Innovation The Research Concept

Entrepreneur's Performance Level at Food Processing Industry: A Study in Assam

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Abstract

The development of industrial sector highly depends on the performance level of the entrepreneur. Performance of an entrepreneur indicates the capability to satisfy the consumer, quality output and proper management. Performance of the entrepreneur depends upon their capacity regarding proper account keeping system, innovative ideas and extension activities, expansion of the business and management of working capital.

The conversion of raw agricultural ingredients (plants and animal products) into food and food into other value added product is identified as food processing which is a large sector that connects with the activities such as agriculture, horticulture, plantation, animal husbandry and fisheries. It converts fresh harvested crops and animal product into attractive, marketable and value added long life products. In India food processing is considered as sunrise sector due to its large prospects in economic development of the country. It also includes other industries that use agricultural inputs for manufacturing of edible products.

At present food processing industry has received a developmental stage in Assam, because large number of entrepreneur comes forward in this field. The development of industrial sector highly depends on the performance level of the entrepreneur. Here we study some subsector of food processing industry mainly fruits and vegetables, bakery and supari sector with main objectives of studying the present stage and to study the performance level of the entrepreneur. Regression analysis is done to determine the performance level. The performance level is regressed on relevant variables such as years of schooling, gender of the entrepreneur, training obtained or not by the entrepreneur, experience and family size. These variable are seems to be important from the preliminary field survey and from the experience of past literature.

The study reveals that Entrepreneur's performance level depends upon several factors like schooling, training of the entrepreneur, experience of the entrepreneur etc.

Keywords: Food Processing, Development, Industrial Sector Performance Level, Regression Analysis,

Introduction

Assam produces a variety of primary food crops, fruits and vegetables, but the food processing sector in the state is still at a rudimentary stage of development. Although a number of food processing units have come up in recent years, food processed in the state still accounts for less than 30 percent of the state's total agricultural products. Besides, the growth of the sector has been lopsided. The sector is dominated by units of processing primary food products like packaged milk, milled flour, rice, tea and spices etc. Processing and packaging of perishable fruits and vegetables are still unable to occupy an important place. As a result the earnings of the farmers engaged in the production of perishable crops are adversely affected and they compelled to go for distress sale of bulk of their produce for inadequacy of facilities like proper storage, transportation etc. An attempt has been made in the present study to analyse the performance level of the entrepreneur along with the present position of food processing industry in Assam considering three subsectors for simplicity as sample subsectors. These three sample subsectors are fruits and vegetables, grain processing (Bakery) and plantation crop processing (supari).

Objectives of the Study

The study is based mainly on the following objectives-
1. To observe the present position of the food processing industry in Assam, and
2. To analyse the performance level of the entrepreneur in food processing industry

Methodology

A two stage stratified sampling design, in which both random and a purposive method has been used to draw samples in the study. A list of food processing units in Assam stratified into subsectors has been prepared from the available official data and three subsectors viz. fruits and vegetables, grain processing and plantation crop processing has been selected purposively depending upon some characteristics of raw materials like perishable, astringent etc.In grain and plantation crops processing subsectors only bakery and supari processing units are selected respectively. In view of time and resource constraints along with number of existing units 10 to 20 percent sample is drawn. Out of total 1251 units of three subsectors a sample of 151 units consisting 12 percent of the total sample processing units in these three subsectors are drawn randomly for data collection and analyses. The sample size is given below.

Sample Size of the Study

Sub sectors	No. of units	Sample drawn	Percentage of the total
Fruits and vegetables	244	36	15%
Grain processing (Bakery)	854	85	10%
Plantation crops(Supari)	153	30	20%
Total	1251	151	12%

Source: Director of industries GOA (2013-14)

In our study to examine the performances of the entrepreneurs' marks have been assigned to different indicators in between 0 and 1.

Present position of Food Processing Industry in Assam

NEDFi had identified the fruits and vegetables processing industry as the most potential project for NER. The food processing industry has been brought under the NEDFi's recently launched investment plan viz. North East Equity Fund. Under the scheme, a Guwahati based cold drink bottling firm has been provided fund worth Rs.150 lakh.

The reports of Directorate of Horticulture and Fruit Processing, Government of Assam(GOA), (2013-14) reveals that the value of production of agro based and food processing industry during 2012-13was Rs. 17574.85 lakh, total sales Rs.19859.82 lakh, employment 12, 3000 and wages Rs. 9926.51 lakh. The production of fruits and vegetables processing sector in Assam during 2011-12 and 2012-13 was Rs 73.20 lakh and total sales Rs.80.40 lakh.

Number of Food Processing Units

According to the records of Directorate of Industries, GOA, there are 7291 food processing units in Assam since inception to March 2013. The subsector wise distribution of the units reveals the predominance of rice processing units accounting to more than 41 percent of the total, followed by atta (15.18%), bakery (11.71%), oil processing (8.65%), Spice (4.64%) and so on. These are represented with the help of bar diagram in Figure 1

Figure 1
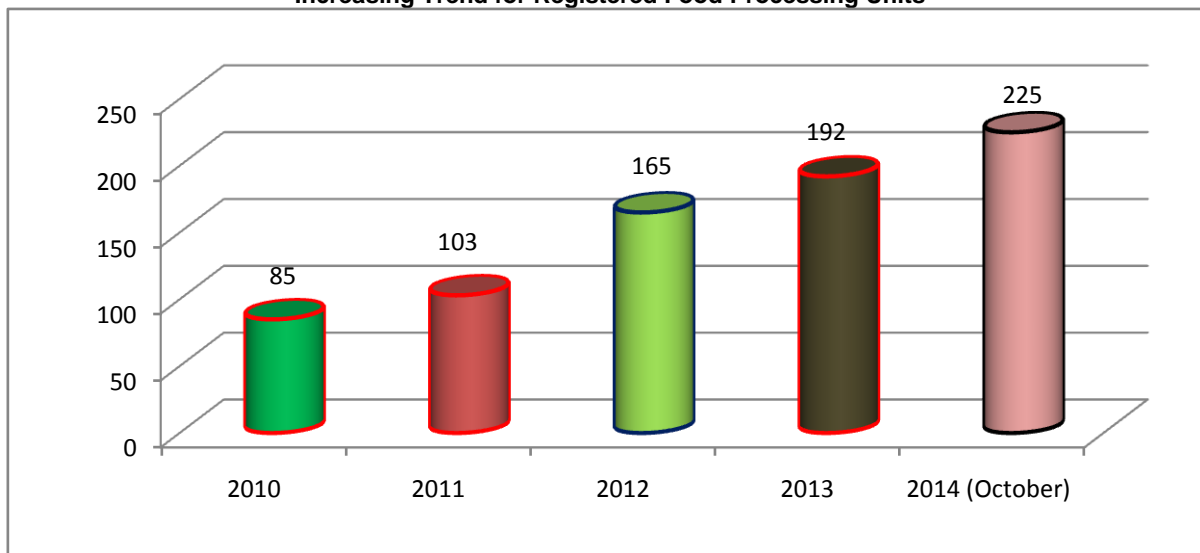**Number of Food Processing Units in Assam**
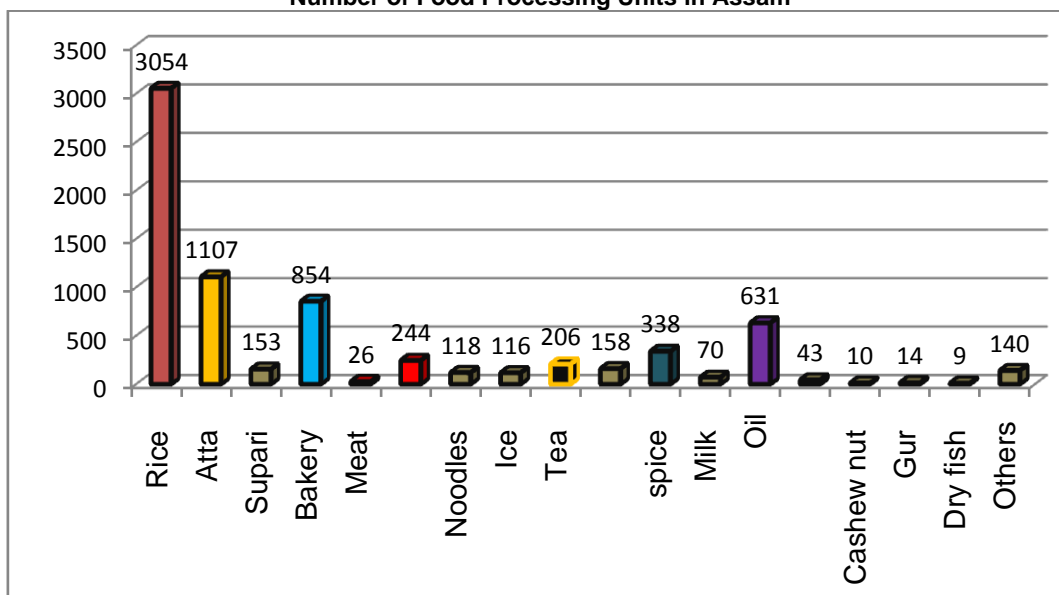
Source: Directorate of Industries, GOA (2013-14)
Subsector wise numbers of registered food processing units up to March 2014 are shown in figure

The number of food processing units registered in different district industry centers reveals that the units are unevenly spread and most of them operate under private sector. The trend for the increasing number of food processing units and the sample processing units during the period 2010-2014 (October) are shown in figure 2 of the following.
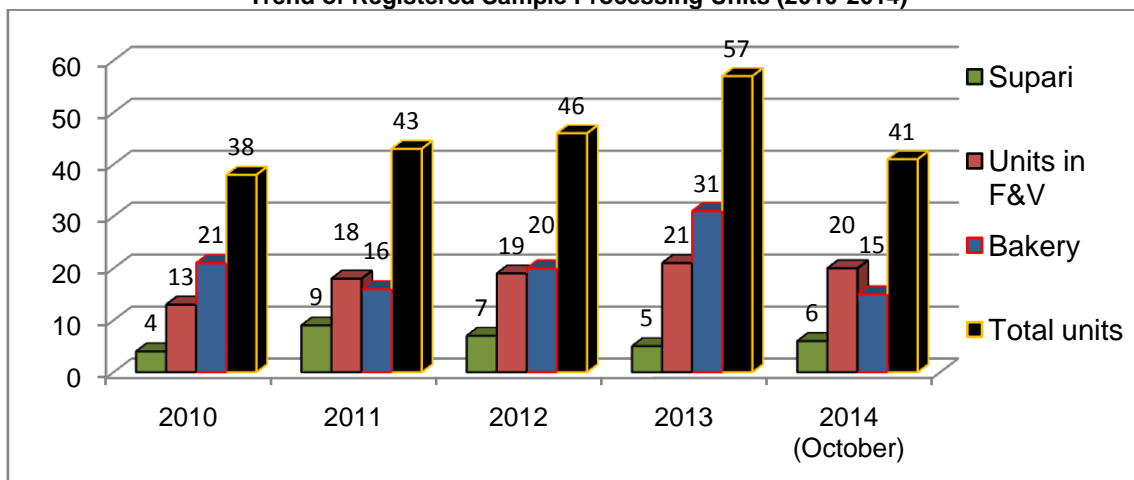
Figure -2
Increasing Trend for Registered Food Processing Units

Source: diccassam/admin

Numbers of registered units in three sample sub sector during 2010-2014 (October) are shown in Figure 3.

Figure 3
Trend of Registered Sample Processing Units (2010-2014)

Source: diccassam/admin

Along with this the district wise numbers of sample processing units in three subsectors are also calculated. In case of fruits and vegetables subsectors the highest number of units is in Nagaon district followed by Kamrup (M), Sivasagar, Sonitpur, Karimganj and Darang. In case of grain processing sub sectors highest number is in Goalpara, followed by Kamrup (M), Sonitpur and Jorhat. Regarding plantation crops the highest is in Dhubri followed by Kamrup (M) and Nagaon districts..

Association of Performance Level with Other Variables

To find out the association of performance level of the entrepreneur and other relevant variables a multiple regression model is used where the performance level is regressed on relevant variables such as years of schooling, gender of the entrepreneur, training obtained or not by the entrepreneur, experience and family size. These variable are seems to be important from the preliminary field survey and from the experience of past literature. The dependent and explanatory variables are given as follows

Variables for regression model is,

Dependent Variable
1. Performance level of the entrepreneur

Explanatory Variable
1. Year of schooling of the entrepreneur
2. Gender of the entrepreneur
3. Training obtained by the entrepreneur
4. Experience of the entrepreneur
5. Family size of the entrepreneur

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6. Location of the unit

The following logistic function is used to analyse the performance level as the dependent variable (performance level) takes the value in between 0 and 1.

$$Y=1/(1+e^{-z})$$

Here Y= Value of performance level index

Z= Linear combination of explanatory variables

$$Z= \beta_0 + \sum \beta_i X_i + U_i$$

For running regression the value of Z has been constructed by using following transformation formula.

$$\ln\{Y/(1-Y)\}=Z$$

Therefore the model becomes

$$Z= \beta_0 +\beta_1 Ysc_i +\beta_2 Gn_i +\beta_3 Tr_i +\beta_4 Ex_i+ \beta_5 FS_i + \beta_6 Loc_i+ U_i \text{ -- - - - - - - 1}$$

Where,

Y_{SC}= Years of schooling [0= illiterate, 4=primary, 10= HSLC or below,   12= HS or below 15=graduate & undergraduate, 17=P.G.]

G_n = Gender of the entrepreneur   [1=Male, 0=otherwise]

T_r = Training of the entrepreneur [1=got training, 0= otherwise]

E_x = Experience (maturity) of the entrepreneur [1= up to 5 years, 2=6-10, 3= 11-15, 4= 16-20, 5= 21-25, 6=26-30, 7= 31 and above].

FS= Family size

Loc = Location (1= urban, 0= rural)

U_i = the random disturbance term

For fruits and vegetables subsector, U_i= 1,2,3,4,- - - - - - - - - - -36 and β_j's are the unknown parameters to be estimated where j =(0,1,2,- - --6). Now the parameters are estimated by applying STATA package. White's Robust standard error has been used and heteroscedasticity of the disturbance term has been cleared up by the technique.

The calculated results of the regression analysis for the equation 1, for fruits and vegetables subsector are shown in Table 1.

Table 1

Variables/ constant	Estimated coefficient	Robust standard error	t-value
	Regression Analysis for F&V Subsector		
	Breusch- pagan test for heteroscedasticity: Chi ^{2}(1) = 5.79 and probability =0.0161 Result= Presence of heteroscedasticity ; Corrected using Robust SE		
Ysc	0.0663511	0.0183566	3.61***
Gn	-0.0649757	0.0860294	-0.76
Tr	0.1361423	0.0802488	1.70*
Ex	0.1010161	0.0465328	2.17 **
FS	-0.0469885	0.0375191	-1.25
Loc	-0.0147112	0.0834218	-0.18
constant	1.719319	0.2736547	- 6.28***
R^2	0.6872	0.23394	
F(6,29)	14.95***		

'***', '**'and '*' indicates significant at 1%, 5% and 10% respectively

From the analysis it is seen that year of schooling, training and experience of the entrepreneurs has significant association with performance level of the entrepreneurs. But gender, family size of the entrepreneur and location of the unit has no significant association with performance of entrepreneurs in case of fruits and vegetables processing subsector.

Same regression model is used for measuring the association of performance level of the entrepreneur with other variables in plantation crop processing sub sector as given in equation -2.

$$Z= \beta_0 +\beta_1 Y_{SCi} +\beta_2 G_{ni} +\beta_3 T_{ri} +\beta_4 E_{xi}+ \beta_5 FS_i + \beta_6 Loc_i +U_i \text{ ---------------- 2}$$

Same specifications is used but the only difference is that here the random disturbance term U_i is (U_i= 1,2,3,4,- - - - - - - - -, 30) instead of (U_i = 1,2,3,----- -,36) Now for estimating the parameters STATA package is used. White's Robust standard error has been used to clear the heteroscedasticity problem. The results of the regression analysis of the equation 2 are shown in Table 2.

Table 2

Variables /constant	Estimated coefficient	Standard error of coefficient	t-value
	Regression Analysis for Plantation Crop Processing (supari) Subsector		
	Breusch- pagan test for heteroscedasticity: Chi ^{2}(1) = 0.37 and probability =0.5441, Result= No heteroscedasticity		
Ysc	0.0730065	0.0201423	3.62***
Gn	- 0.0160038	0.0821351	-0.19
Tr	0.0846293	0.0877347	0.96
Ex	0 .092201	0.0347521	2.65**
FS	- 0.0568222	0.039863	-1.43
Loc	- 0.05955	0.0899275	-0.66
constant	-1.66534	0.2913467	- 5.72
R^2	0.7106	0.20981	
F(5,24)	9.41***		

'***' and'**' indicates significant at 1% and 5% respectively

The result of this analysis reveals that year of schooling of the entrepreneur has high significant association but experience of the entrepreneur is moderately significant with their performance levels. On the other hand gender, family size and training of the entrepreneur along with location of the units has no significant association with the performance of entrepreneur in case of plantation crop (supari) processing subsector.

To analyse the association of performance level of the entrepreneur with other variable in grain processing (bakery) subsector same model is used with same specification.

$$Z= \beta_0 +\beta_1 Y_{SCi} +\beta_2 G_{ni} +\beta_3 T_{ri} +\beta_4 E_{xi}+ \beta_5 FS_i + \beta_6 Loc_i + U_i \text{ - - - - - - 3}$$

Here U_i is disturbance term and U_i = 1, 2, 3, 4, - - - - - - - - - - - - - -, 85. Now for estimating the parameters STATA package is used. White's Robust standard error has been used and heteroscedasticity of the disturbance term has been cleared up by the technique. The results of regression analysis for the equation 3 are shown in Table-3

Table 3

Variables	Estimated coefficient	Robust standard error	t-value
Regression Analysis for Grain Processing (Bakery) Subsector			
Breusch- pagan test for heteroscedasticity: Chi ^{2}(1) = 22.40 and probability =0.0000, Result= Presence of heteroscedasticity : Corrected using Robust SE			
Ysc	0.0422359	0.0146282	2.89***
Gn	0.0353369	0.0398864	-0.89
Tr	0.0842133	0.0502817	1.67*
Ex	0.1216709	0.0328915	3.70***
FS	0.0005025	0.0146461	0.03
Loc	0.0095551	0.0375419	0.25
constant	-1.661459	0.1333078	-12.46***
R^2	0.7856	1.8039	
F(6,78)	42.40 ***		

'***', '**' and '*' indicates significant at 1%, 5% and 10 % respectively

From this analysis it is seen that year of schooling, training and experience of the entrepreneur has significant association with their performances while the gender, family size of the entrepreneur and location of the units has no significant association with performance level of entrepreneur e in case of grain processing (bakery) subsector.

Conclusion

From the discussion it can be concluded that there are various types of food processing industry producing in Assam. The prospect of fruit and vegetable processing industry in Assam is bright. With large amount of local raw materials, infrastructural facilities, establishment of training institutions etc helps the entrepreneur to establish the food processing industry in the state.

Entrepreneur's performance level depends upon several factors like schooling, training of the entrepreneur, experience of the entrepreneur etc.

Though the industry faces various problems yet it has large prospect for the economic development of the state.

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