AESSRA

Product Practices and Production Performance of Traditional Handloom Based Micro-Enterprises in Assam, India

Manuj Baruah[1], Paramita Saha[2] and Mashud Ahmed[3*]

[1]Department of Economics, Dikhowmukh College, Sivasagar, Assam, India
[2]Department of Economics, Tripura University, Suryamaninagar, Tripura, India
[3]Department of Economics, Khairun Nessa Begum Women's College (Affiliated to Assam University, Silchar), India

*Corresponding author: hmashud786@gmail.com (**ORCID ID:** 0000-0002-0092-7282)

ABSTRACT

In India, handloom industry is based on a large number of artisanal skill-based enterprises that produce traditional fabrics from both industrially produce and naturally produced yarn. Assam, a state of North East Region, produces varieties of handloom products by using different types of silk and cotton yarn. The weavers in the state are preserving their traditional arts, skills and representing cultural identities through their weaving fabrics and designs. The objective of the paper is to investigate the product practices and production performance of handloom based micro-enterprises in Assam. The paper used primary data collected from 312 handloom enterprises spread across the four districts of Assam using multi stages sampling technique. It is observed that revenue per loom of multi loom enterprises is significantly higher than that of single loom enterprises. The concentrations of handloom enterprises are more in the production of low-price products in comparison to high price products. The result of Cobb-Douglass production function found that value of handloom production can be increase by increasing labour and yarn inputs.

HIGHLIGHTS

◉ The paper reveals that revenue per loom of multi loom enterprises is significantly higher than that of single loom enterprises.
◉ Labour and materials inputs are the significant determinants of value of handloom production.

Keywords: Handloom Enterprises, Product Practices, Sales Revenue, Cobb-Douglass production function

Rural non farming activities in the informal sector are important for rural economic diversification through employment creation, income generation, and the prevention of rural-to-urban labour migration (Hazarika & Goswami, 2014). As an informal sector, the handloom industry in India is based on a large number of artisanal skill-based enterprises that contributed 11.79 per cent of total textile production in 2019–20 and employed 35.22 lakh handloom workers in the same year (Ministry of Textile, 2020). However, the elimination of trade restrictions in the textile sector from 1st January, 2005 increased competition among China, India, Bangladesh, Vietnam, Sri Lanka, and others to increase their market share (Bortamuly, & Goswami, 2012; Bortamuly, Goswami, & Hazarika, 2013). As a consequence, the Indian handloom industry, which is part of the textile industry, faced intense competition. It is well documented in the literature that, internally the industry faces competition from the power loom and is affected with various challenges such as low productivity, obsolete technology, unorganized production system, weak marketing link, insufficient working capital, conventional product range, overall stagnation of

production and sales (Sudalaimuthu & Devi; 2006, Dev, Golab, Reddy & Vinayan, 2008; Ramswamy & Kumar, 2013; Nadh, Rao, & Harshavardhan, 2013, Goswami & Jain, 2014).

Even though the handloom sector spreads across all the states of India, it is mainly concentrated in the thirteen states, namely, Assam, West Bengal, Tamil Nadu, Manipur, Uttar Pradesh, Odisha, Andhra Pradesh, Tripura, Arunachal Pradesh, Karnataka, Telangana, Nagaland, and Meghalaya, as per the Handloom Census Report, 2019-20, and 93 per cent of the handloom workforce belongs to these 13 states (Baruah & Saha, 2022). Over the years, handloom fabrics have become a symbol of India's excellent art of weaving. Different regions of the country have distinct styles of handloom fabrics to offer, such as exquisite design weaved and silk fabrics of Assam, Chanderi from Madhya Pradesh, Ikats from Andhra Pradesh, Varanasi of brocades, Patola sarees of Patan, Rajasthan and Orissa have tie and die products, Himroos of Hyderabad, Phulkari from Panjab, Daccai and Jamdani from West Bengal, and Phenek and Tongam from Manipur (Kausik, Khanna & Sah, 2020, Handloom Census Report, 2019-20). The weavers in these states are preserving their traditional arts, skills and representing culture through their weaving fabrics and designs. The level of artistry and complexity accomplished in handloom fabrics is unmatched, and certain weaves and designs are still beyond the scope of modern machines.

High quality, attractive colour combinations, unique design pattern, high durability, varieties of products and reasonable price, and retailer specific variables like good sales service, introduction of new product and accessibility are identified to significantly affect customer satisfaction (Anumala & Acharyulu, 2015). A study in Mizoram observed that though the handloom weavers produced diversified handloom products, they need government support with respect to product development, design improvisation, brand building, for improve the quality of the product (Hmangaihzuali & Ramswamy, 2015). Studies like Dutta (2019); Hazarika, (2020) observed that value of handloom production can be increase by increasing labour, raw materials and capital inputs.

Assam, a state of North East Region, has the highest number of handloom workers (12.84 lakh) among all the states of India (Ministry of Textile 2020). In Assam, majority of workforce of the sector are women and weaving is a significant source of livelihood for women weavers in Assam (Bortamuli & Goswami, 2012). Assam is the third largest state in India in terms of silk production. Assam is the largest producer of muga silk in the world and produces 85 percent of the world's muga silk. Regarding eri silk production, Assam ranks highest in the nation and produces 62 percent of eri silk in India (Central Silk Board, 2019).

In this context, the objective of the paper is to examine the product practices and determine the factors influencing the production of handloom based micro-enterprises in Assam with a view of suitable policy suggestion.

METHODOLOGY

Sources of Data and Sampling Technique

The study is based on primary data collected from 312 handloom-based micro-enterprises spread over four districts of Assam namely Kamrup (R), Barpeta, Sivasagar, and Nalbari, from October 2021 to February 2022. The study used a multi-stage sampling method at the district, block, village, and enterprise levels. At the first stage, four districts of Assam were selected purposefully on the basis of the highest number of weavers as per the data obtained from Handloom Census, 2019-20. In the second stage, two development blocks from each selected district were selected based on the highest number of weavers. At the third stage, eight villages were selected from the eight selected blocks on the basis of the commercial concentration of handloom activities as per information collected from the District Handloom and Textile Department. At the last stage, before collecting data at the village level, lists of handloom enterprise owners were prepared after discussions with the head of the village, master weavers, and ward members. From the prepared list of each chosen sample village, 50 per cent of handloom entrepreneurs were selected randomly.

Analytical Framework

The Cobb-Douglass (C-D) production function is used to determine the factors that contribute to the total value of production of handloom based micro enterprises included in the study. The value

of output of a handloom enterprise is measured by value of its annual production i.e., total product mix valued at selling price of respective items. The production function considered three inputs variables namely labour, capital and materials. Labour is defined as annual labour cost for each enterprise. Capital inputs is defined as the value of looms and other equipment like warping drum, bobbin and pirn winding machine etc. A material input is defined in terms of annual expenditure of yarn, electricity charge and cost of other intermediate inputs. Among the materials inputs yarn is the primary raw material for the handloom enterprises. The C-D production function may be written as

$$Y = AL^{b1} K^{b2} M^{b3} \qquad \ldots(1)$$

This production can be convert liner form by taking log form and may expressed as;

$$lnY_i = lnA + b_1 lnL_i + b_2 lnK_i + b_3 lnM_i \; i = 1,2\ldots\ldots3 \ldots(2)$$

Where,

Y_i = Annual sales revenue of ith handloom enterprises (₹/year)

L = Annual labour cost of ith handloom enterprises (₹/year)

K_i = Total capital expenditure of ith handloom enterprises (₹)

M = Cost of raw materials of ith handloom enterprises (₹/year)

RESULTS AND DISCUSSION

Product is at the core of all marketing and business activities. It is envisioned as a bundle of utilities provided by a variety of product features and related services. Product mix, product quality, design, features, brand name, packaging etc. are the important components of the product strategy of a firm. Thus, the product strategies of sample enterprises are examined here, in terms of product mix and design and sales revenue.

Product Mix

An enterprise chooses a product mix, to achieve higher revenue. The enterprises may choose the right combination of high and low price items to increase revenue. High price items, possibly with lower demand, may generate high revenue, while low price items may have high demand and larger volume of sales but much lower revenue potential. According to Assam Government Marketing Cooperation Ltd. (AGMC), 72 types of handloom items are produced by handloom sector in Assam as mentioned. However, the 312 handloom enterprises under consideration are found to produce 12 items as detailed in Table 1. To understand the product mix it must be discussed along with the price structure and sales of the products, supplied by the enterprises under consideration. The product mix of the sample enterprises are classified into four product lines such as Mekhela-Chadar (MC), Gamosa, Other traditional attire and Other items like fabric for shirts and dresses, muffler etc. (Table 1).

Mekhela-Chadar is a two-piece traditional attire worn by Assamese women. Mekhela is like a skirt worn around the waist and Chadar is a designed piece of cloth used to cover the upper body. These may be made of natural yarns like cotton, silk or various synthetic yarns. In the sample enterprises, Product line I consists of four types of Mekhela-Chadar numbered I to IV, categorized on the basis of types of yarn and technique of design. MC I, made of cotton yarn using hand design, is lowest priced among the four types of Mekhela Chadar, This is the most popular product with 157 enterprises involved in its production. MC II, MC III are made using silk yarn and MC IV is a premium product made of Muga silk predominantly grown in Assam. Production of Muga silk is dependent on numerous climatic factors, including temperature, humidity, soil, rainfall, and topography. Hence Muga silk is one of the rarest silks in the world. MC IV is a niche product and fetches highest price in the market. However, cost of procuring Muga silk yarn and producing Muga silk fabrics is high. Also fine designing on Muga Silk requires substantial investment in jacquard loom and higher labour hours. Thus, cost of production for MC IV is high and requires substantial amount of working capital. As a result only few capital rich enterprises are able to produce MC IV. This is evident from the fact that only 8 (eight) enterprises out of a total of 312 in the sample, are producing Muga fabric based Mekhala Chadar i.e. MC IV.

Table 1: Product Mix of Sample Handloom Enterprise in Assam

Product line	Product items	Descriptions	No. of Enterprises	Sales Price (in ₹)
Product line I Mekhela-chadar set	Mekhela-Chadar I (MC I)	Made by using cotton yarn 24 to 32 hours of labour employment for producing single set. Hand design	157	800-2200
	Mekhela-Chadar II (MC II)	Made by using tusser silk 56 to 64 hours of labour engagement for producing single set. Fine designing using Jacquard loom	54	6000-14,000
	Mekhela Chadar III (MC III)	Made by using tusser silk 24 to 32 hours of labour engagement for producing single set Moderate hand design	78	3500-5500
	Mekhela-Chadar IV (MC IV)	Made by using muga silk 48 to 56 hours of labour engaged for producing single set Fine designing using Jacquard loom	8	25000-35000
Product line II Gamosa	Gamosa I	Made by using tusser silk 3 to 4 hours of labour engagement for producing a single piece Fine design using jacquard loom	34	900- 1200
	Gamosa II	Made by using cotton 3 to 4 hours of labour engagement producing a single piece Fine hand design and jacquard loom	203	110-550
	Gamosa III	Made by using cotton 2 to 4 hours of labour engagement producing a single piece Moderate hand design	21	80-300
Product line III Other Traditional attire	Dhoti	Made by using cotton 12 to 15 hours of labour engagement producing a single piece No design	11	500-700
	Chelleng Chadar	Made by using cotton / mulberry silk 7 to 10 hours of labour engagement producing a single piece Moderate hand design	14	400-1100
Product line IV Other items	Tangali	Made by using cotton or wool 3 to 5 hours of labour engagement producing a single piece Moderate hand design	2	400
	Shirt piece	Made by using cotton or muga silk 12 to 16 hours of labour engagement producing a single piece	3	1000 -2000
	Mufflar	Made by using cotton or wool 8 to 12 hours of labour engagement producing a single piece Moderate hand design	3	300-500

Source: Field Survey, 2021-22.

Both MC II and MC III are made of silk yarn but are differently priced because of the difference in technique and intricacies of design used. Fine designs in silk created using jacquard loom like in MC II, has a higher market price than MC III, but are produced by only 54 enterprises, who are able to invest in a jacquard loom. Moreover, fine designs in jacquard loom, require more labour hours resulting in higher costs of production. On the other hand simple designs created in silk, on handloom as in MC III, require less labour hours, and has a lower cost of production and hence a lower price compared to MC II and MC IV. Seventy eight (78) enterprises produce MC III.

Gamosa is a white rectangular piece of cloth often with embroidered red borders. It is the most prominent handloom product of daily use. For people of Assam, Gamosa assumes a iconic status as a symbol of their culture and heritage. It is commonly used to honour people, and it is also used in various social, cultural and religious rituals. Assamese men and women use the Gamosa in various ways, depending on the traditional or cultural occasion. It may be woven by using different natural yarns, such as cotton, muga silk, tusser silk, etc. In the sample, Product line II consists of three items of Gamosa numbered I, II and III, categorized on the basis of types of yarn and technique of design. Gamosa I, made of silk yarn using jacquard loom design, is highest priced among the three types of Gamosa. Thirty four (34)

enterprises are engaged in producing Gamosa I. Both Gamosa II and III are made of cotton yarn but are different in terms of design intricacies and price. Gamosa II, weaved in cotton and designed with fine thread work, is the most popular product among the customers and majority of enterprises (65 percent) are engaged in producing this item.

Product line III consists of two items such as Dhoti and Chelleng Chadar. Dhoti is traditional attire worn by men of Assam and used to cover the lower half of the body as is commonly worn in other parts of India also. In the sample, 11 enterprises are engaged in producing Dhoti. Chelleng Chadar is traditional attire used by Assamese men and women to cover upper part of the body during the religious occasions. Only 14 enterprises are engaged in producing Chelleng Chadar.

Very few enterprises are engaged in producing items under product line IV such as Tangali, Shirt pieces, and Mufflers. Tangali is a used by men to be tied as a belt around the waist when they perform Assamese Bihu dance. The items like Tangali, Shirt pieces, and Mufflers are produced by enterprises only as per order.

Sales Revenue

Proper pricing of the items produced increase the sales revenue for the enterprises. Item wise sales revenue is estimated in order to understand the significance of a particular item in revenue generation (Table 2). Product line I and II are the

Table 2: Items Wise Sales Revenue of Sample Enterprises in 2021-22

Product line	Product items	No. of Enterprises	Estimated sales revenue	Share in total sales revenue (in per cent)
Product line I	Mekhela-Chadar I (MC I)	157	103.62	8.59
	Mekhela-Chadar II (MC II)	54	419.25	34.75
	Mekhela Chadar III (MC III)	78	189.09	15.67
	Mekhela-Chadar IV (MC IV)	8	29.67	2.46
	Sub-Total	297	741.63	61.48
Product line II	Gamosa -I	34	198.78	16.48
	Gamosa-II	203	233.31	19.34
	Gamosa-III	21	9.54	0.79
	Sub-Total	258	441.63	36.61
Product line III	Dhoti	11	0.43	0.04
	Chelleng Chadar	14	13.26	1.10
	Sub-Total	25	13.69	1.13
Product line IV	Shirt	3	0.60	0.05
	Muffler & Tangali	5	8.79	0.73
Sub-Total		8	9.39	0.78
Grand Total			1206.34	100

Source: Field Survey, 2021-22.

Table 3: Annual Sales Revenue of Sample Enterprises (in lakhs)

Types of enterprises	No. of enterprises	No. of looms	Sales Revenue (in lakhs)	Sales Revenue Per loom (in lakhs)
Single loom enterprise	202	202	279.41	1.38
Multi loom enterprise	110	354	926.91	2.62
Total	312	556	1206.33	2.17

Source: Field Survey, 2021-22.

Table 4: Result of Cobb-Douglass Production Function

Variables	Single Loom Enterprises		Multi Loom Enterprises		Aggregate Sample Enterprises	
	Co-efficient	t-ratio	Co-efficient	t-ratio	Co-efficient	t-ratio
Intercept	0.03	0.08	1.48***	3.91	0.36***	2.31
Labour (lnL)	0.67***	13.40	0.59***	8.61	0.63***	15.22
Capital (lnK)	0.01	0.22	0.06	0.98	0.06	1.61
Materials (lnM)	0.42***	14.67	0.33***	8.35	0.39***	16.18
R square	0.92		0.92		0. 96	
Adjusted R square	0.92		0.92		0.95	
N	202		110		312	

Sources: Field Survey, 2021-22.

*** *represent significant at 1 per cent level*

main products contributing about 98.09 percent (61.41 percent + 36.61 percent) of total revenue. While 297 enterprises produce Product line I, 258 enterprises are engaged in production of Product line II, indicating that these are the two most popular products.

Under Product line I, MC II generates highest revenue (₹ 419.25 lakhs) though only 54 enterprises produce these and sell at a price higher than MC I and MC III. On the other hand sales revenue from MC IV is lowest (₹ 29.67 lakh) with only 8 enterprises producing these, though these are priced highest. Highest number of enterprises (157) produces MC I generating sales revenue of ₹ 103.62 lakh which is only 8.59 per cent of total revenue of the enterprises from all products. It is interesting to note that most of the enterprises (157) are engaged in producing the lowest priced item MC I under Product line I, while the highest priced item is produced by least number of enterprises.

Under Product line II, Gamosa II generates highest revenue (19.34 per cent of total revenue) which is only next to revenue generated by MC II. Gamosa I closely follows with third highest share (16.48 per cent) in total revenue. Items under Product line III and IV have very low share in total revenue because of low number of enterprise are engaged in producing these items.

As enterprises are of different sizes and number of looms in each enterprise differs, an attempt is made to examine if revenue per loom differ among single loom enterprises and multi loom enterprises. Table 3 highlights the difference between the performances of single loom and multi loom enterprises. A one tailed independent sample t test shows that, in multi loom enterprises, sales revenue per loom is significantly higher than that of single loom enterprises at one per cent level of significance (t statistic value -6.66, t critical one tail value 1.65 and p value 0.000).

Production Function

The Cobb-Douglass production function result shows that elasticity of output with respect to labour and materials are positive and statistically significant both in the case single loom and multi loom enterprises while the co-efficient of capital is not statistically significant (Table 4). The co-efficient of labour is higher than materials both in single loom and multi loom enterprises. In the aggregate

sample enterprises, the co-efficient of labour is 0.63 and significant at 1 per cent, indicating that one per cent increase in cost of labour will leads to 0.63 per cent increase in the value of production. The elasticity of output with respect to materials is 0.39 indicating that everyone per cent increase in raw materials would increase the production by 0.39 per cent. It is also observed that share of labour is more than materials. Thus, it is observed that the elasticity of output with respect to labour is highest, implying that labour input is the most effective determinant for increasing of output level. As handloom industry is labour intensive in nature, higher positive marginal productivity of labour is quite expected.

CONCLUSION

The handloom enterprises included in the study area produces 12 varieties of items and these are classified into four Product lines such as Mekhela-Chadar (MC), Gamosa, Other traditional attire and other items like fabric for shirts and dresses, muffler etc. It is reveal that Product line I and II are the highest revenue generating products. The concentrations of weaving enterprises are more in low price products in comparison to high price products. It is observed that revenue per loom of multi loom enterprises is significantly higher than that of single loom enterprises. The result of Cobb-Douglass production function found that value of handloom production can increase by increasing labour and yarn inputs. The paper suggest that policymakers may take initiatives to provides financial assistants for purchasing dobby/jacquard looms and price subsidization of high value yarn for encouraging handloom micro-entrepreneurs to revive the traditional handloom sector. Moreover, for improving the quality and design of products, policymakers may organise short-term training programmes in different handloom villages.

REFERENCES

Anumala, K. and Acharyulu, G. 2015. A demography study on customer satisfaction about handloom products in India-A study on Andhra Pradesh state Weaver Co-operative Society Limited. *Journal of Textile and Apparel, Technology and Management*, **9**(3): 1-15.

Baruah, M. and Saha, P. 2022. An analysis of employment status in Indian handloom Industry. *Indian Journal of Economics and Development*, **18**(2): 331-340.

Bortamuly, A.B. and Goswami, K. 2015. Determinants of the adoption of modern technology in the handloom industry in Assam. *Technological Forecasting and Social Change*, **90**: 400-409.

Bortamuly, A.B., Goswami, K. and Hazarika, B. 2013. Determinants of occupational choice of workers in the handloom industry in Assam. *International Journal of Social Economics*, **40**(12): 104-1057.

Bortamuly, A.B. and Goswami, K. 2012. Factors influencing wage structure of handloom workers in Assam. *Journal of Rural Development*, **31**(2): 39-150.

Central Silk Board, 2019. Seri-States of India: A Profile. https://csb.gov.in/wp-content/uploads/2019/02/Seri-States-Profiles-2019.pdf

Dev, S.M., Galab, S., Reddy, P.P. and Vinayan, S. 2008. Economics of handloom weaving: A field study in Andhra Pradesh. *Economic and Political Weekly*, pp. 43-51.

Dutta, B. 2019. Handloom Industry of Dhemaji District of Assam: A Study about Input Using Pattern and Factor Contribution to Production. *International Journal of Humanities & Social Science Studies*, **6**(1).

Goswami, R. and Jain, R. 2014. Strategy for sustainable development of handloom industry. *Global Journal of Finance and Management*, **6**(2): 93-98.

Government of India, Ministry of Textiles. 2020. Fourth All India Handloom Census, New Delhi: Ministry of Textiles, Government of India. Retrieved from https://ruralindiaonline.org/en/library/resource/fourth-all-india-handloom-census-2019

Hazarika, B. and Goswami, K. 2014. Rural non-farm micro-entrepreneurship or not: Gender issue in decision making. *Available at SSRN 2598405*. https://ssrn.com/abstract=2598405

Hazarika, K. 2020. Production technology and problems of the handloom textile units: A case study on the Singphos of Assam. *International Journal of Management*, **11**(12).

Hmangaihzuali, J.B. and Ramswamy, R. 2015. Product policies of handloom enterprises in tribal clusters of NE India. *SEDME-Small Enterprises Development, Management & Extension Journal*, **42**(3): 1-19.

Nadh, R.R., Rao, P.V. and Harshavardhan, B.M. 2013. Handloom market: Need for market assessment, problems & marketing strategy. *International Journal of Emerging Research in Management & Technology*, **2**(5).

Ramswamy, R. and Kumar, N.J. 2013. Women weavers in Mizoram: Sustaining livelihood through cluster development. *Indian Journal of Gender Studies*, **20**(3): 435-452.

Ramswamy, R. 2013. Marketing problems of micro artisan enterprises in Thanzel Handloom cluster, Mizoram. *Voice of Research*, **2**(2).

Sudalaimuthu, S. and Devi, S. 2006. Handloom industry in India'. Retrieved from https://www.fibre2fashion.com/industry-article/2269/handloom-industry-in-india