Research Note

Effect of Financial Resources in Agriculture Production of Nepal [1]

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Abstract

This study aims to assess the effect of different financial resources such as government expenditure, foreign grant, foreign loan and bank loan in agriculture production of Nepal. For this study six different productions: Wheat, Paddy, Sugarcane, Potatoes, Milk and Egg have been analysed. this study aims to cover the relation of the existing financial resources with the agriculture production using the secondary data from 2003 till 2014 Also related secondary data collected from previous research were analysed to verify the hypothesis and thus structuring the research work. The foreign grant and bank loans have both positive and negative impact on the agriculture production, as in some agriculture production it has significant positive relation whereas in some agriculture production it has negative relation. Out of all the financial resources the foreign loan provided in the agriculture sector has not been able to significantly impact the agriculture sector as none of the production is highly positively significant to the foreign loan. Hence, this study has analysed the different sources of financial resources and its effect on the agriculture production.

1. Introduction and Study Objectives

Nepal is a small, extremely divergent and landlocked country. Agricultural development is the foundation for the economic development in Nepal as one third of GDP is contributed by the Agriculture sector. Improvements in agricultural productivity are a fundamental precondition for sustainable agriculture growth and economic development (O'Donnell, 2010). The Ministry of Agriculture Development (2015) stated that the agriculture sector has been contributing 33.1

[1] **NB: It is merely a research note, and, therefore, may not meet all criteria of a research paper. -Ed.**

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percent of its GDP and more than 50 percent of its export depends on agriculture. Its topography determines that only less than 20 percent of its land is cultivable. It also highlights that this sector is a major source of food, income and employment for the great majority (65.7 percent of the population).

Despite Nepal being the predominantly subsistence-based agricultural society, the majority of the population is adapting itself with traditional systems which holds from achieving its true economic potential. The agriculture sector has been characterised by very low productivity. The adoption of improved technology is still at a very low level and there is a huge gap between current and the potential productivity of agricultural products across the various geographical domains. More than 30 districts of the country are suffering from food insecurity situations and the issue of poverty has always stood as a matter of serious concern of the day. The major reasons for current level of low agricultural development are insufficient investment in infrastructure and agricultural research, low level of input use, lack of quality education about agriculture and production, monsoon dependence, climate change, migration, insufficient adoption of modern technology, fragmented land, inadequate availability of improved seeds and quality fertilisers, lack of basic infrastructures and transportation, warehouses and assured markets (Pandey & Gurung, 2017).

Thus, this paper tries to understand the effect of different financial resources in agriculture production -Wheat, Paddy, Sugarcane, Potatoes, Milk and Eggs of Nepal. The research objectives are to find out the impact of government expenditure and agriculture production in Nepal, to examine the effect of foreign grants, foreign loans and agriculture bank loan in agriculture production in Nepal.

2. Literature Review

The Keynesian theory is adopted as the framework of this study. Keynes regards public expenditures as an exogenous factor which can be utilised as a policy instrument to enhance output. According to the Keynesian school of thought, increase in government spending leads to a multiple increase in total output of an economy which means the multiplier effect of government expenditure (Jambo, 2017).

$Y = C + I + G (X-M)$ ----------2.1

Where; Y = Output, C = Consumption, I = Investment, G = Government Expenditure, X-M = Net Export (export minus Import).

The change in output will be equal to the multiplier times the change in government expenditure. This theory explains that an increase in government expenditure on agriculture is likely to lead to a multiple increase in agricultural output. The relevance of this theory to the Nepalese economy is that it describes how the

government of the country can help bring about growth in the agricultural sector through its expenditure on the sector.

Selvaraj (1993) conducted research in India which indicated that agriculture government expenditure instability affects the development of the agriculture sectors. The analysis shows that India has witnessed an overall decline in the share of agricultural expenditure in total government expenditure: reduction in agricultural government expenditure adversely affects agriculture sectors performance. The empirical evidence of this paper suggests that public expenditure is an important determinant of agricultural growth. In order to achieve the sustainable growth in the agriculture sector a rational allocation of budgetary outlays plays a significant role.

Thapa (2017) mentioned that foreign aid can play an important role in the economic development of Nepal. Nepal is one of the least developed countries of the world with a very poor economic and social infrastructure for development. Nepal suffers from a serious resource gap with low savings and low investment creating a vicious circle of poverty. Then technology gap and foreign exchange gap and foreign exchange are also another cause of poverty. Carisma (2011) mentioned that investment in agriculture is a key determinant of productivity growth and is essential to meet growing demands on the agriculture sector.

Alabi (2014) conducted a study in which the econometric analysis suggests that foreign agricultural aid has a positive and significant impact on agricultural GDP and agricultural productivity. The study also reveals that it is important to scale up foreign agricultural aid in order to increase its impact on agricultural productivity and its contribution to the economy. However, the sectoral foreign agricultural aid allocation should give priority to factors that will enhance agricultural productivity.

Ayaz and Hussain (2011) observed that credit availability to farmers is much more important than any other factors to improve the resource use efficiency in the agriculture sector. Their study is based on the 300 cross section sample farmers from Faisalbaad District of Pakistan. By employing Stochastic Frontier Production Analysis (SFA), they conclude that credit to the agricultural sector has more constructive and significant impact on the farmers" technical efficiency than other factors like farming experience, education, herd size and number of cultivation practices.

Devi (2012) found that agricultural credit not only helped to increase productivity but also develop the process of cultivation as a whole in Andhra Pradesh, India. The study argues that there was an enormous increase in the usage of modern seeds, modernised inputs, fertilisers and pesticides after receiving the agricultural credit, which increased yield per acre and thus income of the farmers. Further, it is observed that the impact of agricultural credit was more significant in non-irrigated and semi-irrigated villages than the irrigated villages.

3. Study Methods

The objective of this study is to understand the impact of government investment in the agriculture production in Nepal. In addition, the study reflects the impact of other factors such as loans provided by the banks, foreign grants and foreign loans supported by the different donors in Nepal.

Research Model

Agriculture Production= $\beta 0+\beta 1X1+\beta 2\ X2+\beta 3\ X3+\ \beta 4\ X4+\beta n$

- Agriculture Production of Wheat, Paddy, Sugarcane, Potatoes, Milk and Egg.
- X1= ln (Government Expenditure)
- X2= ln (Bank Loan)
- X3= Foreign Grant
- X4= Foreign Loan

This study has been carried out on the basis of the macro data published by the government. For this research, Data from 2003 to 2014 has been taken for analysing agriculture production, government expenditure, foreign grants, foreign loans and bank loans. In this case it will be impossible to analyse all the data so sampling in terms of time and six agriculture products has been selected. The sample size is the past 12 years data published in the red book of the Government of Nepal, Statistical Information on Nepalese Agriculture and other secondary documents of government. The government expenditure and bank loans have right-skew that is, they have a long tail at the high end hence to make it independent identical both the variables are transferred to log.

4. Data Analysis and Discussions

This section presents data analysis and discussions.

Table 4.1

Descriptive Statistics for Independent Variables (Rs. in Millions)

Particulars	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Government Expenditure for Agriculture Sector	6838.33	5635.61	1502	16944
Foreign Grant for Agriculture Sector	1740	1513.95	384	5331
Foreign Loan for Agriculture Sector	571.67	214.45	345	1009
Bank Loan for Agriculture Sector	15050.92	10958	3730	37811

The table 4.1 describes the descriptive statistics of independent variables taken into consideration for the study from 2003 to 2014.

Table 4. 2

Descriptive Statistics for Dependent Variables (in metric tonnes)

Particulars	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Paddy	4446259.67	398434.811	3680838	5072248
Wheat	1933286.75	208192.347	1590097	2283222
Potato	2290277.00	396256.902	1643357	2817512
Sugarcane	2669662.58	322039.342	2305326	3315939
Milk	1484627.67	178165.095	1231853	1755725
Egg	703409.17	123729.114	575565	887240

The table 4.2 presents the descriptive statistics of dependent variables of the study from 2003 to 2014.

Table 4.3

Multivariate Regression Analysis of Wheat Production

Particulars	Beta	T value	Sig.	VIF
Government Expenditure	201079	2.097	0.074	9.926
Bank Loan	-8864	-0.089	0.932	8.865
Foreign Grant	22.859	0.712	0.499	3.133
Foreign Loan	-113.89	-0.786	0.458	1.281
Adjusted R Square	F	Sig	Durbin-Watson	
0.809	12.626	.003b	2.433	

Table 4.3 reflects the significant relationship of wheat production with government expenditure, bank loan, foreign grant and foreign loan. The coefficients table shows other than government expenditure all the independent variables are statistically insignificant as the level of significance is greater than 0.1.

Table 4. 4

Multivariate Regression Analysis of Paddy Production

Particulars	*Beta*	*T value*	*Sig.*	*VIF*
Government Expenditure	126612.3	0.335	0.748	9.926
Bank Loan	55662.51	0.141	0.892	8.865
Foreign Grant	67.97315	0.536	0.608	3.133
Foreign Loan	263.9472	0.461	0.659	1.281
Adjusted R Square	F	Sig	Durbin-Watson	
0.186	1.629	.269b	2.064	

Table 4.4 shows significant relationship of paddy production with government expenditure, bank loan, foreign grant and foreign loan. The coefficients table indicates that all variables have statistically insignificant relationship with the paddy production. That independent variable does not impact the production of the paddy as the level of significance is more than 0.05.

Table 4. 5

Multivariate Regression Analysis of Sugarcane Production

Particulars	*Beta*	*T value*	*Sig.*	*VIF*
Government Expenditure	127203.9	3.401	0.011	9.926
Bank Loan	-132704	-1.991	0.087	8.865
Foreign Grant	42.58776	2.459	0.044	3.133
Foreign Loan	-192.28	-1.987	0.087	1.281
Adjusted R Square	F	Sig	Durbin-Watson	
0.86	17.79	.001b	1.897	

The table 4.5 reflects the significant relationship of sugarcane production with government expenditure bank loan, foreign grant and foreign loan. The coefficients table indicates that the sugarcane production has significant relationship with government expenditure, foreign grant, foreign loan and bank loan at level of significance 0.1.

Table 4.6

Multivariate Regression Analysis of Potato Production

Items	*Beta*	*T value*	*Sig.*	*VIF*
Government Expenditure	456274.6	4.329	0.003	9.926
Bank Loan	105206.8	0.957	0.371	8.865
Foreign Grant	-86.7828	-2.459	0.044	3.133
Foreign Loan	-97.6657	-0.613	0.559	1.281
Adjusted R Square	F	Sig.	Durbin-Watson	
0.93	41.343	.000b	2.178	

The table 4.6 presents a significant relationship between production with government expenditure, bank loan, foreign grant and foreign loan. The coefficients table shows that government expenditure and foreign grant are highly significant. The significant relationship shows that the government expenditure has a positive relation with potato production whereas foreign grants in the agriculture sector has a negative impact.

Table 4.7

Multivariate Regression Analysis of Milk Production

Particulars	*Beta*	*T value*	*Sig.*	*VIF*
Government Expenditure	168720.3	3.461	0.01	9.926
Bank Loan	27052.6	1.865	0.1	8.864
Foreign Grant	-1.9908	-2.788	0.026	3.132
Foreign Loan	10.20874	0.966	0.366	1.281
Adjusted R Square	F	Sig.	Durbin-Watson	
0.92	36.788	.000b	2.014	

The table 4.7 reflects the significant relationship of milk production with government expenditure, bank loan, foreign grant and foreign loan. The coefficients table shows that the government expenditure, bank loan and foreign grant has significant impact in milk production with level of significance less than 0.1. The government expenditure and bank loan have positive impact whereas the foreign grants have negative impact on milk production.

Table 4. 8

Multivariate Regression Analysis of Egg Production

Particulars	*Beta*	*T value*	*Sig.*	*VIF*
Government Expenditure	127417.9	2.135	0.07	9.926
Bank Loan	-20745	-0.333	0.749	8.865
Foreign Grant	15.976	0.799	0.45	3.133
Foreign Loan	-55.328	-0.613	0.559	1.281
Adjusted R Square	F	Sig.	Durbin-Watson	
0.79	11.35	.004b	1.324	

Table 4.8 reflects the relationship of egg production with government expenditure, bank loan, foreign grant and foreign loan. The coefficients table shows that other than government expenditure all the independent variables have insignificant impact in egg production as all the value is greater than 0.1 level of significance.

Table 4. 9

Summary of Hypotheses

Hypotheses	*P-value*	*Remarks*
$H0_1$: There is no significant relationship between government expenditure and agriculture production.		
$H0_{1a}$: There is no significant relationship between government expenditure and paddy production.	0.748	Accept
$H0_{1b}$: There is no significant relationship between government expenditure and wheat production.	0.074	Accept

Hypotheses	*P-value*	*Remarks*
$H0_{1c}$: There is no significant relationship between government expenditure and sugarcane production.	0.011	Reject
$H0_{1d}$: There is no significant relationship between government expenditure and potato production.	0.003	Reject
$H0_{1e}$: There is no significant relationship between government expenditure and milk production.	0.01	Reject
$H0_{1f}$: There is no significant relationship between government expenditure and egg production.	0.07	Accept
$H0_{2}$: There is no significant relationship between foreign grants and agriculture production.		
$H0_{2a}$: There is no significant relationship between foreign grants and paddy production.	0.608	Accept
$H0_{2b}$: There is no significant relationship between foreign grants and wheat production.	0.499	Accept
$H0_{2c}$: There is no significant relationship between foreign grants and sugarcane production.	0.044	Reject
$H0_{2d}$: There is no significant relationship between foreign grants and potatoes production.	0.044	Reject
$H0_{2e}$: There is no significant relationship between foreign grants and milk production.	0.026	Reject
$H0_{2f}$: There is no significant relationship between foreign grants and egg production.	0.45	Accept
$H0_{3}$: There is no significant relationship foreign loans and agriculture production		
$H0_{3a}$: There is no significant relationship foreign loans and paddy production.	0.659	Accept
$H0_{3b}$: There is no significant relationship foreign loans and wheat production.	0.458	Accept
$H0_{3c}$: There is no significant relationship foreign loans and sugarcane production.	0.087	Accept
$H0_{3d}$: There is no significant relationship foreign loans and potato production.	0.559	Accept
$H0_{3e}$: There is no significant relationship foreign loans and milk production.	0.366	Accept
$H0_{3f}$: There is no significant relationship foreign loans and egg production.	0.559	Accept
$H0_{4}$: There is no significant relationship between bank loans and agriculture production.		
$H0_{4a}$: There is no significant relationship between bank loans and paddy production.	0.892	Accept

Hypotheses	*P-value*	*Remarks*
$H0_{4b}$: There is no significant relationship between bank loans and wheat production.	0.932	Accept
$H0_{4c}$: There is no significant relationship between bank loans and sugarcane production.	0.087	Accept
$H0_{4d}$: There is no significant relationship between bank loans and potato production.	0.371	Accept
$H0_{4e}$: There is no significant relationship between bank loans and milk production.	0.1	Accept
$H0_{4f}$: There is no significant relationship between bank loans and egg production.	0.749	Accept

$H0_1$: There is no significant relationship between government expenditure and agriculture production.

As shown in Table 4.9, government expenditure does not provide significant contribution to paddy production at 0.748($p>0.05$), wheat production at 0.07($p>0.05$) and egg production 0.07($p>0.05$). Other than this government expenditure has significantly contributed to sugarcane production at 0.011($p<0.05$), potato production 0.003($p<0.05$) and milk production 0.01($p<0.05$).

$H0_2$: There is no significant relationship between foreign grants and agriculture production**.**

The Table 4.16 shows that there the foreign grants have contributed the sugarcane production at 0.044($p<0.05$), potatoes production at 0.044 ($p<0.05$) and milk production at 0.026($p<0.05$). However there seems no significant impact by foreign grant in wheat production at 0.608 ($p>0.05$), paddy production at 0.499($p>0.05$) and egg production at 0.45($p>0.05$).

$H0_3$: There is no significant relationship foreign loans and agriculture production.

The above data show that the foreign loans have no significant contribution to any of the agriculture production. The foreign loans has no significant contribution to wheat production at 0.458($p>0.05$), paddy production at 0.659($p>0.05$), sugarcane production at 0.087($p>0.05$), potatoes production at 0.559($p>0.05$), milk production at 0.366 ($p>0.05$) and egg production at 0.559($p>0.05$).

$H0_4$: There is no significant relationship between bank loans and agriculture production.

The Table 4.9 reflects that the bank loans have no contribution to any of the agriculture production. The bank loans has no significant relation with paddy production at 0.892($p>0.05$), wheat production at 0.932($p>0.05$), potatoes production at 0.371 ($p>0.05$), sugarcane production at 0.087($p>0.05$), milk production at 0.1($p>0.05$) and egg production at 0.749($p>0.05$).

5. Conclusions and Implications

Nepal is an agriculture-based country; despite having the larger share in GDP the sector has a decreasing growth rate with lower productivity. Considering this the study was conducted with an aim to find out the impact of different funds in the agriculture sector.

The purpose of the study is to explore the impact of the government expenditure in agriculture sectors. The multi regression analysis reflects that government expenditure has highly influenced agricultural production. As the data shows that the government expenditure has highly influenced the cash crops such as sugarcane, potatoes and livestock -milk production. Comparatively the government expenditure has moderately influenced the wheat and egg production. Out of the entire six agriculture products chosen for the study only in paddy, government expenditure has insignificant impact. Relatively the government expenditure has a significantly positive relation with agriculture production.

Considering the importance of the foreign aid in the form of grant and loan for the study the second and third objectives are to analyse the effect of foreign grant and loan on the agriculture production in Nepal. The data shows that the foreign grant has positive significant impact on sugarcane production whereas there is significant negative impact on the potatoes and milk production.

Relatively the sugarcane production is moderately significant with foreign loans. However, there is a negative relation between foreign loan and sugarcane production. Other than this there is no significant relation between the foreign loan and other agriculture production. Considering this it reflects that the foreign loan provided in the agriculture sector has not been able to significantly impact the agriculture sector as none of the production is highly positively significant to the foreign loan. Compared to other independent variables the foreign loan and insignificant relation with the agriculture production.

Banking and financial institution loans play a vital role in the context of agriculture. In reference to this another objective of this study is to analyse the impact of the bank loans in agriculture production in Nepal. The study shows that banking and financial role has very less impact in the agriculture production as out of all six products only in milk production, bank loan has moderately positively influenced, whereas bank loan and sugarcane has moderately negative relation. Moreover, bank loans have insignificant effect on the other agriculture production – wheat, paddy, potatoes and egg. According to Nepal Rastra Bank Monetary Policy (2011) the bank credit to the agriculture sector has not increased as reflected in the sector wise distribution of credit. Credit to the agriculture sector is only about 3 percent of total bank credit till mid-May 2011. This clearly shows that there is less investment made by BFIs through load and advances until 2011. In 2013/14, out of the total credit from BFIs, the credit to the agricultural increased to 6.16 percent. However, the loans and advances provided in the agriculture sector are not so significant, which has been reflected by this study.

One of the key objectives of the Agriculture Development Strategy (ADS) of Nepal is to commercialise the farm sector in order to generate economic gains for Nepal and its people. This means agriculture must move up from subsistence level for this Nepal needs to diversify to other agriculture products such as – ginger, tea, cardamom, honey in it has comparative advantage. Competitive market opportunities exist for Nepali agricultural products with good potential for agriculture products growth: tea, coffee, honey, ginger, large cardamom, lentil, potato, milk and dairy, meat, fish, and NTFP, including essential oils (World Bank, 2013). Hence this shows there is a shift in the priority of the government of Nepal and development partners from traditional crops to other high value products in the agriculture sector. This research concludes that the government expenditure has a relatively greater impact on the agriculture production than foreign grants, foreign loans and bank loans. Linking to the government and World Bank report that the government and development partner priorities are shifting from core traditional agriculture crops to diversify high value products such as tea, honey, ginger, lager cardamom.

Finally, this study does not imply that only financial resources influence the agriculture production instead there are different other factors which impact the agriculture production. There are other different factors such as: climate change, out migration, education level, policies and regulation, infrastructure such as roads, water and market facilities which impact agriculture production.

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