, pests and diseases control had positive influence to the quantity of broccoli produced while the land reserved to broccoli farming had not significantly influenced broccoli production in study area while labourers had a negative influence on broccoli production in study area. The results of the study indicated that contract farming system in agriculture sector contributed much more on the development of youth in Rwanda particularly in study area. It was contributed on youth income increase, jobs creation, inputs provision, access to the extension services, access to information, reduced the youth migration. The results also indicated the major constraints faced by youth to be involved in contract such as lack of support, Lack of access to credits, Lack of access to land, Lack of farming experience, Lack of information, Lack of youth policies, Transaction costs, Shortage of production, Limited technical knowledge, Lack of decision-making, and Lack of market accessibility.

After the results of the study, the recommendations were formulated as follow:

1) Youth unemployment is primarily a problem of labour demand. The government of Rwanda should elaborate strategies increasing occupation to youth as well as to increase number of youth in agribusiness.
2) Considering high rate of youth unemployment the agricultural sector offers multiple livelihood and employment opportunities. Central and local governments should enhance the modern agriculture as well as to increase production return through innovative, commercially oriented and modern agriculture system.
3) The government should develop youth agribusiness strategy to address challenges that hinder youth to be involved in contract farming to provide effective participation of the youth in the sector.
4) The impact of youth engagement in agriculture is the motel of sustainable economic growth and in the reduction of poverty and malnutrition in developing countries. The government should increase strategies aimed at providing of new opportunities for youth in agriculture and its value chains.
5) The Ministry of Agriculture and animal resources create environment that motivate the realization of the youth engagement in Agricultural development initiatives.
6) In addition, the economic constraints facing youths in agriculture (lack of access to credit, low profitability, extension services, lack of support, etc.) should be examined through the proper policies establishment.

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