A STUDY OF GROWTH DETERMINANTS IN SMALL SCALE AGRO - PROCESSING INDUSTRY

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Abstract - Small scale industry is one of the biggest contributors to any economy and the growth of these firms depict wellness about the country. However, it is very essential to understand about the growth pattern of these firms. Some of the major determinants such as firm size, managerial networking intensity, skill development of employees, product diversification and market integration are well highlighted along with Employee skill development and use of information technology. To attain growth, small-sized agro-based firms should move from a traditional product-focus strategy to a flexible market-focus strategy. This paper aims to study the growth determinants of small-sized agro-based firms in the Indian agro-industry. The census sampling method was used to collect information through a structured pretested questionnaire from sample agro-firm in Pune district of Maharashtra, India. Data was then analyzed with the help of Chi-square statistical tool to test the hypothesis.

Keywords - Small scale, determinants, agro-industry

I. INTRODUCTION

Growth and development in any economy is accelerated by growth of industries and firms. The national gross domestic product (GDP) in an economy depends on the collective industry performance. The agro-industry in India is one of the important industries, contributing toward national growth and development and leading to higher economic activity, starting from income and employment to literacy and high living standards of people. Commonly, the agro-industry is assumed to be an industry connected with agriculture. The graduation from agriculture to agro-industry depends on the degree of development of an economy. The agri-business to agriculture ratio of urbanized countries is 3.32 and that of transforming countries is 1.98. India is traditionally known as an agriculture-based country and is one of the largest producers of paddy, wheat, pulses, coarse grains and vegetables in the world, contributing 25 per cent to the national GDP and 13 per cent of the country's export. Unfortunately, the agribusiness to agriculture ratio of agriculture-based countries is 0.57. The important fact to be noticed is that the percentage of the food processing and beverage industry to the total industry in agriculture-based countries is 0.47, as compared to that of 0.22 of transforming countries and 0.20 of urbanized countries (Wilkinson and Rocha, 2008). So, the agro-industry in India is one of the important industries generating employment and contributing to the GDP and export.

In the middle of the nineteenth century, the agro-industry was commonly known as a processing industry with the initiation of a few flour mills. History says that in 1863, the foundation for the agro-industry was set up in the Madras state of India by the British Government, which included modern agricultural machines like threshing machines, winnowers, chaff cutters, the steam plough, cultivators, seed drills, etc. In the post-independence period, the agriculture sector was triggered by a green revolution and increased production of grains, followed by a white revolution for milk and a yellow revolution for vegetable oils. In a later period, emphasis was given to the production of fish-based products, meat, non-timber forest products, etc. The increased agricultural production led to a spillover effect on the agro-industry, especially mechanized production and processing. With the development of an agro-industry, technology was developed and supported by the Indian Government, as the agro-industry was not only a supplier of food or processed food or preserved food but also a significant contributor to employment and domestic capital to the economy. With government support and improved research and development, the mechanized production and processing industry was developed, especially the processing of rice, coarse cereals, pulses, oil seeds, fruits and vegetables, cotton, jute, animal produce, fish and fish products, plantation crops, commercial crops, medicinal and aromatic plants, apiculture, floriculture, etc.

The agro-industry in India is highly unorganized (42 per cent, organized - 25 per cent, small-scale - 33 per cent) with a product-focus approach. The industry is characterized by less technology and is labor-intensive, few firms implement quality standards, firms are mostly proprietorship-based businesses, they are less competitive and they focus on quantity rather than quality. The demand analysis says that the market size for the food industry, 110 USD, is expected to move to 330 USD by 2014-2015, and food and groceries occupy 45 per cent of spending in Indian households. The Indian export of processed food is 5 billion USD and is expected to grow due to open economies. Share of value-added products in the processed food industry is 70 billion USD and would

likely move to 88 billion USD in 2014-2015. To support the agro-industry, in terms of know-how, the Government of India has established agricultural universities in all states, as well national institutes like Indian Institute of Technologies (IITs), National Institute of Technologies (NITs), Indian Council of Agricultural Research (ICAR), National Dairy Research Institute (NDRI), Central Food Technological Research Institute (CFTRI), etc., and many agri-research institutes in India for research and training and skill development. There are quality testing laboratories established to control the quality of the agro-products. The Government of India has initiated several steps to make bank finance available to agro-firms with tax-holiday privileges (Deloittee, 2009; KPMG, 2009).

The Indian agro-industry has gained a competitive advantage due to its cheap workforce, government subsidies and availability of raw materials. Although the Indian economy has registered a growth rate in the agro-industry sector, it is still prone to some weaknesses and threats. The major weaknesses are high working capital, inadequate automation and information systems, missing links between firm and research and development, etc. The industry is, however, working on these issues to increase industrial productivity. Apart from these weaknesses, the major threat the agro-industry is facing is competition from global players and large players in the domestic region (Kachuru, 2006). In recent years, the electronic and computer industry has developed and has reached an unexpected height over a short period. The agro-industry, in contrast, is still struggling due to its inherent weaknesses and external threats. Apart from this, the agro-industry still operates in a product-driven and risk-adverse mode without adequate market linkage and flexible strategies. These weaknesses and threats are in need of farm-level competitiveness, managerial excellence and business strategies for firms in the agro-industry to survive and grow (Deloittee, 2009; KPMG, 2009). The Ministry has a clear goal of attaining these objectives by facilitating and acting as a catalyst to attract quality investments from within India and abroad into this sector with the aim of making food processing a national initiative.

Contribution of Food Processing Industries to Gross Domestic Product at 2004-05 Prices

							(Rs. Crore)
S.No.	Description	2008-09	2009-10	2010-11	2011-12	2012-13	
	GDP at Factor Cost, Of which	41,58,676	45,16,071	49,18,533	52,47,530	54,82,111	
1	GDP-Agriculture*	5,88,757	5,92,110	6,47,305	6,82,016	6,90,646	
2	GDP: Manufacturing	6,56,302	7,30,435	7,95,152	8,54,098	8,63,876	
3	GDP-FPI	60,378	58,752	67,508	82,063	84,522	
Growth (%)							AAGR $
4	GDP at Factor Cost	6.7	8.6	8.9	6.7	4.5	7.1
5	GDP-Agriculture*	0.1	0.6	9.3	5.4	1.3	3.3
6	GDP: Manufacturing	4.3	11.3	8.9	7.4	1.1	6.6
7	GDP-FPI	5.3	2.7	14.9	21.6	3	8.4
Share of FPI in GDP (%)							Average
8	GDP FPI as a share of GDP in Agriculture*	10.3	9.9	10.4	12	12.2	11
9	GDP FPI as a share of GDP in Manufacturing	9.2	8	8.5	9.6	9.8	9

Source: National Accounts Statisitcs-2014; * Excludes Forestry & Logging; $: Five Year Average Annual Growth Rate

The above table rightly indicated the contribution of food processing industry in Indian economy at various levels. This data helps us to understand the importance and the potentiality of the sector in the growth of our economy. Performance of this sector has improved significantly in the recent years. Manufacturing sector was generally growing at a higher rate than FPI till 2009-10. Performance of FPI improved substantially in 2011-12 registering a record growth of 21.6 per cent. In the year 2012-13, the growth of food processing sector decelerated along with slow growth both in agriculture and manufacturing sectors though the growth of the sector was higher than both agriculture and manufacturing sector.

Principal Characteristics of Registered Food Processing unit: 2011-12

Unit	Factories (numbers)	Persons Engaged $ (numbers)	Fixed Capital^ (Rs. Crore)	Value of Output (Rs. Crore)
Food Processing units#, of which	36,881	17,76,643	1,45,038	7,34,340
Grain Mill & Starch products	19,010	3,66,500	17,553	1,58,213
Vegetable & Animal oils and fats	3,394	1,21,232	18,409	1,97,325
Beverages	1,997	1,47,482	22,420	53,301

Dairy Products	1,653	1,49,775	10,695	87,015
Fruits and Vegetables products	1,078	62,448	5,060	10,309
Prepared Animal Feeds	755	44,462	2,741	26,602
Fish, crustaceans etc.	390	42,081	2,150	15,228
Meat Processing & Preserving	146	20,621	1,362	10,008

Source: Annual Survey of Industries (ASI), MOSPI; # Includes Food Products & Beverages (Division-10 & Division-11 of NIC 2008 classification); *: Factory Registered under Factory Act 1948; $: Person Engaged included all persons employed directly or through an agency including family members; ^: Fixed Capital: Depreciated value of Fixed Assets owned by factory

There are, of course, a lots of studies conducted on growth strategies in industries and in the agriculture sector in the world and in India. However, the current list of literature is literally missing studies on growth strategies in the agro-processing industry in India. This paper is developed to address these issues, especially strategic issues on the growth of the agro-industrial firms in India. The small enterprises are taken as defined by MSMED Act 2006 as the investment is made in firm from 25 lakh to 5 crore for manufacturing organization and 10 lakh to 2 crores in case of service organization.

II. OBJECTIVES

1. To understand agro processing industry in India
2. To understand various growth determinants

III. METHODOLOGY

The study was conducted using sample survey data collected from various firms established in Pune district of Maharashtra. The Indian agro industry deals with supply, process and distribution of agricultural or farm products. For many, the agro industry consists of post-harvest activities engaged in transformation, preservation and production of agricultural products for intermediary and final consumption. So there exist many types of firms in the industry based on the product or service type. This study purposively target fruits and vegetable processing units. In the first stage, a list of firms from each sub-sector was prepared. As there are numerous unorganized agro-based microenterprises, the study includes small enterprises that were registered with Pune DIC from 2010-11 to 2014-15. A structured pretested questionnaire was designed and presented to all 50 sample firms. However, I received only 37 questionnaires returned which further used to calculate and testing the hypothesis. Information was collected from the owners or managers of these enterprises as they were the small firms. The questionnaire mainly contained close-ended questions, keeping the objectives of this study in view.

Hypothesis

H0: Growth determinants do not play a major role in the growth of small enterprises.

IV. STATISTICAL ANALYSIS

Firm growth can be measured in terms of assets or employment of sales revenue. However, growth measurement in terms of assets and employment can lead to biased results if the industry consists of a mixture of capital-intensive and labor-intensive firms (employment is biased against capital-intensive firms and assets are biased against labor-intensive firms). The questionnaire considered various factors and was consisting of 15 dichotomous questions related to the topic found after an intensive literature review. The final data recorded as follows:

Units/Responses	Yes	No	Total
Small Scale Unit (Owner)	15	06	21
Small Scale Unit (Manager)	07	09	16
	22	15	37

Table -1 – Record of Data

This data is recorded on the basis of responses received from respondents. There were 15 questions so maximum yes was considered under “yes” and maximum no was considered as “no” while recording the data in above table.

Obs Freq. (Oij)	Exp Freq. (Eij)	(Oij – Eij)	(Oij – Eij)2	(Oij – Eij)2 / Eij
15	12.49	2.51	6.3001	0.5044
06	8.51	- 2.51	6.3001	0.7403
07	9.51	2.51	6.3001	0.6624
09	6.49	-2.51	6.3001	0.9707
Total				2.8778

Table – 2 – Chi-square calculation

The calculation table of chi-square wherein all the data put and calculated shows the value of chi-square (2.8778). Wherein, the chi-square table value at 1 degree of freedom and 10 % level of significance is 2.706.

Chi-square calculated value > Chi square table value

As the calculated value is more than the table value so it fails to accept the null hypothesis that, “Growth determinants do not play a major role in the growth of small enterprises”. Hence, the alternate hypothesis that, “Growth determinants play a major role in the growth of small enterprises” is accepted.

Chi-square statistical analysis tool is used to evaluate the variables and interpret the data collected through questionnaire. All the responses were collected in yes or no. There were two types of respondents. At some places owner responded and some places manager responded. So both the respondents were treated separately as both have got different point of views to see the organizations and their growth patterns. As most of the questions were in yes and no so it was easy for the respondents as well to answer.

FINDINGS AND DISCUSSION

The data collection was not only limited to the questions mentioned in questionnaire. While collecting data many things have come across regarding the industry. Mainly it was related to the change in production competency of firms from traditional to professional organizations. Market segmentation, Product diversification and uses of latest technologies are some of the main changes in positive side observed in the firms. Both capital and labor intensive firms focusing more on skill development of employees by providing more trainings to their employees. Market integration included both horizontal integration and vertical integration. In the vertical integration, both forward and backward integration were considered. The use of latest technology is pre-dominant in agro-processing sector as it requires to be processed. Information technology system, data mining, data analysis, data transfer systems and any other innovative systems based on information technology are highly used. The advancements of technical support help the industry a lot. However, small firms, due to lack of capital; find it difficult to get latest technologies.

The growth rates of sample agro-enterprises have registered a growth rate of 18 percent average over a period of 20016-17. The overall growth of the sample agro-enterprises has a much higher growth rate compared to the 2.2 per cent growth rate of Indian agriculture. This high growth rate exhibits a situation of high-growth and fast-growing industry. The inconsistency in the growth of firms was also found in sample firms. This shows that the high-growth firms had higher value of assets than the average value of assets of all sample firms. When I measure the firm size in terms of labor size, the analysis shows a contradiction, i.e. the size of permanent employees in high-growth firms was less than those of the low-growth firms. However, employee size cannot be considered as the size of firm, as the sub-sector in the agro-industry sector varies widely; some firms are very labor-intensive, while some others are capital-intensive. But, overall, this gives an indication that the high-growth firms were broadly capital-intensive, while the low-growth firms were labor-intensive. At the same time, the raw material cost was also less for high-growth firms than those of low-growth firms.

Considering the four variables, i.e. firm size, sales revenue, labor size and raw material cost, it can be concluded that high-growth firms invest more capital in their businesses and earn more sales revenue, but incur less cost on labor and raw material. This situation can be possible when firms gain efficiency in the business, especially technical efficiency and managerial efficiency; mechanize the production process; automate the management systems, like computerization; appropriate management information system through installation of customized software and accounting software; invest in staff skill development, etc. So majorly these four determinants set a lot about the growth pattern of small scale agro-processing industry. However, due to the absence of a structured management information system, low-growth firms would have suffered from inefficiency, high cost, higher lag period in decision making and high cost of labor.

Among the entire sample firms, many firms were using product diversification strategies for fast growth and understanding the current market demand, i.e. they went beyond the traditional rigidity and attempted to offer product lines based on market demand. But, unfortunately, few firms were recorded extremely low growth as they were very rigid in terms of changing their working style and they were there with the traditional ways only. Similar evidence was observed in the case of market integration as well. All high growing firms were observed to be making more forward and less backward integration and slow-growth firms were observed to be making less forward and more backward integration. This gives an indication that forward integration was a profit-driven strategy. As all the firms were engaged in manufacturing or processing, retailing was the forward-marketing function.

Considering the growth patterns of the organizations, various innovative ways are advised to be used. Many small firms, due to lack of knowledge and expertise, are not able to achieve the deserve growth. In some of the cases the role of external consultants is also very crucial. However the cost incurred by the firm for these external consultants were significantly and positively related to the growth of firms. This gives an indication that the fast-growing firms seek advice from external consultants (like industry advisors) to upscale the sales revenue.

Information technology is another determinant which plays an important role in supporting all the operational and functional activities in firm. Though, these small organizations do not spend a lot in information technology still the minimum IT supports also helps in maximization of efforts and results. Similar findings can be traced in the study conducted by Daneshvar and Ramesh (2010). However, low-growth firms have shown a contradiction, as information technology did not remain a significant determinant (though positively related) of sales revenue in these firms.

As long as employee skill development is concerned, the industry shows a significant positive relationship with sales revenue growth. Development of employee skills acts as a significant predictor of sales revenue in firms, and this is consistent with the view of Fuller-Love (2006), but the same variable was not found to be a significant sales revenue determinant in firms. Employee skills through technical development training, management development trainings, etc. are to be focused and the investment in employee skill development and invest more in external consultants.
Offering more product lines can be a good strategy for sales revenue growth. In both categories of enterprises, product diversification shows a significant positive relationship with sales revenue. So, broadly, this study supports the comments made by Webster (1977) and Carman and Eric (1980). A flexible strategy in a firm is a non-traditional strategy. A traditional strategy is where the different aspects of business practices are inherited from one generation to another generation in family businesses, or inherited from old businesses in and around the area, or age-old business practices continuing in the region. As most small-scale agro-enterprises in India are family businesses, a flexible strategy and change management is highly desirable for the growth of the organizations.

CONCLUSION

The small scale organizations though play a major role in countries' development; however beg for its survival in many cases. The significant determinants for firm growth in the Indian agro-industry are found to be firm size, employee skills, managerial knowledge, product diversification, market integration, consultants and government support. Choices of strategies selection are very important as mistakes in strategy selection may bring down the growth rate of the firm. Further these growth determinants to be studied individually in details to get more influence of these determinants in the growth of small scale organizations. This is going to be the further scope of this study.

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