

Analysis of Performance Efficiency of Rural Micro Enterprise Sector in Assam, India: A Value Chain Based Approach

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Abstract—Based on a survey of 80 micro enterprises in four districts of Assam, India, the present study explores the value chain of rural micro enterprises at enterprise level across four major rural enterprise activities. The study also examines the performance efficiency of the rural micro enterprise sector by creating a performance efficiency index. The sectoral value chain reveals that the enterprises are lagging behind in aspects like infusing technology, promoting market linkages, and enhancing product design and development etc which can help in improving competitiveness. Further, it is found that majority of the enterprises reflect low production efficiency in terms of cost, manpower and time. Therefore, in order to achieve accelerated growth of the rural micro enterprise sector, focussed measures for enhancing performance of the micro enterprises in terms of manpower, time and cost efficiency as a policy measure along with addressing the issues like technology infusion, market promotion and product diversification is the need of the hour.

Keywords: Rural Micro Enterprises, Production Efficiency, Performance Efficiency.

Introduction

The prominent role of the microenterprise sector across economies is well established. Numerous studies, reports, surveys throughout the globe has recognised the significant contribution of the sector towards employment generation, balanced regional development, effective utilisation of local resources and export (Ardishvili *et al*, 1998, Davidsson & Delmar, 1997, Bayineni, 1996, Flamholtz & Randle, 1990). One such study (Nag, 1978) pointed out that the micro enterprise has been employing a considerable number of skilled and unskilled manpower especially in rural areas and small towns and thus, playing a vital role in balanced regional growth of the industrial sector. Yet another study (Kashyap, 1995) found that the micro enterprise sector in India has helped in generating large scale employment, production of wage goods and increase in levels of income in a fairly dispersed manner, and has succeeded in mobilising dormant skills and resources. This has enhanced the entrepreneurship skills, developed village economies and has aided the process of backward area development. It has also played an important role in the overall process of industrialisation and economic development of the country. And, in an agrarian economy like India, integration of the agro based industries with agricultural activities can strengthen the rural industrialisation process and accelerate economic development of the country (Bayineni, 1996).

The micro enterprise sector thus has the potential to foster attainment of self-reliance in the economy thereby giving a push to the overall standard of living of the people. Infact in India, the role of the small scale industries was well appreciated way back in 1956 in the Industrial Policy Resolution which argued that the small scale industrial sector is vital for employment generation, achieving equality & decentralisation, and productive utilisation of latent resources. The sector is especially advantageous for the rural workforce as it does not demand highly skilled labour and even semi-skilled and unskilled labour can be employed in the micro enterprise units. However, the performance efficiency of the micro enterprise sector is still a subject of deliberations (Raffa *et al*, 1996, Kolvareid, 1996, Weinzimmer, 1998, Wiklund, 1998, Wiklund *et al* 2005, and Rayenet *et al*, 2010). Literatures show that measure of growth alone not being an adequate indicator of performance efficiency among the enterprises involved in

production of single or multiple products in the sector, there is a need for deploying other measures which can reflect performance level of the rural micro enterprises.

It is argued that analysis of enterprise value chain is a useful technique to draw performance insights of a micro enterprise (Kaplinsky, 2000). Value chain analysis, as an analytical tool can illustrate the determinants of inter and intra-enterprise income distribution and consequently help in identification of problems and prospects of the micro enterprises. It has also been viewed that value chain analysis can be one of the tools for understanding the dynamics, opportunities and constraints of promising product markets of micro enterprises (Fries & Akin, 2004).

The search on available literature shows that studies depicting or analysing the pattern of growth in micro enterprises, as well as studies using value chain analysis techniques are rather limited in India and are not available for the State of Assam.

Rationale of the Study

The micro enterprise sector in India is contributing significantly to the gross domestic product (GDP), manufacturing output, employment and export of the country. It is also playing a crucial role in nurturing entrepreneurial talent, utilising local resources and bringing about balanced development, especially at the regional level and at the grassroots. In this regard, as per the Annual Report of the Ministry of MSME for the financial year 2017-18, the MSME sector, with total fixed assets of rupees 1,471,912.94 crores, has provided direct employment to 1,171.32 lakhs persons. The findings of the National Sample Survey, 73rd Round on Unincorporated Non-Agricultural Enterprises in Manufacturing, Trade and Other Services Sectors (excluding Constructions) reveal that there are 633.92 lakh estimated number of enterprises in the micro, small and medium enterprise (MSME) sector in the country. The share of MSME sector in total GDP of the country stood at 28.77 per cent during the financial year 2015-16.

As against the national scenario, the contribution of the MSME sector in the North Eastern Region of India lags far behind. In view of this, the Government of India has classified the North Eastern Region of the country as a category 'A' industrially backward region. According to the 4th MSME Census, the working enterprises in the MSME sector in the North Eastern Region of India shares a mere 2.23 per cent of the total working enterprises in India. This industrial backwardness of the Region has been for long revealed by different studies and is an area of concern for the policy makers.

In case of Assam too which shares 2.58 per cent of the total population of the country, the registered micro and small enterprises share is only 1.20 per cent as per 4th MSME Census. As per National Sample Survey, 73rd Round, Assam accounts for only 1.92 percent of the total enterprises of the country. Similarly, on employment generation front, only 1.64 percent of the persons engaged in the MSME sector is from the state of Assam. This reflects the relative laggedness of the sector in Assam. Further, only 16.74 percent of the total SME units are involved in manufacturing activities compared to 31.15 percent at the national level. Significantly, 69.9 percent of the enterprises are located in the rural areas in Assam.

In the background of the above facts and discussion, a pertinent question to address is why the micro enterprise sector in the State has failed to perform as compared to the national scenario. It is found that no attempt has been made to analyse the sectoral level performance efficiency of the microenterprises in Assam in terms of cost, manpower and time efficiency. The existing studies have only portrayed the overall performance and growth of the sector in Assam in terms of number of units established, employment, investment, production and sales turnover. Thus, there is a prudent need to carry out a sectoral level performance analysis of the different sectors of micro enterprises in Assam.

Further, the use of recent tools and analytical methodologies like value chain analysis has not been used so far for ascertaining the performance efficiency in the context of the micro enterprise sector in the State. It is well established today that using the method of value chain analysis for exploring the performance efficiency of micro enterprises can generate insights into the actual gaps and requirements of the different microenterprise sectors which in turn can act as beacon for suggesting appropriate intervention measures needed and thereby coming up with informed decisions. It is in keeping with this perspective that the paper tries to look into and analyse the performance efficiency of the rural micro enterprises sector in Assam.

Materials and Methods

Objectives of the Study

The broad objectives of the study are outlined below:

1. To analyse the value chains of major rural microenterprise activities in Assam
2. To analyse performance efficiency of rural micro enterprises based on value chain analysis

Data Source & Methodology

The paper is based on primary data. Primary information have been collected at micro enterprise level drawing a total of 80 samples representing a three staged random sampling procedure.

In the first stage, four districts out of 33 districts in Assam have been selected based on household-enterprise ratio (HER) of registered MSMEs divided into four groups – (i) District with high household-enterprise ratio, (ii) District with moderately high household-enterprise ratio, (iii) District with moderately low household-enterprise ratio, and (iv) District with low household-enterprise ratio. One district from each category is selected to constitute the sample districts as outlined below:

HER Categories	Sample District
High	Kamrup (Rural)
Moderately high	Sibsagar
Moderately low	Cachar
Low	Barpeta

In the second stage, the four most dominating sectors from among the MSMEs in the State in terms of number of registered units are identified for drawing 20 sample micro enterprises by categories from each district. Thus, four sectors in terms of numerical presence have been identified which are listed below:

Sectors	Sample Micro Enterprises
Engineering and Non-conventional Energy	Carpentry
Textile	Weaving
Agro Based and Food	Food Processing
Forest Based	Cane and Bamboo Works

In the third stage, five sample units from each identified dominating sector have been drawn randomly for primary data collection. Thus, data has been collected from a total of 80 sample units from across the four sample districts.

A structured interview schedule has been prepared at the micro enterprise level to elicit the primary data. A database has been developed using IT tools in Microsoft MS Access for the purpose of data entry, storage and retrieval in the required format. An index on performance efficiency has been constructed in order to have a comprehensive understanding of the performance efficiency of the rural micro enterprises based on the analysis of sectoral value chains at enterprise level.

Construction of Performance Efficiency Index (PEI)

In order to understand the performance of rural micro enterprises, a Performance Efficiency Index (PEI) is constructed to bring out the performance efficiency at enterprise level. Performance Efficiency Index has been constructed based on the value chain analysis data of individual micro enterprises. PEI has been deduced with the help of the following formula:

$$PEI = (C_E + M_E + T_E)/3$$

Where,

C_E = Cost Efficiency of individual micro enterprise against Rs. 100 sales proceeds

M_E = Manpower Efficiency of individual micro enterprise against Rs. 100 sales proceeds

T_E = Time Efficiency of individual micro enterprise against Rs. 100 sales proceeds, and

$$C_E(\text{Cost efficiency}) = \{(CM - CA)/CM\}$$

Where,

CA = Production cost per Rs.100 sales proceeds of the enterprise

CM = Maximum production cost per Rs.100 sales proceeds among the enterprises

$$M_E(\text{Manpower efficiency}) = \left\{ \frac{(MM - MA)}{MM} \right\}$$

Where,

MA = Manpower cost required per Rs.100 sales proceeds of the enterprise

MM = Maximum manpower cost required per Rs.100 sales proceeds among the enterprises

$$T_E(\text{Time efficiency}) = \{(TM - TA)/TM\}$$

Where,

TA= Man hours required per Rs.100 sales proceeds of the enterprise

TM= Man hours required per Rs.100 sales proceeds among the enterprises.

Results and Discussion

In accordance with the objectives outlined, the findings of the study are presented in two sections in the paper. The first section presents an analysis of the value chains of the major rural micro enterprise activities identified in Assam. The second section provides the status of performance efficiency of the rural micro enterprises.

I. Value Chain Analysis of Micro Enterprise Sectors in Assam

A value chain is the entire chain of activities of an enterprise through which it adds value to a product or service to make it worthy for the customer. The more the value created, the more the number of customers who would be prepared to pay a good price for any product or services. M. E. Porter (1985) was the first to introduce the concept and analysis of value chain in terms of primary activities and support activities. The primary activities includes inbound logistics (getting the material in for adding value), operations (the production or manufacturing processes), outbound logistics (includes storing and distribution to the points of sale), marketing and sales and after sales service. The support activities include infrastructure, human resource, procurement and technology that are essential for supporting and sustaining the primary activities. Value chain analysis provides vital insights indicating performance and gaps of an enterprise or sector, based on which, an enterprise or sector can develop strategies for making its product or services competitive.

In the paper, an attempt has been made to document the value chains of each enterprise surveyed. Subsequently, the enterprise level data have been combined to obtain the sectoral value chains for the four sample micro enterprise sectors identified. The value chain analysis of the cane and bamboo, food processing, handloom and carpentry sectors are presented here. The value chain analysis has been carried out using combined market value of the produce of each sector and then deducing it in proportion to Rs.100.

a. Value Chain Analysis of Cane and Bamboo Sector

The analysis reveals that the total production cost of the cane and bamboo sector is around 80 per cent of the market value of the produce and the profit margin is around 20 per cent. The average person hour required for producing products of Rs.100 weighted by market value is one hour forty seven minutes. In terms of primary activities, inbound logistics (46.04 per cent) and operation activities (40.12 per cent) are responsible for about 86 per cent of the total production cost. The expenditure on outbound logistics (7.63 per cent) and marketing and sales (6.21 per cent) is limited. As regard to the support activities, 72 per cent of the production cost is incurred on procurement of raw materials (38.85 per cent) and human resource (32.88 per cent). The cost of use of technology is 20.64 per cent of the market value of the produce.

Table 1: Value Chain Analysis of Cane and Bamboo Sector

Primary Activities	Secondary Activities				Total (Rs.)	Person Hour Required
	Infrastructure	Procurement	Human Resource	Technology		
A. Inbound Logistics	3.2	29.67	1.9	2.04	36.81	1 hour 47 minutes
B. Operation	2.9	1.4	19.14	8.64	32.08	
C. Outbound Logistics			3.6	2.5	6.1	
D. Marketing & Sales			1.65	3.32	4.97	
E. Total Production Cost (A+B+C+D)	6.1	31.07	26.29	16.5	79.96	
F. Profit Margin					20.04	

Source: Field Survey, 2016-17

b. Value Chain Analysis of Food Processing Sector

The analysis shows that the total production cost of the sector is 78.67 per cent of the market value of the produce. The average time required in the sector to produce any product worth market value of Rs. 100 is two hours and four minutes. The profit margin is 21.33 per cent for the sector. Out of the total expenditure incurred on primary activities, inbound logistics (43.24 per cent) and operation activities (41.58 per cent) account for 84 per cent of the total production cost. In case of support activities, 74 per cent of the production cost is due to procurement (38.50 per cent) and on human resource (37.32 per cent) expenditures. The use of technology accounts for 14.63 per cent and infrastructure 9.54 per cent of the total production cost respectively.

Table 2: Value Chain Analysis of Food Processing Sector

Primary Activities	Secondary Activities				Total (Rs.)	Person Hour Required
	Infrastructure	Procurement	Human Resource	Technology		
A. Inbound Logistics	4.41	26.49	1.08	2.04	34.02	2 hours 04 minutes
B. Operation	3.1	1.4	24.56	3.65	32.71	
C. Outbound Logistics		2.4	2.07	2.5	6.97	
D. Marketing & Sales			1.65	3.32	4.97	
E. Total Production cost (A+B+C+D)	7.51	30.29	29.36	11.51	78.67	
E. Profit Margin					21.33	

Source: Field Survey, 2016-17

c. Value Chain Analysis of Handloom Sector

The value chain of the handloom sector reveals that the profit margin of the sector is the lowest in comparison to the other three sectors (18.37 per cent). On the other hand, the time required to produce products with market value worth Rs 100 is two hours and sixteen minutes, the highest among the four sectors. The cost of procurement of raw material in the sector too is the highest (35.23 per cent) among the four sectors. In fact, among the primary activities, inbound logistics and operation together account for about 90 per cent of the total production cost. On the other hand, expenditure on marketing and technology is quite limited.

Table 3: Value Chain Analysis of Handloom Sector

Primary Activities	Secondary Activities				Total (Rs.)	Person Hour Required
	Infrastructure	Procurement	Human Resource	Technology		
A. Inbound logistics	2.3	35.23	1.7	1.06	40.29	2 hours 16 minutes
B. Operation	2.42	1.4	21.6	7	32.42	
C. Outbound logistics			2.3	1.65	3.95	
D. Marketing & sales			1.65	3.32	4.97	
E. Total production cost (A+B+C+D)	4.72	36.63	27.25	13.03	81.63	
E. Profit margin					18.37	

Source: Field Survey, 2016-17

d. Value Chain Analysis of Carpentry Sector

It is found that total production cost at 76.54 per cent as well as production time - one hour twenty three minutes are the lowest in the carpentry sector. Thus, the profit margin in the sector is the highest amongst the four micro enterprise sectors. Notably, the technology cost is the highest among the four sectors (27.34 per cent). Among the secondary activities, the cost on inbound logistics and operation together account for about 83 per cent of the total cost of production in the sector.

Table 4: Value Chain Analysis of Carpentry Sector

Primary Activities	Secondary Activities				Total (Rs.)	Person Hour Required
	Infrastructure	Procurement	Human Resource	Technology		
A. Inbound logistics	4.08	22.6	2.76	2.6	32.04	1 hour 23 minutes
B. Operation	4.2	1.05	14.14	12.8	32.19	
C. Outbound logistics			2.43	4.5	6.93	
D. Marketing & sales	2.7		1.65	1.03	5.38	
E. Total production cost (A+B+C+D)	10.98	23.65	20.98	20.93	76.54	
E. Profit margin					23.46	

Source: Field Survey, 2016-17

II. Performance Efficiency of Rural Micro Enterprises Based on Value Chain Analysis

The performance efficiency of the rural microenterprises at enterprise level has been explored through the Production Efficiency Index (PEI), which is a combined measure of cost efficiency, manpower efficiency and time efficiency. The PEI has been constructed based on the value chain analysis of the data of individual microenterprises.

The PEI scores of sample microenterprises have been classified into three categories - low with PEI scores upto 0.15, average with PEI scores ranging from values higher than 0.15 to 0.25 and high with PEI scores with values higher than 0.25. The analysis of the scores of enterprise growth index reveals that more than two third of the sample micro enterprises (51 per cent) fall in the low performance category while only about five percent of the microenterprises fall in the high performance category (Figure:1)

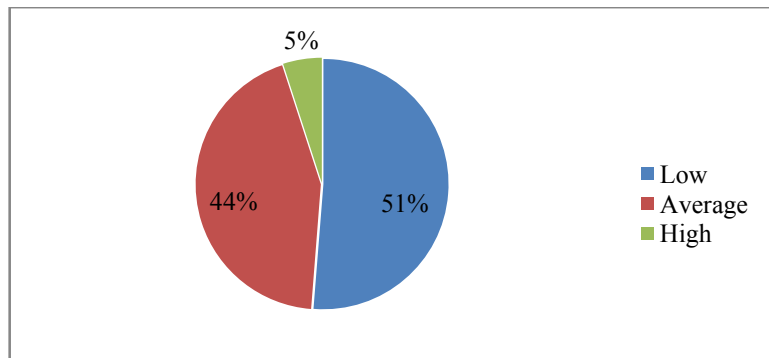


Figure 1: Distributions of Micro Enterprises based on PEI Score Categories
 Source: Field Survey, 2016-17

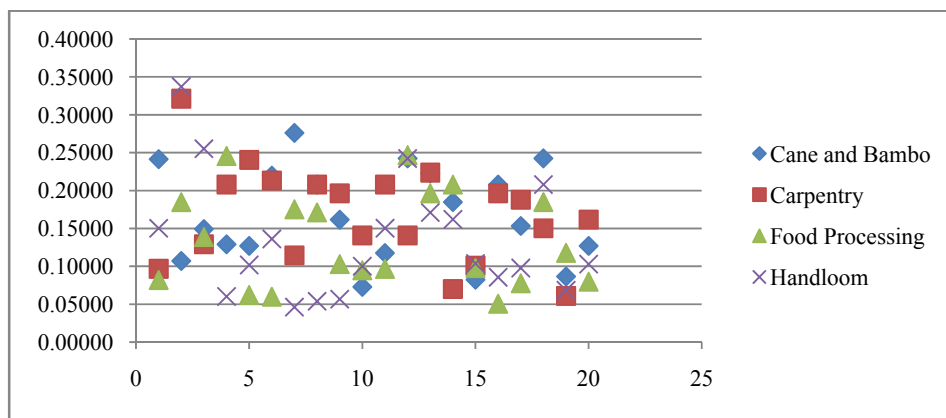


Figure 2: Distribution of PEI Scores of Rural Micro Enterprises across Sectors
 Source: Field Survey, 2016-17

Analysing the PEI scores across sectors, it is observed that the carpentry sector is the best performing sector closely followed by the cane and bamboo sector. The performance of the food processing sector is found to be lagging in comparison to the other sectors (Figure 2). In case of performance across the sample districts, it is found that performance of the microenterprises in the Kamrup (Rural) district is best followed by Barpeta, Sibsagar and Cachar district respectively (Figure 3).

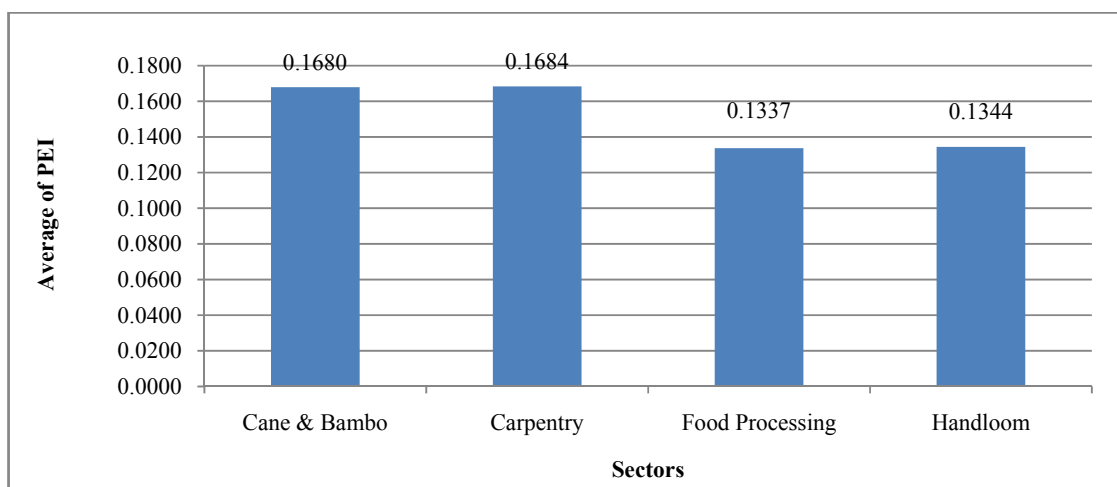


Figure 3: Performance of Rural Micro Enterprises across Four Sectors
 Source: Field Survey, 2016-17

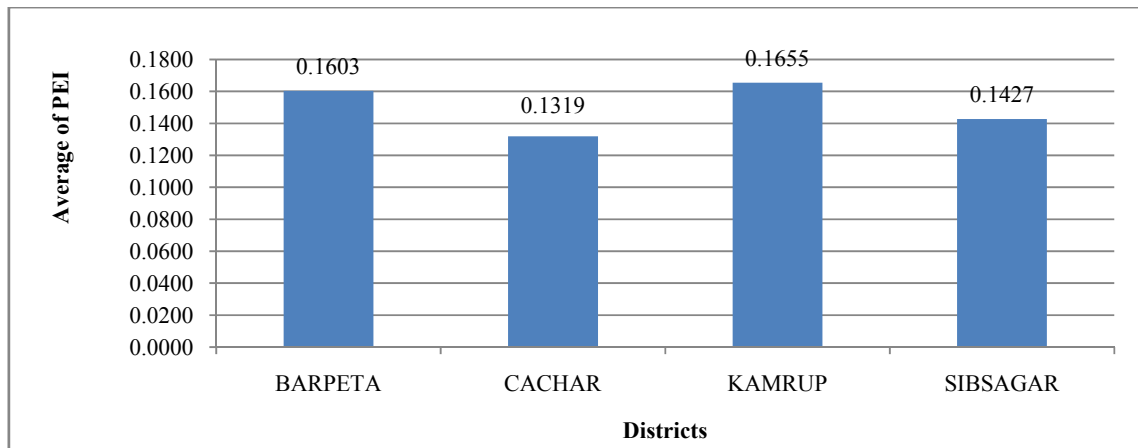


Figure 4: Performance of Rural Micro Enterprises across Four Sample Districts

Source: Field Survey, 2016-17

An analysis of the performance of the micro enterprise activities across districts reveals that in case of the cane and bamboo sector, average performance of the Barpeta district is the highest followed by Cachar, Kamrup (Rural) and Sibsagar district respectively. In case of carpentry, Kamrup district is the best performing district followed closely by the Barpeta district. Similarly, in case of the food processing and handloom sectors, the performance of Kamrup (Rural) district is better as compared to the other three districts (Figure 3, 4 & 5).

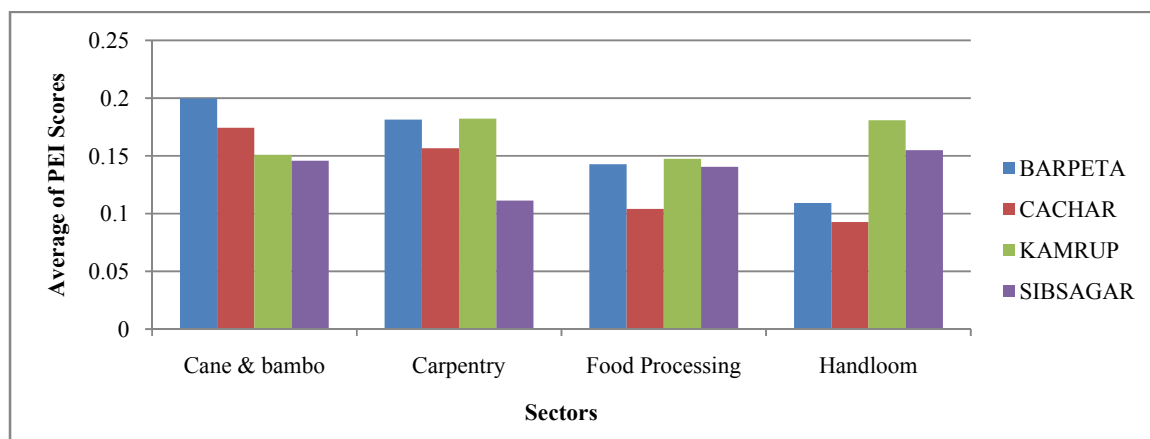


Figure 5: Performance of Micro Enterprises across Four Sample Districts

Source: Field Survey, 2016-17

Conclusion and Recommendation

The micro enterprise sector in Assam as discussed in the paper is lagging behind in terms of performance parameters like employment, production and investment. Another important finding based on value chain analysis in the paper is that a major portion of the production cost incurred by the rural micro enterprises is on human resources and raw material inputs with the role of technology and market promotion activities being limited. Therefore, steps towards infusing technology and promoting market linkages, and enhancing product design and development can help in improving competitiveness of the rural micro enterprise sector in Assam.

The results show that majority of the enterprises reflect low production efficiency in terms of cost, manpower and time. Only about five per cent of the micro enterprises exhibit high production efficiency. Therefore, for improved productivity, there is a need to cut down on cost, and improve manpower and time efficiency of the rural micro enterprises in Assam. Efforts should also be put into place for building capacity of the rural micro enterprises for enhancing production efficiency. Interventions like skill development, technology infusion and adoption of innovative approaches may play pivotal role in achieving performance efficiency. As the paper reveals the importance of enhancing performance efficiency for accelerated growth of the micro enterprises, focussed measures for enhancing performance of the micro enterprises in terms of manpower, time and cost efficiency as a policy measure can lead to enhanced growth of the micro enterprises.

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