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Impact of value chain activities on value addition in paddy farming in Nepal

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Abstract

Objective: *The objective of this research is to measure the impact of processing activities on value addition in paddy farming in Bagmati zone.*

Methods and Materials: *For the efficient completion of the research, samples of 400 farmers were taken from four districts of Bagmati Zone: Kathmandu, Bhaktapur, Lalitpur and Kavrepalanchowk respectively. Simple random sampling method was used where every element of the study population had equal and non zero chance of being selected as a sample of the study. The research study is completed using a blend of descriptive and causal research design. Quantitative method is used in the research where the questionnaires are close ended with fixed options.*

Results and Conclusion: *It is found that 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.*

Keywords: *Value Chain, Harvesting, Farming, Paddy Farming, Hauling*

Background of the study

Nepal has been well known for agriculture. Since years we have been studying and hearing that Nepal is an agriculture country but only few people have been able to carry out the commercial 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).

The value chain concept was first addressed by Philip Kotler in 1985. Kotler, et. al. (2013) have shared that the value chain disaggregates the firm into its strategically relevant activities in order to understand the behavior of cost and the existing and potential sources of differentiation. A firm gains competitive advantage by performing these strategically

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important activities more cheaply or better than the competitors. Further the scholars have added that the value chain is embedded with different elements: 1. Supplier value chain, 2. Firm value chain, 3. Channel value chain and 4. Buyer value chain.

The statement of problem

Agriculture being the main occupation of people in Nepal, 65.6% of total population is engaged in agriculture according to the census conducted in 2011. This information has created a vibration on researcher where there is acute need for the value chain. Agriculture has not been treated as a commercial part in Nepal; as a result there is no significant development in this field. Value addition to farmers is very low. Inadequate infrastructures in the field of transport storage have resulted to value reduction in agriculture sector. Also agricultural products are perishable products which need special attention during the value addition process like during storage and hulling or transporting. This has triggered the researcher that take value chain in agriculture sector as a field of study.

In addition there has been many instances that there is tracking of the final products and its movement but there has been very few instance in Nepal where value chain is measured step by step in agriculture sector where we can see the development of the product in each stage and its importance in value addition of the product. In that case the present research is focused on a single statement of problem that reads as --What is the state of value chain in agricultural sector?

With elements of value chain not being in reach of farmers directly 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 levels of intermediaries. Final products are purchased by agents from the farmland itself and then pass on through multiple intermediaries before they reach to the final consumers. This has made the final product expensive to final consumers. Value chain elements are the areas where the value appreciation of products takes place so it is necessary to study the importance and its element.

Government have allotted distribution point of agriculture products in Kalimati, Kathmandu where farmers can rent the place and sell their products but there has been numerous complains that those outlets are leased by intermediaries and again sub leased to other reseller or farmers. This increases the operation can that will ultimately have impact on price of the final products. A concept of Farmers market and organic farm market is also increasing. Balkhu vegetable market is one of the examples of farmers market where farmer can have their stall and sell the products. Other small selling points have been established in Kalanki and Kirtipur so that farmers will have access to the market. Value chain has not been in full control of farmers due to which they are not fair paid and respected in the society. Also the value chain sector of agriculture has not been studied extensively and its market is in growing phase. So this research is more viable for a genuine study to explore the sector of Value chain in agriculture sector.

Objectives of the study

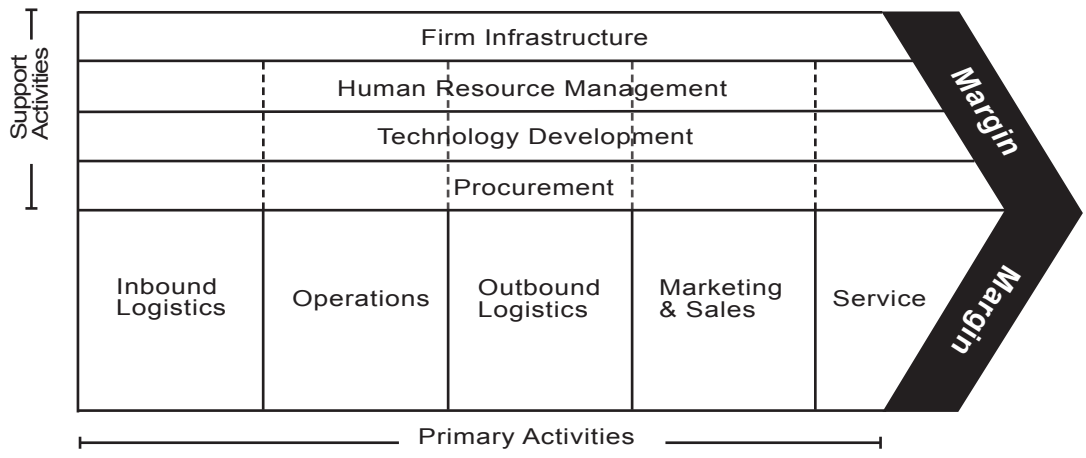
The primary purpose of the present study is to analyze the value chain in agriculture sector of Nepal. More specifically, the present researcher was quite concerned to--

1. To analyze the value chain in paddy production
2. To assess the relationship between Harvesting and its Value addition.
3. To measure the impact of processing activities on value addition in paddy farming.
4. To analyze the relationship between Storing and Hulling in Value addition in paddy farming

Literature review

According to Porter (2001), the business of a firm can best be described as the value chain in which total revenues minus total cost of all activities undertaken to develop and market a service yields value. Moreover, Porter (2004) observed that value chain analysis decomposes the firm into its activities and then study the economic implication of those activities. He suggested that the organization is split into primary activities and support activities. Primary activities are directly concerned with the creation or delivery of a product or service and are comprised of operation, outbound logistics, Marketing, Sales and service. On the other hand, the support activities assist the primary activities in helping the organization to achieve its competitive advantage and they include procurement, human resource management and firm infrastructure. Porter (2001) used example of manufacturing business to outline primary activities which comprises of inbound logistics, operation, outbound logistics, marketing, sales and service provision. This can be summarized in the below given diagram:

Figure 1: Porter's Generic Value Chain



Inbound logistics are activities concerned with receiving, storing and distributing inputs or raw materials used in the production of goods and services including functions such as materials handling, stock control, transport etc. Operations on the other hand are concerned with transforming or rather converting these inputs into finished products or services. This

includes functions such as manufacturing, processing, packaging, assembling etc. Outbound logistics consist of a distribution chain network that actually collect, store and distribute the product to the consumer and involves warehousing, material handling, transportation, distribution and retailing. Marketing and sales functions provide means of promoting the products by way of creating awareness to customers and developing ways to induce them to buy. It involves sales administration, advertising and personal selling. Service activities come after a sale and are basically used for value addition by way of keeping a product or service working effectively.

A value chain is comprised of series of events surrounding the development, production and delivery of goods and services desired by targeted customers. This is achieved by ensuring that good gain customers recognized value as they move through each step of the chain. In an efficient and effective value chain, this is achieved through coordinating operation on the manner that ensures the involved companies are able to create more consumer recognized value than their competitors Womack and Jones (2005, as cited by Gooch & Felfel, 2009). The need to react more effectively to consumer demands than traditional approaches has come from the enormous changes that have occurred in the international trade of agricultural and food products, consumer tastes, and advances in production, transport and other supply chain technologies (Felfel, 2007). These changes have led to market fragmentation and a reduction in the competitiveness of many commodity-oriented organizations where as they have also led to competitiveness increasingly being a function of business, rather than industry-related capabilities. 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 agro business investors Nedelcovych et al.,(2012 as cited by Agrawal & Ambrose, 2014).

Conceptual framework of the study

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 "Impact of Value Chain Activities on Value Addition in Paddy Farming ".

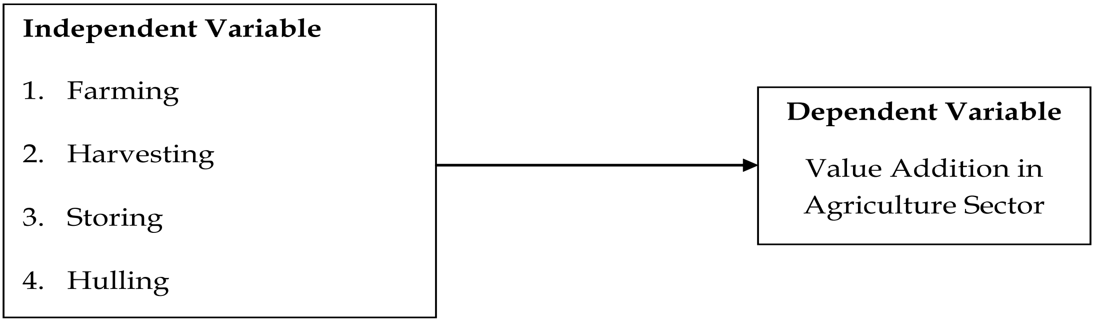


Figure 2: Conceptual framework of the study

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.

Research design

In this research, descriptive as well as exploratory research designs were used. The cause and effect relationship between the dependent and independent variable that are taken in the present research is analyzed using the causal research. Both primary and secondary data are the sources of information. Primary data are collected through individual interaction with the farmers of four districts of Bagmati Zone namely Kathmandu, Lalitpur, Bhaktapur and Kavrepalanchowk by designing a set of questionnaire.

People engaged in farming of four districts as their primary occupation are the major study population of the present research. Also being more specific the present researcher has limited the study to the farmers of eight districts of Bagmati Zone that is Kathmandu, Bhaktapur, Lalitpur and Kavrepalchowk. The total population of the study is unknown so a total of 400 respondents were selected for primary data collection and for the required secondary data the information and results from the past research will be used. Here the study will be done with respect to people having farming as their main occupation in the Four districts of Bagmati Zone. So the sampling method to be used is simple random sampling where every population element belonging to the study population will have equal chance of being selected.

Model specification

The following model is employed to test hypothesis that there is positive relation between value addition of paddy rice and independent variables i.e. farming, harvesting, storing and hauling. The regression model is used in the study to analyze the interrelationship between dependent and independent variables.

$$VA = \beta 0 + \beta 1Hu + \beta 2Ha + \beta 3St + \beta 4Fa + e \ldots\ldots (1)$$

Where,
Dependent Variable VA= Value Addition
Independent Variable
B0= Constant
Hu= Hauling
Ha= Harvesting
St= Storing
Fa= Farming

Result and Discussion

Demographic Profile of Respondent

In order to provide a strong base for the data presentation and analyses, following details provide us with adequate information:

Table 1

Geography wise display of gender of respondents

SN	District	Gender				Total
		Male		Female		
		N	%	N	%	
1	Kathmandu	66	27.7	34	21	100
2	Bhaktapur	63	26.5	37	22.8	100
3	Lalitpur	57	23.9	43	26.5	100
4	Kavrepalanchowk	52	21.8	48	29.6	100
	Total	238	100	162	100	400

Source: SPSS Results based on Primary Data 2019

Table 1 displays the geography wise segregation of gender of the population of the study. Among the total sample taken from 400 respondents, respondents from Kathmandu were 100 where 66 are male and 34 are female that accounts to 25% of the total respondents. A total of 100 respondents were from Bhaktapur district where the number of male is 63 and female is 37 which accounts to 25% of the total respondents. Also there are 100 respondents from Lalitpur district where there are 57 male and 43 female with 25% of total respondents. Lastly 100 respondents are from Kavrepalanchowk district where 52 are male and 48 are female with 25% being represented in total respondent population.

Table 2

Gender wise display of respondents' educational qualification

SN	Education Qualification	Gender				Total
		Male		Female		
		N	%	N	%	
1	SLC	32	13.4	27	16.7	59 (14.8%)
2	Intermediate	39	16.4	26	16	65 (16.2%)
3	Bachelors	103	43.3	33	20.4	136 (34%)
4	Literate	64	26.9	76	46.9	140 (35%)
	Total	238	100.00	162	100.00	400 (100%)

Source: SPSS Results based on Primary Data 2019

Table 2 displays the educational qualification wise segregation of gender of the respondents. A total of 59 respondents having SLC as their educational qualification 32 are male and 27 are female which comprises of 14.8% of total respondents. Numbers of respondents having intermediate level as their educational qualification were 65 where 39 are male and 26 are female that comprises a total percentage of 16.2. Similarly number of respondents having bachelors level as their educational qualification are 136 where male are 103 and female are 33 with the percentage of 34. Lastly, 140 respondents were found to be literate but not with significant level of educational qualification where 64 were male and 76 were female with total percentage coverage of 35.

Table 3

Land holding of farmers with respect to their location

SN	Land Holding	Location Of Respondent								Total
		Kathmandu		Bhaktapur		Lalitpur		Kavrepalanchowk		
		N	%	N	%	N	%	N	%	
1	0-5 Ropani	29	29	47	47	45	45	9	9	130 (32.5%)
2	6-10 Ropani	30	30	22	22	36	36	9	9	97 (24.2%)
3	11-15 Ropani	27	27	23	23	5	5	47	47	102 (25.5%)
4	16 Ropani and Above	14	14	8	8	14	14	35	35	71 (17.8%)
	Total	100	100	100	100	100	100	100	100	400 (100%)

Source: SPSS Results based on Primary Data 2019

Table 3 shows a clear picture on the land holding of farmers according to their location. A total of 130 farmers had land holding of 0-5 Ropani which is 32.5% of the total repondents out of which Bhaktapur had highest number of farmers with land holding being just 0 to 5 Ropani being 47. Likewise 97 farmers had land holding of 6-10 Ropani which is 24.2 % of total respondents out of which Lalitpur had highest number of farmers with land holding

being 6 to 10 ropani. Similarly 102 farmers had land holding of 11-15 Ropani which is 25.5 % of the total respondents out of which Kavrepalanchowk had highest number of farmers in this group with number being 47. Lastly 71 farmers had land holding of 16 and more Ropani which is 17.8% of the total farmers. Also this group is led by Kavrepalanchowk with number of farmer being 35 who hold land more than 15 Ropani.

Table 4

Correlation between overall value addition and independent variables

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

Source: SPSS Results based on Primary Data 2019

Table 4 presents correlation between dependent variable Overall Value Addition and independent variable being Farming, Harvesting, Storing and Hauling. Here we can see r value being 0.386 between "Farming" and "Overall Value Addition". From this we can infer that they have positive significant relationship between each other. Likewise the r value between "Harvesting" and "Overall Value Addition" is 0.313 which means they have positive significant relationship. Similarly r value of "Storing" and "Overall Value Addition" is 0.412 which means they have high positive significant relationship. Lastly "Hauling" and "Overall value addition" has r 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 Hauling 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 but the relationship between hauling and harvesting is insignificant similarly there is insignificant relationship between hauling and storing at 1% level of significance.

Regression analysis

Table 5

Regression equation of overall value addition on processes

OVA	$= \beta_0$	$+\beta_1$Hu	$+\beta_2$Ha	$+\beta_3$St +	B_4Fa	+ …+et		
Parameters		Coefficients		se		t		Sig.
β_0		.166		.254		.654		.513
β_1Hu		.413*		.053		7.786		.000
β_2Ha		-.012		.063		-.188		.851
β_3St		.250*		.051		4.922		.000
B_4Fa		.367*		.038		9.565		.000
R^2= 0.85		F(4,395)=59.58		DW=1.98		d.f.=395		

a. Dependent Variable: Overall value addition

Number of observations=400

Note: * Significant at 0.01 levels ** Significant at 0.05 levels

Where

OVA= Overall value addition Hu = Hauling Ha = Harvesting

St= Storing Fa= Farming

It is observed that the explanatory power of the R^2 is 0.85 indicating that 85 percent variation in the overall value added is explained by variation of the independent variables included in the model. The F statistic of this model is also statistically significant at 1 percent. It is hypothesized that the signs of all independents variables are positive and significant. The predictors Hu, St and Fa are found with positive sign as per expectation but Ha has negative sign. It is found that other variables keeping constant, one percent point increase in Hu leads to 0.413 percent on overall value addition. Similarly, it is noted that one percent point increase in St and Fa increase by 0.25 percent and 0.37 percent on the overall value addition respectively if other variables keeping constant. Here three independent variables are significant and one independent variable Ha is insignificant at 1% level of significance.

Conclusion

As mentioned in earlier sections the research is conducted on the value chain analyses of farming which took value addition as dependent variable with the sample size of 400 respondents. The result gives the insight on the value addition in paddy during the farming value chain used by farmers of four different districts Kathmandu, Lalitpur, Bhaktapur and Kavrepalanchowk. The result so obtained may not be generalized to the farmers residing all over Nepal. The research is all based on quantitative data and has used descriptive statistics, ANOVA, regression and Correlation analysis as the major analyses tools. The unit of analyses used was the gender of the respondents, location of the respondents, investment level and their experience in farming paddy.

Here after the thorough analysis of the findings and result it had been clear that the 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. Also in order to gain more result the 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.

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