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Development of Agro Processing Sector in Assam: Probable Influencing Factors

Abstract

Agro based industries are those adds values to agricultural raw materials through processing in order to produce marketable and usable products. A strong and dynamic agro processing industry plays a vital role to reduce post harvest losses, diversification and commercialization of agriculture, enhances self life, ensures value addition, generates employment and enhances farmer's income. In this paper we tried to study the features of agro processing sector and discuss the influencing factor for the growth of agro processing sector in Assam, including organisational strength and related factors

The analysis is based on both primary and secondary data and only for food processing sector is conciders. The subsectors taken for study are fruits and vegetables, bakery and spices.

Keywords: Agro Based Industry, Processing, Post Harvest Losses, Value Addition, Organisational Strength, Etc.

Introduction

An industry that adds values to agricultural raw materials through processing in order to produce marketable and usable products can be termed as agro based industry. This provides a strong link between agriculture produce and ultimate consumer. In India several efforts have been made to give great thrust to this Sector. The green revolution, white revolution and blue revolution have laid the foundation for rapid expansion of the agro processing in India. Thus Indian agriculture provides a strong base though wastage of the produce is large. A strong and dynamic agro processing industry plays a vital role not only in reduction of post harvest losses but also in diversification and commercialization of agriculture, enhances self life, ensures value addition, generates employment, enhances farmer's income and creates market for export of agricultural product.

Assam occupies a prominent place in agriculture sector in the country as the state is blessed with Suitable fertile land and climate which can support varieties of crops. Majority of population depends on agriculture for their livelihood. In spite of being one of the major producers of many crops, fruits & vegetables in the north eastern region, the infrastructure for post harvesting and processing is quite inadequate. As a result, there is a huge wastage in the sector and thus not only reduce the income level of the farmers but also affects the state economy adversely.

Agro processing dates back to the prehistoric ages when crude processing incorporated slaughtering, fermenting, sun drying, preserving with salt, and various types of cooking (such as roasting, smoking, steaming, and oven baking). Salt preservation was especially common for foods that constituted warrior and sailors 'diets, until the introduction of canning methods. Evidence for the existence of these methods can be found in the writings of the ancient Greek, Chaldean, Egyptian and Roman civilizations as well as archaeological evidence from Europe, North and South America and Asia. Examples of ready-meals also exist from pre industrial revolution times such as the Cornish pasty and Haggis. During ancient times and today these are considered processing foods.

Among agro processing products, Jute, cotton etc. are the nonfood agricultural product and the edible are food products. Here we discuss about the food processing sector only. Food processing is generally divided between the organized and unorganized sectors. In case of fruits and vegetables it is almost equally divided between the two. The product like juices and pulp concentrate are largely manufactured by the organized sector, while the unorganized sector covers the traditional area of processed item like pickles, sauce and squashes. Most of the units are export oriented. Domestic consumption of the product is low, which indicate



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a potential for growth through increased penetration of the domestic market.

Objectives of the study

The main objectives of the study are given below-

1. The first objective of this paper is to discuss the features of agro processing sector in Assam.
2. Another objective of the study is to discuss the influencing factor for the growth of agro processing sector in Assam, including organisational strength and related factors

Methodology

The analysis is based on both primary and secondary data and only for food processing sector is conciders. The subsectors taken for study are fruits and vegetables, bakery and spices. The sample selected for the study is 124 which contain 24 units of fruits and vegetables, 85 bakery units and 15 spice units. From the field study of food processing industry in Assam, we have gathered some primary information regarding the features of the sectors, organisational skill, innovations, awareness etc. from different entrepreneurs. In this study some preliminary analysis of the primary data collected has been presented. Some basic characteristics of food processing industry are studied and explain the features of food processing industry in Assam. The influencing factors for the growth of processing industry in the state are also analysed in this study.

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**Features of Food Processing Industry
Classification of Food Processing Units**

The information collected in the field study regarding the amount of labour and its nature used by the unit has been utilised to classify the processing units. The structure of processing units can be divided in to two classes i) the processing units work and managed by family members called own account enterprises and ii) the processing units engaging at least one hired workers is establishments. In Assam the food processing industry is mainly unorganised; both own account enterprise (OAE) and establishments are present in the sector. But large part of the unit is dominated by establishment.

In this study out of 124 sample units 119 units constituting 95.97 percent of the total carryout their processing activities by engaging hired labour (establishments) and the remaining 05 units constituting 04.03 percent fall under the own account enterprises category. Therefore the food processing industry is dominated by establishments. In case of bakery units 98.82 percent is dominated by establishments and in fruits and vegetables subsectors too large portion of sample units belongs to establishments. Among 24 samples of fruits and vegetables only 02 units belongs to OAE. In case of supari units 13 units out of 15 belongs to establishments. These accounts are listed in the table-1

Table 1

Number OAE and establishment of sample processing units

Sub sectors	Nos. of OAE	Nos. of establishment	Total
Fruits and vegetables	02(08.33%)	22(91.67%)	24 (100)
Bakery units	01(01.18%)	84(98.82%)	85 (100)
Spice	02(13.33%)	13(86.67%)	15(100)
Total	05(04.03%)	119(95.97%)	124(100)

Source: Field study

This obviously signifies the predominance of establishments in food processing industry.

Endorsement of FSSAI to food processing units:

The food processing units can enjoy the several opportunities in manufacturing, storage, distribution and import of food if get licence from Food Safety and Standard Authority of India (FSSAI) under FSS Act 2006. But our investigation reveals that 83 sample units (66.94 percent) out of 124 are unable to acquire the FSSAI licence due to the non fulfillment of minimum norms put forwarded for obtaining such licence. Only 41 units (33.06 percent) of the sample processing units have got the FSSAI licence. There are 7 units from fruits and vegetables subsector, 31 from bakery and 3 from spice units have got the licence from FSSAI.

Due to the nonexistence of licence more than half of sample processing unit are unable to obtain the globally acceptable quality standard products considered as Total Quality Management (TQM) including ISO 9000, ISO 22000, HACCP, GMP, GHP etc. Without attaining this certificate their product faces the problem of marketing inside or outside the country and products remain confined within particular vicinity.

Maturity of Food Processing Units

Maturity of units can be studied from the starting period of processing activities by the units. From the field investigation regarding the year of starting the processing activity we can calculate the maturity. The following table shows the period of maturity of the sample processing units of Assam.

Table-2

Maturity of sample processing unit

Period of existence	0-5 years	5-10 years	10-15 years	15 and above	Total
Nos. of units	45 (36.29)	29(23.39)	31(25.00)	19(15.32)	124(100%)

Source: Field study

The result of field investigation as plotted in table -2 reveals that 45 processing units out of total 124 sample units constituting 36.29 percent of the total units came into existence and produces for less than 5 years. The units produces for more than 5

years but less than 10 years are 29 out of 124 units and constitute 23.39 percent of the total. Again the processing units which exist more than 10 years but less than 15 years are 31 or 25.00 percent and the

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number of unit that survive more than 15 years are 19 out of 124 and constitute 15.32 percent of the total.

This analysis reveals that majority of the sample units are new, because out of 124 units only 19 units lies on the maturity group of above 15 years. This fact signifies that the processing activities in our state are very nascent or the processing units are stopped their activity before attaining maturity. During the field study it is observed that several well established units closed down after receiving the institutional credit from different institutions or due to some locally arising problems like labour injure in working place, price of the raw material etc.

In case of marketing and research and storage activities the involvement of the workers are negligible. Large numbers of workers are engaged in production, procurement and other activities such as sales and other support services etc.

Absence of Gender Discrimination in Entrepreneurial Activities

Another important feature of the processing unit observed in this field investigation that both male and female are equally interested for performing the activities. Among the 124 sample units 44 units, constituting 35.48 percent of the total is managed by the female entrepreneur and the remaining 80 units constituting 64.52 percent of the total are managed by male personal. Therefore gender discrimination are almost absent in case of entrepreneurial activities of food processing industry in Assam.

Dominance of Private Sector

In our field study it is observed that most of the food processing units are under private sector.

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Only a few units are under cooperative and public sector. Among our 124 sample units 109 units consisting of 87.90 percent of the total are under private sector and only 15 units consisting 12.01 percent are under public and co-operative sector, which clearly shows the dominance of private sector on food processing industry. One of the reasons for this trend may be the inadequate information about the economic feasibility of starting the unit.

Male Female Workers Ratio

The male female workers ratio in case of our sample study is 1:0.73. That is for the employment of one male labour, 0.73 female is employed. This clearly indicates the predominance of male in the food processing industry.

Hired and Family Member Worker Ratio

Both family member and hired persons are engaged in production activities. Out of total 1069 employees 148 or 13.48 percent are comes from their own family and the remaining 921 or 86.16 percent are haired persons. The ratio is 1:0.16

Influencing Factors on the Growth of Food Processing Industry

The result recorded during the field study under the subtitle 'influencing factors for the choice of the activity' has been analysed to examine the factors behind the growth of the food processing industry in Assam. This analysis fulfill the second objective of the study .Table 3 shows the impact of different factors on the growth of processing units in Assam.

Table -3
Influencing factors for the growth of food processing industry in Assam

Factors	Sub sectors			
	Fruits & Vegetables	Bakery	Spice units	Total
Existing facilities	14(58.33)	39(45.88)	10(66.67)	63(50.81)
Personal factors	03(12.50)	22(25.88)	03(20.00)	28(22.58)
Existing & personal	06(25.00)	13(15.29)	02(13.33)	21(16.94)
Other factors	01(4.17)	11(12.95)	-----	12(09.67)
Total	24(100)	85(100)	15(100)	124(100)

Figures in the brackets indicate percentages.

From the sample of all subsectors a total of 63 processing units out of the total 124 units comprising 50.81 percent came into existence due to the available existing facilities. On the other hand some personal factors like family tradition, personal status etc is responsible for the coming out of 28 processing units which constitute 22.58 percent. The combined force of the above mentioned two factors helps in the construction of 21 units comprising 16.94 percent and the remaining 12 units are emerges due to other factors like absence of alternative engagement, construction of ancillary industry etc.

The figures presented in the table - 3 reveals that in case of fruits and vegetables processing subsector of food processing sector out of 24 sample units 14 units consisting 58.33 percent came into

existence due to the influence of existing facilities which include easy availability of raw materials, infrastructural facilities etc. Some personal factors are also responsible the growth of units. This factor is responsible for the existence of 3 units out of 24 consisting of 12.50 percent. Similarly 25 percent of fruits and vegetables processing units are grown for both existing and personal factors. The remaining 4.17 percent are grown due to other factors.

In case of bakery which includes the subsector of grain processing, 45.88 percent unit came into existence due to the existing facilities. Personal factors are responsible for the growth of 22 units out of 85 sample units which consists of 25.88 percent. The combined factors of both personal and existing facilities are responsible for the growth of 13

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units consisting of 15.29 percent of the total, followed by 12.95 percent or 11 units for the other factors.

In case of spice processing which lies in the commercial crop processing subsector, out of 15 sample processing units 10 units' i.e. 66.67 percent of the total are came into existence due to existing facilities. Out of remaining 33.33 percent of the unit 3

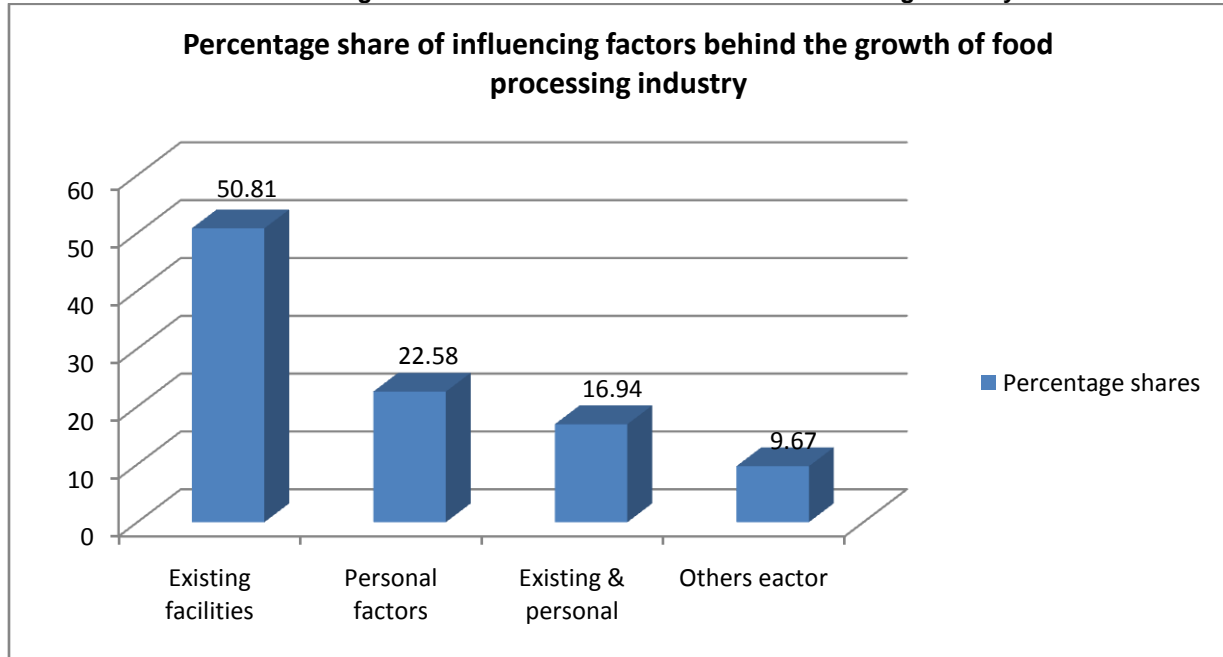
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units (20.00%) came into existence due to personal factors and 2 units (13.33%) come into existence due to combined effort of personal and existing factors.

The percentage shares of different influencing factors are represented in the following figure.

Figure -1

Influencing Factors behind the Growth of Food Processing Industry



Influencing Factors behind the Growth of Food Processing Industry

Mere percentage may not be the determinant for selecting the influencing factors in the growth of processing industry in some cases.

Therefore from this information we calculate the coefficient of variation (CV) to measure the best (consistent) among the four factors and the results are listed in the table -4.

Table -4
Coefficient of variation

Factors	Existing facilities	Personal factors	Existing &personal	Others
C.V	74.84	117.57	79.54	152.07

From the table it is clear that the coefficient of variation (CV) is less for existing facilities among the four series which is 74.84 percent and the CV is greater for the series of other factors and the value is 152.07. The CV of the remaining two series lies in between the two i.e. 117.57 and 79.54 for personal factors and existing and personal factors respectively. Therefore we can conclude that the existing factors are highly influencing factors or the growth of food processing industry in Assam. In respect of overall growth of food processing industry in Assam the existing facilities factors rank first followed by combined factor of both personal and existing facilities, personal factors and lastly the other factors.

Organisational Strength and Related Factors Organisational Strength and Importance of Training

An organisational strength of the processing entrepreneur depends upon their capacity regarding proper maintenance of the account, innovative idea and awareness about business prospects. In our study to examine the organisational strength of the

entrepreneurs' marks were assigned to different sub sectors taking into account their responsiveness about business prospects, innovative ideas regarding production and capabilities of keeping accounts properly. On the basis of the marks obtained by the entrepreneur after careful investigation of the above factors were classified in to several groups.

An entrepreneur getting 1 to 9 marks out of total 30 marks were considered as below average , those who scored 10 to 15 marks were considered as average, entrepreneur scoring 16 to 21 were considered as good and score in between 22 to 30 were considered as very good in organisational performances. In our observation out of 124 processing unit, only 49 units consisting 39.52 percent scores in between 22 to 30 marks and included in the very good rank, 27 units (i.e. 21.77%) were selected as good, 36 units consisting 29.03 percent were found to be in the rank of average and the remaining 12 units (09.68%) were ranked as below average. The following table shows the details of ranking according to the marks obtained by the units.

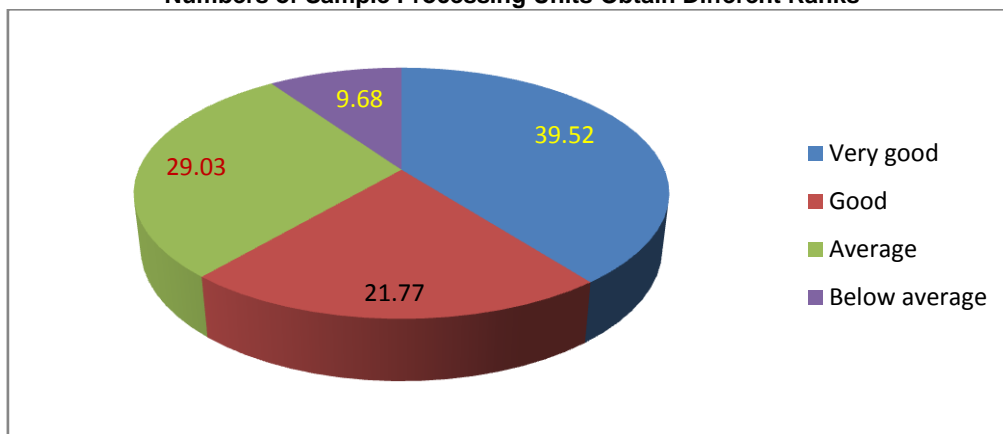
Table -5
Ranks Obtained by the Sample Units

Rank	Very good	Good	Average	Below average	Total
Nos. of units	49(39.52)	27 (21.77)	36 (29.03)	12 (09.68)	124 (100)

Figures in the brackets indicate percentages.

Numbers of processing units under different rank according to their performances are shown in the following figure.

Figure-2
Numbers of Sample Processing Units Obtain Different Ranks



Numbers of Processing Units Obtain Different Ranks

From this it is clear that most of the entrepreneur have poor organisational strength in terms of habit of keeping accounts, innovativeness and awareness about future business prospects. One of the important factors for this poor organisational strength has been recognized as the absence of training facilities to the entrepreneur, because 72 sample food processing entrepreneurs of the sample units consisting 58.06 percent of the total did not receive any formal training in the relevant subjects. Therefore significance of training and entrepreneurial strength has been examined by conducting Chi-square test.

The calculated value of Chi-square is greater than the table value for degrees of freedom 1 and at 10 percent level of significance. Hence we rejected the null hypothesis of independence of or absence of association between training and organisational strength of the processors about business prospects at 10 percent level of significance.

Therefore it can be concluded that training has a positive impact on the growth of food processing industry as it develops organisational strength of the entrepreneurs.

Extension, Diversification Plan and Organisation of Training Programme by the Processors

Our field investigation reveals a poor picture concerning expansion and diversification plan. Recorded information shows that only 59 entrepreneurs out of 124, consisting 47.58 percent of the total have expansion and diversification plans and the remaining 62 entrepreneurs consisting 52.42 percent are satisfied with their existing scale of production. Some of them are satisfied at the same position due to several confinements.

Regarding the expansion and exploration of the market majority of the entrepreneurs have expressed their interest but most of them cannot

explore beyond the locality due to the limitations of non existence of FSSAI licence. However a good portion of our sample, 69 out of 124 (55.65%) have ambitions to explore outside markets. On the other hand 45 unit's consisting 36.29 percent believe on the scope of large markets within the local economy. But 8.06 percent of the entrepreneurs have no forward vision concerning the expansion or exploration of the markets.

Regarding the issue of organisation of training by the processing units 57, units constituting 45.97 percent have positive thinking. By organizing workshop and seminar with experienced resource persons or even with some entrepreneurs they help in expansion of the sector with quality product.

Infrastructural Facilities

Agri Export Zone

For fresh and processed ginger, agri export zones have been proposed in different parts of Assam. The important districts selected for this zone are Kamrup, Nalbari, Barpeta and Nagaon.

Mega Food Park Scheme

To provide adequate infrastructure for food processing industry the Mega food park scheme was revised in 11th five year plan. The scheme provides a grant of 50 percent of the capital cost and in case of North East India it is 75 percent. In Assam under this scheme a central processing centre is constructed at Nathkuchi of Nalbari district, which cover an area of 50 acres of land. It has a network of 6 primary processing centres, 19 collection centre spread across the NER. Moreover an agro marketing hub has been setup near Guwahati linked with this park. A food processing park is also under construction at Chaygaon in the Kamrup district and one is at ulup pathar, Tinsukia district.

Banana Parks

In Goalpara district of Assam a banana park has been setup. It is situated in the Industrial Growth Centre at Matia development block. It facilitates value

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addition and marketing of banana in fresh and derivative forms. To encourage commercial cultivation of banana and to facilitate fresh and processed banana production a banana export development centre is being set up in Assam.

Grant in Aid for Infrastructure Development

For development of infrastructure for food processing industry MOFPI approved several scheme like food park, integrated cold chain facilities, value added centre, irradiation facilities, modernized abattoir etc. the grant in aid for these scheme is 25 percent of the total cost. In case of Assam and other north eastern states this assistance is 33.3 percent. Moreover the grant in aid for Mega Food Park is 50 percent for the states, but for north eastern states it is 75 percent.

Creation of NERAMAC

NERAMAC (North East Regional Agricultural Marketing Corporation) an energetic Agri-marketing organization is a government enterprise under DoNER Ministry (Development of North East Region). It plays a significant role by intervening in the sourcing, procuring and marketing the case crops like ginger, pineapple, cashew nut, kiwi fruits etc. It has also procured and marketed other items such as turmeric, maize etc. and helps the farmers and producers by organizing different awareness programme, exhibition etc. The North East Food Processing Expo for the processors of NER and seller buyers' conference organised by NERAMAC helps them in different ways.

Investment

Several investors showing their keen interests in bhot jolokia, lemon or nemu, carombola or kordoi, passion fruits or lota bel, olive or jalphai elephant apple or ou-tenga, birds eye chilli or kon jolokiya, bamboo shoots or bahor gaj, ginger, turmeric, black pepper, orchids etc. The bhimvita brand of baby food (made from vhimkal and gum) produced by 'Shristi Industrial Products' of Kamalabari, Majuli are able to attract foreign investor. The Central Food Technology Research Institute at Mysore has cleared the baby food for consumption. A Dubai based businessman has expressed the interest in importing the product.

Efforts have been made by APEDA to build external market linkage for food processing units in Northeastern region with major players in food sectors like Hindustan liver, Dabur, ITC and other companies, APEDA is also setting up model of organic farms for Joha rice and sugarcane in Assam, passion fruit in Manipur and pineapple in Tripura.

Conclusions

The conclusion derived from the analysis of this paper may be summarized as below.

1. The food processing industry is dominated by establishment and operated mostly under private sector.
2. The growth of food processing industry in Assam is an emerging phenomenon and primarily influenced by the easy availability of raw material in the state.

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3. In food processing industry of the state seasonality is observed, particularly for fruits and vegetables and nut processing sub sector. Therefore the persons engaged in this two subsector are required to look for alternative measures of engagement during the slack period.
4. Gender discrimination is absent in case of entrepreneurial activities of food processing activities.
5. Male, hired and full time workers dominate the food processing industry in Assam.
6. Training has a positive impact on the growth of food processing industry and it helps in increasing the organisational performances of the entrepreneur of the state.
7. To overcome the problems of seasonality and middleman faced by producers and processors there is a need to develop a strong relation between farmers and processing units.
8. Contribution of food processing sector to GDP and export of processed food gradually increasing in our country.

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