International Journal of Research
Available at https://edupediapublications.org/journals
e-ISSN: 2348-6848
p-ISSN: 2348-795X
Volume 05 Issue 16
June 2018

A Study on Value Chain in Agriculture Sector: A Study of Bagmati Zone

Dr. Virachai Vongbunsin[1], Prafulla Rijal[2]

[1] School of Management, Shinawatra University

[2] Graduate School, Shinawatra University

Abstract

The present research aims to bring into understanding the value chain indicators to be used in agriculture sector in Nepal. Based on the analysis of four districts selected for the study, there was positive significant relationship between the method of farming, storing and hulling on value addition in paddy whereas there was no significant relationship between the harvesting and value addition in paddy.

Key Words: Value Chain, Agriculture Industry, Farmers, Marketing, Agriculture Sector

Introduction

Nepal is an agricultural country having 66 per cent of people engaged in this occupation. But only few people are engaged in commercial farming whereas majority of people are involved in subsistence farming. People have not been able to use the value chain in agriculture product. Value chain is very essential for any sector to move towards prosperity. Kaplinsky and Morris (2000) addressed that value chain is an important construct for understanding the distribution of returns from designs, production, marketing, coordination and recycling (involving a combination of physical transformation and input of various producer services).

Value chains have been accepted as an effective way of focusing on measures to improve the scale and impact of private sector investments, which include the investments made by small holder farmers themselves as well as those made by larger-scale domestic or foreign agri-business investors Nedelcovych et al.,(2012 as cited by Agrawal & Ambrose, 2014). According to Miller and Jones (2010), the concept of agricultural value chain includes the full range of activities and participants involved in moving agricultural products from input suppliers to farmer's fields and ultimately to consumers. Oliveira & Alvim (2016) on their study in the agriculture value chain in Brazil found that Brazilian agribusiness owe to a combination of factors, including more integrated supply chains, intensive capitalization in the various segments of the supply chains, and governmental support to agriculture. On the other hand, the logistics sector has been lagging behind, lacking adequate transportation infrastructure or storage facilities. Similarly, BV., & Krishnegowda (2015) in their study have observed that farmer is the only stakeholder who is paid least and supply chain management of paddy suffers from huge losses to the

government as more than 65% farmers sell paddy to the local agents of "mill owners and stockists" who have been dominating the Value chain in agriculture industry.

Nepalese agriculture Industry have suffered from inadequate development in value chain sector. There are very few instances in Nepal where people focused on development of commercial agriculture. There are concerns raised about the deficiency and lack of supply of fertilizers, seeds and also farmers not being able to access the market directly. Stages in farming are highly dominated by intermediaries and big market players. From the initial stage of getting seed and fertilizers farmers have to look for intermediaries. Small farmers are not able to go to the right door for subsidizes seeds and fertilizers. During the farming they are continuously followed up by big market players and buyers of agriculture products who buy their products in initial phase and separate farmers from the right on their own product. Big players involved in transportation pick up vegetable from the house of farmers in a negligible price and then increase its value while selling it to the final consumers. Therefore, value chain development remains a crucial factor.

With elements of value chain not being in reach of farmers agricultural development and productivity has always been in a sorry state in Nepal. From the very first stage of purchasing seeds and fertilizers farmers have to pass on through multiple level of intermediaries. Final products are purchased by agents from the farmland itself and then pass on through multiple intermediaries before they reach to the consumers. This has made the final product expensive. Value chain elements are the areas where the value appreciation of products take place so it is important to study the importance and its element.

Porter's (1985) value chain framework analyzes the value creation at the firm level and observed that value chain is a chain of activities that a firm operating in a specific industry undergoes in order to deliver a valuable product or service to the market. Further the scholar added that value is gradually added through the different stages of product development, manufacturing, and distribution. According to Miller and Jones (2010), the concept of agricultural value chain includes the full range of activities and participants involved in moving agricultural products from input suppliers to farmer's fields and ultimately to consumers. The idea of the value chain is based on the process view of organizations which emphasizes on seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. These inputs, transformation processes, and outputs involve the acquisition and consumption of resources; money, labor, materials, equipment, buildings, land, administration and management (Porter, 1985).

Fitwi, Kassa and Tefera (2011) in their study of gum and regin marketing in Ethiopia focused on four value adding activities namely drying, cleaning, sorting and grading and storage. It was found that margin for producer was very less when they were not organized. Rainbird and Ramirez (2012) in their study on Salmon farming in Chile focused on Five stages of value chain identified in Salmon fish farming 1. Breeding, 2. Artificial Fertilization, 3. Hatching, 4 Growing and Fattening and 5. Harvesting. The study found that due to very low technological development in Chile maximum nation owned and MNC operating in Chile were focused on lower segment of value chain. Nagaraj and Krishnagowda (2015) in their study on Paddy had focused on considered four stages of

Value chain 1 farming, 2. Harvesting, 3 Storing and 4. Hulling. The study found that 46% of value addition occurred at the time of harvesting which is highly enjoyed by stockist and millers due to their dominance in market. Chandrasekaran and Umagowri (2012) found that farmers needed to be trained to reduce post harvest value loss of fruits. Also for better value addition it was necessary for farmers to collaborate and sell their product directly to wholesalers or retailers rather than the middlemen.

Similarly, Boekalman, Kodigehalli and Venkatesh (2011) found that Coffee Market was highly dominated by intermediaries. In value chain the share received by producer was be very less. Out of 30 farmers interviewed, 70% farmers sold their product to the agent at farm gate price while 20% sold their product directly to the curing works. This showed that there was high influence of agents in the value chain. Machowfi (2016) in his study on value chain in coconut sub sector of Kenya made study on 26 SMEs which revealed that value addition in coconut subsector is very important in Kenya and various government and non-government institutions played an important role in value chain process. Meena, Murthy and Reddy (2010) in their study on Value Chain and Retailing of Fresh Vegetable and Fruits, Andhra Pradesh found that both demand and supply side factors contributed to the emergence of traditional and modern retailing. Hence, efficient, value chain management would certainly add value.

With reference to the literatures reviewed in the above section and also the number of articles taken into consideration the following conceptual framework is developed for the current study on " A Study of Value Chain On Agriculture Sector".

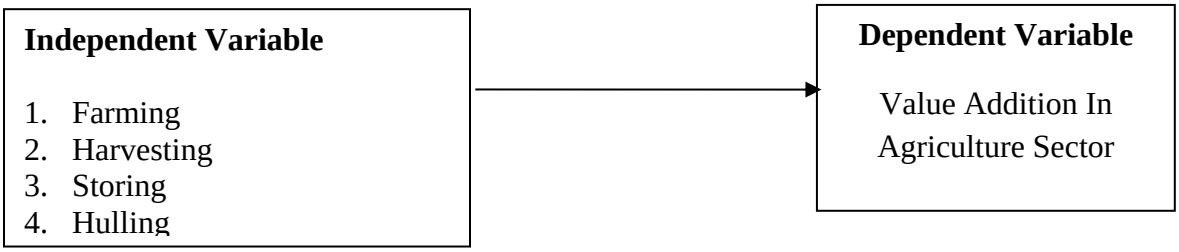

Fig1: Conceptual Framework of the study

In the above figure we can see two different variables that are dependent and independent variables. Independent variables influence the dependent variable. We can see four different independent variables that are the components of Operation part in agriculture sector. The Value chain process moves according step by step where the first is farming, second is harvesting, third is storing and the fourth one is hulling. Value Addition takes place in each stage which will have ultimate impact on the end product value.

Methodology

The study has used quantitative method for data collection. Farmers were the major study population. Farmers from four districts of Bagmati Zone that is Kathmandu, Bhaktapur, Lalitpur and Kavrepalchowk. At least 400 respondents response were selected

for the study. The study used sampling method. Personal interviews were also conducted to collect data. SPSS tools are used for the data coding and analyses.

Model Specification

The following model was employed to test hypothesis to check positive relation between Value addition and independent variables ie. farming, harvesting, storing and hulling. The regression model is used in the study to analyze the interrelationship between dependent and independent variables.

$VA= \beta0+\beta1F+ \beta2H+ \beta3S+ \beta4Hu+e$……. (1) Where,
Dependent Variable VA= Value Addition
Independent Variable
B0= Constant
F= Farming
H= Harvesting
S= Storing
Hu= Hulling

Data Analyses

The following tables show the relationship between Farming as a independent variable and Value Addition as a dependent variable.

Table 4.1: Correlation between Overall Value Addition and Independent Variables

Correlations					
	Overall Value Addition	Farming	Harvesting	Storing	Hulling
Overall Value Addition	1				
Farming	.386**	1			
Harvesting	.313**	.540**	1		
Storing	.412**	.387**	.440**	1	
Hulling	.334**	-.228**	.026	.096	1
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: SPSS Results based on Primary Data 2017

In the above table 4.1 we can see the correlation between dependent variable Overall Value Addition and independent variable being Farming, Harvesting, Storing and Hulling. Here we can see p value being 0.386 between "Farming" and " Overall Value Addition". From this we can infer that they is positive significant relationship between each other. Likewise, the p value between "Harvesting" and " Overall Value Addition" is 0.313 which means they have positive significant relationship. Similarly, p value of "Storing" and "Overall Value Addition" is 0.412 which means they have high positive significant relationship. Lastly "Hulling" and "Overall value addition" has p value of 0.334 which also

infers that they have positive significant relationship. Finally, we can infer that all the independent variables Farming, Harvesting, Storing and Hulling have significant positive relationship to Overall Value Addition in Paddy Farming. Also, we can see that storing is the major factor that brings significant impact in Value Addition in paddy farming among all other independent variables.

Table 4.2: Model Summary of dependent and independent variable

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613[a]	.376	.370	.579
a. Predictors: (Constant), Hulling, Harvesting, Storing, Farming				

Source: SPSS Results based on Primary Data 2017

From the table 4.2 the Adjusted R Square being 0.37 means the four independent variables namely Farming, Harvesting, Storing and Hulling just explain 37 percent of the Value Addition. Also, the standard Error of the estimate is 0.579.

Table 4.3: ANOVA Test

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	79.810	4	19.952	59.585	.000[b]
	Residual	132.268	395	.335		
	Total	212.077	399			
a. Dependent Variable: Overall Value Addition						
b. Predictors: (Constant), Hulling, Harvesting, Storing, Farming						

Source: SPSS Results based on Primary Data 2017

From the above two table we can see that the significance p value is 0.000 which means the model used by the present researcher is valid and matches the requirement of the study. Here we can see Overall Value Addition as Dependent Variable and Farming, Storing, Harvesting and Hulling as Predictors.

Table 4.4: Coefficient Table (Regression analyses between Dependent and Independent Variable)

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.166	.254		.654	.513
	Farming	.413	.053	.395	7.786	.000
	Harvesting	-.012	.063	-.009	-.188	.851
	Storing	.250	.051	.225	4.922	.000
	Hulling	.367	.038	.402	9.565	.000
a. Dependent Variable: Overall Value Addition						

Source: SPSS Results based on Primary Data 2017

In the above table 4.4 we can see the standard error, beta coefficient *t* value and significance of all the independent variables Farming, Harvesting, Storing and Hulling with respect to the dependent variable being Overall Value Addition. Here from the very beginning of ANOVA table we found that the model used is relevant for the study.

Now in the above table we can see that the *t* value of Farming, Storing and Hulling being 7.7886, 4.922 and 9.565 respectively which is greater than 2. This helps us infer that we reject the null hypothesis that say Farming, Storing and Hulling have no significant relationship with overall value addition in paddy. Whereas we can see the *t* value of harvesting being -0.188 which means we accept the null hypothesis saying harvesting and overall value addition have no significant relationship.

Also from the above table we can infer that One unit change in Farming will bring increment of 0.413 in overall value addition, one unit change in harvesting will bring no change in overall value addition since the *b* value is -0.012, one unit change in storing will bring 0.250 increment in overall value addition and one unit change in hulling brings 0.367 change in overall value addition.

International Journal of Research
Available at https://edupediapublications.org/journals
e-ISSN: 2348-6848
p-ISSN: 2348-795X
Volume 05 Issue 16
June 2018

Table 4.5: Location and Factor wise display of Value Chain

Items of Value Chain	Districts of Respondents								Total	
	Kathmandu		Bhaktapur		Lalitpur		Kavrepalanchowk			
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Farming	100	13.91	100	14.31	100	14.01	100	15.07	400	14.32
Harvesting	100	15.41	100	15.69	100	15.36	100	14.21	400	15.16
Storing	100	11.77	100	13.61	100	12.59	100	12.97	400	12.73
Hulling	100	16.02	100	16.01	100	14.81	100	13.39	400	15.05
Total	100	57.12	100	59.62	100	57.77	100	55.64	400	57.26
Level of Value Addition (LVA)		OLVA		OLVA		OLVA		OLVA		OLVA

Source: SPSS Results based on Primary Data 2017

The above table 4.5 shows the district of respondent and the factor wise display of value chain involved in paddy farming. Here Farming had major impact on value addition in paddy farming in Kavrepalanchowk district with mean value being 15.07. Harvesting had major impact in value addition in paddy farming done in Bhaktapur district with the mean value being 15.69. Similarly, Storing also had high impact in Bhaktapur district among all surveyed district with mean value being 13.61. Finally Hulling had high impact in value addition in paddy farming of Kathmandu with mean of 16.02.

When looking at the total mean value we can see the mean value of harvesting high with 15.16. From this we can see that farmers feel that harvesting stage give them high level of value addition. Whereas storing was found to have the least mean 12.3 which means farmers found comparatively low value addition in paddy during the stage of storing.

Evaluating the overall result it is inferred that the mean score obtained by the respondents of Bhaktapur is 59.62 which is higher in compared with farmers of other three districts. Since the overall response of the farmers of all four districts are between the score of 48 to 64 the level of value addition is Operational Level of Value Addition.

Table 4.6: Hypothesis Acceptance Table

SN	Hypothesis	T Value	Remark
H_{01}	Method of farming and value addition in agriculture do not have statistically significant relationship	7.786	Reject Null Hypothesis
H_{02}	Harvesting and value addition in agriculture are statistically independent of each other	-0.188	Accept Null Hypothesis
H_{03}	Storage and value addition in agriculture are independent of each other	4.922	Reject Null Hypothesis
H_{04}	Hulling and value addition in agriculture sector do not have statistically significant relationship	9.565	Reject Null Hypothesis

In the above table 4.6 we can see the *t* value that explains the acceptance and rejection of Null Hypothesis. Since the *t* value of H01, H03 and H04 concerned with variables like farming, storing and hulling is more that 2 we come to conclusion to reject the null hypothesis that explain "farming, storing and hulling have no any significant relationship with value addition". On contrary we can see H02 having *t* value -0.188 which is less than 2. So here we come to conclusion to accept the null hypothesis that states "Harvesting and value addition in agriculture are statistically independent of each other".

Conclusion

Based on the evidences and results, the study finds that harvesting had no significant impact on value addition in paddy along the value chain whereas method of farming, storing and hulling had significant impact on the value addition on final product paddy throughout the value chain process.

The study also found that farmers were separated according to the districts they are residing and their involvement in the value chain process. From analyzing that section, it was found that there was operational level of value addition in all four districts from all the four stages of value chain. Out of all the four stages storing had very low mean which showed that farmers found very low evidence of value addition during the process of storing. This is the fact to be monitored and taken into consideration for improvement in the sector of promoting safe storing facilities for farmers to store their agricultural product paddy.

References

Agrawal, R. & Ambrose, J. (2014). Guidelines on Strategy and Practice in Agriculture Value Chain Finance and Their Effects on Financial Performance of Edible Oil Industry in Kenya. European Journals of Business Management, Vol. 2, Issue. 3, 2014. Available at: http://business.ku.ac.ke/images/stories/docs/guidelines_on_strategy.pdf

BV, P., & Krishnegowda, Y.T. (2015) Value Chain Analyses For Deprived Products From Paddy: A Case of Karnataka State. *International Journal of Value and Supply Chain*, Vol 6, March 2016. Available at: http://airccse.org/journal/mvsc/papers/6115ijmvsc04.pdf. Retrived on: July 10, 2017

Chandrasekaran. M. & Umagowri. M. (2011). An Economic Analysis of Value Chain of Banana in Western Tamil Nadu : *ICFAI University Press*

Fitwi. G., Kassa. H. & Tefers. H. (2011). Preliminary Value Chain Analysis of Gum and Resin Marketing in Ethiopia Issues for Policy Research. *Center of International Forestry Research.*

Kaplinsky, R. & Morris, M. (2000) *A Hand Book For Value Chain Research*. Bellagio. Available at: https://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf Retrived on: February 26, 2016

Kapoor. S & Kumar. N. (2010). Value Chain Analysis of Coconut in Orissa. *Agricultural Economic Research Review*, Vol. 23, pp. 411-418.

Kodigehalli. & Venkatesh. B (2011). Value Chain Analysis of Coffee In Karnataka, India. Unpublished Research of International Masters of Science in Rural Development, University of Humboldt, Berlin.

Meena. P. C., Murthy. M.R.K. & Reddy. G.P. (2010). Value Chains and Retailing of Fresh Vegetables and Fruits, Andhra Pradesh. *Agricultural Economic Research Review*. Vol. 23, pp. 455-460

Miller, C. & Jones, L. (2010). *Agriculture Value Chain Finance*. Food and Agriculture Association of United Nations and Practical Action Publishing.

Mwachofi, P.H (2016). Value Chain Analysis of The Coconut Sub Sector In Kenya. Unpublished MBA Research, University of Nairobi.

Oliveira, Andréa L.R. de,. & Alvim, Augusto M. (2016) The Supply Chain of Brazilian Maize and Soyabeans: The Effect of Segregation on Logistics and Competitiveness. *International Food and Agribusiness Management Association.*

Vol 20, pp 45-61, April, 2016. Available at: http://www.wageningenacademic.com/doi/pdf/10.22434/IFAMR2016.0084. Retrived on: July 17, 2017

Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York: Free Press.

Rainbird. H. & Ramirez. P. (2012). Bringing Social Institution into Global Value Chain Analysis: The Case of Salmon Farming in Chile. *Work, Employment & Society*, Vol. 26, No. 5, pp. 789-805.