International Journal of Innovative Research in Engineering and Management (IJIREM)
ISSN (Online): 2350-0557, Volume 13, Issue 1, February 2026
DOI: https://doi.org/10.55524/ijirem.2026.13.1.9
Article ID IJIR3167, Pages 69-77
www.ijirem.org

Determinants of Economic Performance of Silk Entrepreneurs in Assam: A Micro-Level Study of Sualkuchi and Rampur Blocks, Kamrup District

Dr. Samir Show

Assistant Professor, Department of Economics, Kumarganj College, Balurghat, West Bengal, India

Correspondence should be addressed to Samir; samirshow80@gmail.com

Received: 27 January 2026; Revised: 14 February 2026; Accepted: 28 February 2026

ABSTRACT- Silk handloom industry is a key part of Assam rural sphere and it provides the residents with livelihood, helps in the maintenance of tradition and also adds to the family income. The economic performance of silk entrepreneurs however important is still a skewed and limited phenomenon due to various socio-economic and institutional reasons. The paper is an investigation of the determinants of economic performance of Assam silk entrepreneurs using a micro level study of Sualkuchi and Rampur blocks in Kamrup district. The study uses primary data obtained through independent weavers and master weavers to examine the relationship between the factors of access to raw materials, institutional credit, technology adoption, market contacts, levels of skills and social security coverage on income, productivity and profitability. It is also thought that the post-COVID-19 situation will reflect new weaknesses and changes in the sector. The results indicate that the market access, access to cheap credit, technological modernization, and size of operation are key drivers of economic performance, whereas the reliance on middle-men, volatility of raw material prices, and weak institutional facilitation of entrepreneurship have a negative impact on the entrepreneurial performance.

KEYWORD: Entrepreneurs, Institutional Credit, Technology Adoption And Family Size

I. INTRODUCTION

In this paper, the main factors discussed that shape the economic performance of silk entrepreneurs in Assam, where the region is known internationally as having a diverse base of sericulture with a special focus on a specific example of Muga silk industry [1][14]. Muga silk - a famous high-value export product, with a natural golden shade that is typically found only in Assam, durability, and the exclusivity of the state - takes a significant place in the cultural heritage of the state and significantly impacts its economic environment [1], [2].

Sericulture in Assam involves the manufacturing of Eri, Muga, Tasar, and Mulberry silk and is a very important part of the Assam agro based economy. It guarantees the livelihoods of many rural families and acts as a significant contributor to the marginalized communities as supplementary sources of income [4]. Although the sector has a socio-economic importance, its intrinsic volatility is characterized by the changes in production of raw silk, unequal employment development, and the tendency to perform poorly at different silk types [5]. However, sericulture remains a cottage industry with high labor requirements that provide significant employment and revenue-generation prospects both in rural and semi-urban states of the state [2], [3].

It is against this wider background that the current research is narrowed down to the issue of the economic feasibility and operational nature of Muga silk businesses. These are mainly small and labour-intensive businesses but can frequently bring quite large returns with minimal investment of capital and low labour demands [1]. The research aims to determine what makes entrepreneurship successful or unsuccessful in the Muga silk sector by placing the analysis in the broader context of sericulture development in Assam [5].

Despite the fact that Assam has been recognized as a traditional center of silk production since ancient times due to its productive agro-climatic conditions and cultural background, to date, there is a significant lack in empirical studies of the economic performance of entrepreneurs in sericulture and especially Muga silk [1], [5]. This study will fill this gap by undertaking a systematic empirical study on the economic performance of silk entrepreneurs in Assam. By so doing, it also assesses the role of the key structural and institutional variables in the presence of the changing trends of silk yarn production and employment in the industry.

The analysis is based on five-year (2016-17 to 2020-21) secondary data to determine the effect of such variables, including the number of sericulture villages, the total number of families involved in sericulture, and the area under food plant cultivation on the production of silk yarn [5]. These dimensions have been incorporated to make the study part of the deeper comprehension of the economic forces influencing the entrepreneurial activity in the silk industry, in particular Assam, and the insights to use in policy making and sustainable development of sericulture monopoly.

II. LITERATURE REVIEW

The Seven Sisters are commonly considered as an overlooked area as far as integration with the national business and industrial system of India is concerned. This is what leads to the need to ensure that the states in the region endeavour towards self-reliance, especially in the conventional industries like the handloom and artisanal industry. The heritage of Assam, especially the golden silk, Muga, is given an extra advantage by this factor. The necessity to protect, enhance, and ensure such indigenous industries with the introduction of newer laws under Intellectual Property (IP) regime is even more critical. In turn, a dedicated investigation within the framework of Geographical Indication (GI) to determine the profitability and sustainability of the silk business is needed [15].

Silk industry in Assam is mainly based in Sualkuchi, the Kamrup district and mostly considered as the seat of silk weaving in Assam. There should be a thorough survey or contextual enquiry taking into account the main players in the game, i.e. weavers, cocoon cultivators, wholesalers, and retailers. This would be a twofold inquiry to not only learn about the socio-economic background of the participants but also trace the value chain that would change the raw silk into the much-desired finished cloth [16].

The conventional method of producing silk involves boiling silks cocoons into water containing soda, mostly using stainless steel containers. Nevertheless, this approach has been failing to become more efficient and out-of-date. To meet these new technologies, however, new boiling chambers, including cylindrical and spherical ones, have been suggested as a way of enhancing efficiency, uniformity, and productivity in processing silk [17].

On the international scale, the Multi Fibre Agreement (MFA) of 1974 got substituted in 1994 by the Agreement on Textiles and Clothing (ATC). All the quota remaining on the export of textile and clothing by the developing countries was to be eliminated by 1 January 2005 under the ATC. This change was to boost market share of countries like China, India and Bangladesh and increase competition in international textile market. Consequently, the developing countries had to re-examine their approach to industry, invent new ways of production and enhance export capacity.

In addition, it assesses the socioeconomic and cultural value of sericulture as an agro-based cottage industry that is well ingrained within the rural and tribal society of Assam and has its roots as far back as the Ahom dynasty and its contribution to economic development in the region in terms of job creation [2]. Sericulture, especially the manufacture of the Muga silk, is known to be renowned by its complex manufacturing processes, and it is the highest cost-per-unit price of all silks varieties and a major source of export revenue to the state [1]. In addition to being a sustainable sector worldwide, due to its ecological advantages, including a decrease in soil erosion and an increase in afforestation, this industry is also one of the key redistribution processes of economic benefits, transferring them to the rural poor population at the expense of wealthy consumers [4]. The sericulture is also labor-intensive, which offers a significant number of job opportunities, especially to women, at different phases of the silk production, such as silkworms rearing, weaving, and so on that helps support the economic empowerment of rural families [2]. In this regard, the Muga silk venture comes out as a highly profitable and economically feasible business, especially among small-scale entrepreneurs because it is not only flexible, has lower capital investment requirements, and also manageable labor necessities [1]. Moreover, the distinctiveness and elevated market price of Muga silk add to its economic appeal, which allows business people to obtain high returns despite the nature of difficulties in sericulture [1]. The erratic nature of the growth trend in the production of raw silk and creation of jobs highlight the complicated nature of the relationship between climatic processes and market forces that influence this industry [2].

III. OBJECTIVES OF THE STUDY

The primary aims of this research are to:

- Examine the economic performance of silk entrepreneurs in Sualkuchi and Rampur Blocks.
- Identify factors influencing profitability and productivity of Silk.
- To Analyse constraints faced by these entrepreneurs and Silk Weavers.

IV. DATABASE AND METHODOLOGY

This current research is arrived at using primary data, the sample of which has been determined using a multistage stratified random sampling method, based on households. The field survey was done in the district of Kamrup in Assam that was purposively selected because of its overwhelming contribution in the silk handloom sector in the state. The district of Kamrup contributes close to 70 percent of the post-cocoon activities in Assam and this is the major center of silk production, weaving, and trade. The cluster is central in production and marketing of silk products with an estimated 70 percent of Muga cocoons and more than 50 percent of Eri cocoons being produced in the area being traded, weaved, and marketed in Kamrup district.

The Kamrup district has 14 development blocks of which Sualkuchi and Boko were purposely chosen as the target areas of the study owing to the dense concentration of Muga silk weaving activities in these regions. Of the blocks chosen the highest population of Muga silk traders is located in Boko and Sualkuchi. In that regard, 70 entrepreneurs were chosen by convenient sampling, including 40 of Sualkuchi and 30 of Boko.

The profile variables that were used in the research were as age, family type, level of education, annual income, organizational pattern, years of experience, sources of finance, mass media exposure, social participation, type of business and exposure to training. The major indicator of performance applied in the research was the ratio of return-cost (output-cost) where the performance of the enterprise was operationalized as to profit-cost ratio.

A. Cost and Profit Measurement

Several inputs have been included in the calculation of a crop cost of production. Broadly these costs are classified into two categories such as:

Cost-A: (Fixed cost): Weaving house cost, Cost of flying shuttle looms, Cost of wood frame of loom, Cost of jacquard shedding device, Cost of cloth roller, Cost of reed, Cost of warp roller, Cost of pirn winding device, Bobbin

and shuttle, Bowasuta (heddle/healds thread) cost, Cost of other instruments, Interest on fixed capital, Depreciation cost and Rental value of own land

Cost-B: (Variable cost/Operational cost): it includes the cost of human labour like Draft cutting cost, Total weaver cost, Total warp preparation cost, Total heald's installer cost and Total helper cost. Cost of raw silk like Warp raw silk, Weft raw silk and Silk embroidery thread for flower (Bundles of flower) others cost like Transportation and electricity cost and Interest on variable cost

Cost-C: Total cost of Production (Cost A+ Cost B). The profitability may be calculated by using various economic formulas:

Value of Production or Gross return = (Main Product × Price per unit) + (By Product × Price)

Output-Cost Ratio = Value of Gross return / Cost C

B. Correlation and Regression

To analyze the relationships between factors, both correlation and regression analyses are employed as needed. A correlation matrix, based on the Pearson correlation coefficient, is constructed to examine the interrelationships among variables. Regression analysis, however, is the most crucial method for accurately estimating the relationship between dependent and independent variables.

V. RESULTS AND DISCUSSION

A. Average Annual Cost per Enterprise for Silk Production

Table 1 demonstrates the average yearly cost system of silk production business divided into fixed and variable costs and the percentage of these costs in the total cost. This data shows that the mean expenditure per enterprise per year is Rs.1102822.88 which is very input-intensive and cost-intensive in the production of silk. This is a huge expenditure of cash, which is a product of the impact of capital outlay, workforce needs, and the expensive raw silk materials, which are used in the process of production.

This section presents the empirical findings derived from the primary data collected, focusing on the economic performance of silk entrepreneurs in the Sualkuchi and Rampur Blocks of Kamrup District. The analysis incorporates various statistical methods, including descriptive statistics, to elucidate key socio-economic characteristics and financial indicators relevant to entrepreneurial success within the silk industry [6]. Further statistical analysis, such as regression analysis, was employed to identify significant determinants influencing the profitability and overall economic viability of these enterprises. The findings aim to provide a comprehensive understanding of the factors contributing to varying levels of economic performance among silk entrepreneurs in the region, offering insights into potential areas for intervention and support [1], [9]. For instance, previous research indicates that factors like enterprise size, age of the entrepreneur, and gender significantly influence operating performance, while the number of training days and linkage with Self-Help Groups also play a crucial role [8]. This study builds upon such foundational insights by specifically examining the unique socio-economic and infrastructural contexts of Sualkuchi and Rampur, known as key silk weaving clusters in Northeast India where 70% of the state's silk post-cocoon activities are concentrated [1].

- **Fixed Cost-** The cost of fixed cost per silk business is Rs.105465.37 (9.56 percent of the overall cost of production). The biggest contributors of the fixed cost are the rental value of own land at Rs.30756.33 (2.79%), with the second being investment in loom-related equipment. Of them, the wooden frame of the loom cost occupies Rs.19869.84 (1.80%), flying shuttle looms and jacquard shedding devices occupy Rs.11245.62 (1.02%) and Rs.11124.85 (1.01%), respectively.

Other fixed cost elements are interest on fixed capital (0.74%) and depreciation expenses (0.41 %) Others like cloth rollers, reeds, warp rollers, pirn winding machines and other minor accessories make up an insignificant portion of the total price. The low percentage of fixed cost implies that the silk enterprises rely mostly on the conventional production facilities and already purchased capital assets. It saves on recurring capital expenditure which could also restrict technological upgrading and scale expansion in the sector.

The remaining items such as cloth roller cost is Rs. 606.72 (0.06 percent), reed cost Rs.1124.60 (0.10 percent), pirn winding device is Rs. 1043.54 (0.09 percent), bobbin and shuttle cost is Rs.2159.67 (0.20 percent), and bowasuta or heddle threads is Rs.545.25 (0.05 percent) (see Figure 1) contribute relatively small shares individually. However, they are essential technical components required for the proper functioning of the loom and smooth weaving operations.

- **Variable Cost-** The largest portion of the total cost of the silk production is variable cost, which is 90.44 percent or Rs. 997357.51 of the total cost. This is a clear indication that the silk production businesses are operations intensive with most of the costs being incurred in the production process and not in the fixed assets.

The amount of labour cost per enterprise is Rs. 208903.27 and this represents 18.94 percent of the total cost. The weaver cost is the largest of all other elements of labour at Rs. 182246.50 (16.53%) as the value of the skilled labour in the production of silk. Other labour costs, such as draft cutting, warp preparation, helpers and heald installation, have a comparatively smaller but absolutely essential proportion of the total cost. The sizeable share rate of labour cost indicates the labour-consuming and skill-based character of the silk weaving business wherein expertise and insular skill have an overpowering part in the output quality.

The cost of raw silk comes out as the only most noticeable part of total production cost which is Rs.674906.25, which is 61.20 percent of the total cost. Among these, spending on weft raw silk (Rs. 321006.25 or 29.11%) is more than on warp raw silk (Rs.258642.33; 23.45%), as they are utilized or priced in a more expensive production process. Secondly, ₹ 95,257.67 (8.64%) (See Figure 2) is contributed by silk embroidery thread that is employed in designs of floral base. The overwhelming percentage of raw silk price means that the profitability of silk business is very sensitive to the changes in the prices of silk yarn, limitation in supply and market uncertainty.

Other variable costs are transportation and electricity charges (Rs.17,030.15; 1.72%), miscellaneous expenses (Rs.1953.30), and interest on variable cost (Rs.94562.54 or 8.57%). The portion of interest on working capital is high

implying that it depends on borrowed funds to cover the operating expenses of the day-to-day operations**.**

Table 1: Average annual cost per enterprise for silk production

Cost Types	Particulars of cost	Amount (in Rs)	Percentage Share
A) Fixed cost	Weaving house cost	4752.50	0.43
	Cost of flying shuttle looms	11245.62	1.02
	Cost of wood frame of loom	19869.84	1.80
	Cost of jacquard shedding device	11124.85	1.01
	Cost of cloth roller	685.55	0.06
	Cost of reed	1124.60	0.10
	Cost of warp roller	606.72	0.06
	Cost of pirn winding device	1043.54	0.09
	Bobbin and shuttle	2159.67	0.20
	Bowasuta (heddle/healds thread) cost	545.25	0.05
	Cost of other instruments	8957.80	0.81
	Interest on fixed capital	8124.46	0.74
	Depreciation cost	4468.64	0.41
	Rental value of own land	30756.33	2.79
	Total fixed cost	***105465.37***	9.56
B) Variable Cost (i) Labour Cost)	Draft cutting cost	10236.34	0.93
	Total weaver cost	182246.50	16.53
	Total warp preparation cost	4251.67	0.39
	Total heald's installer cost	912.40	0.08
	Total helper cost	11256.36	1.02
	Total Labour Cost	208903.27	18.94
ii) Cost of raw silk	Warp raw silk	258642.33	23.45
	Weft raw silk	321006.25	29.11
	Silk embroidery thread for flower (Bundles of flower)	95257.67	8.64
	Total Cost of raw silk	674906.25	61.20
iii) Others Cost	Transportation and electricity cost	17030.15	1.72
	Miscellaneous	1955.30	
	Interest on variable cost	94562.54	8.57
	Total variable cost	997357.51	90.44
C) Total Cost (C)	**(Fixed + Variable + others cost)**	1102822.88	100.00

(Source: Filed Level Survey (P.D))

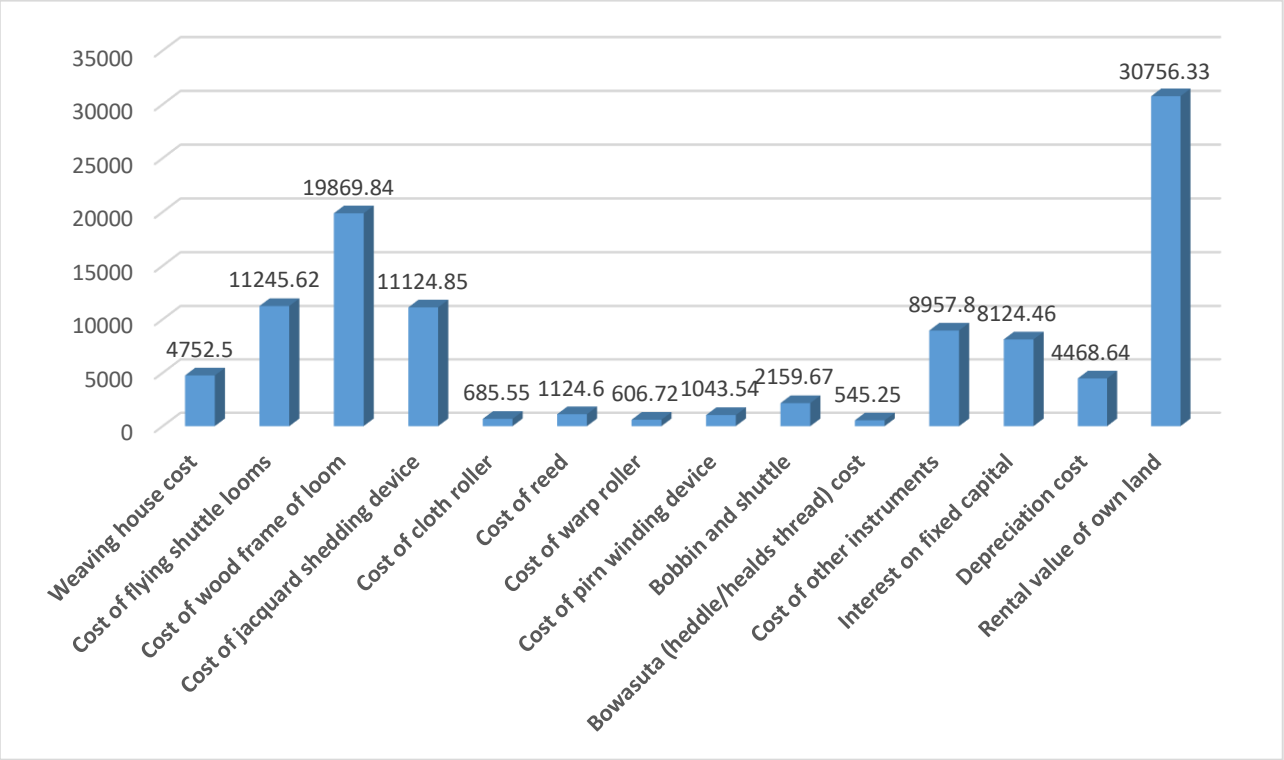

Figure 1: Average Fixed Cost (A) of the enterprise

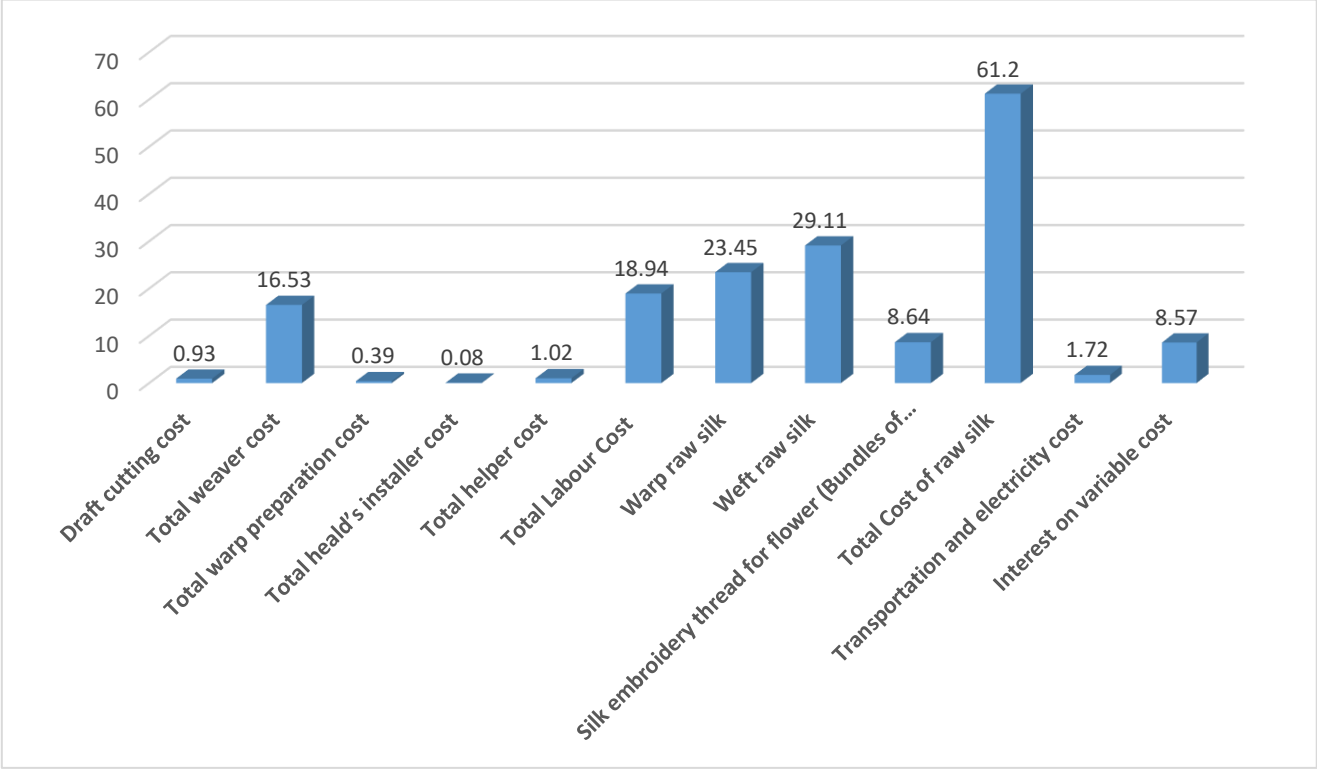

Figure 2: % share of Variable Cost of the enterprise

B. Total Average Cost and Return of the Silk Enterprise

Table 2 presents the total average cost and returns from a silk production enterprise, providing an overview of its economic performance. The total cost of production amounts to ₹11,02,822.88, comprising total fixed cost of ₹1,05,465.37 and total variable cost of ₹9,97,357.51. Variable cost constitutes the major share of total cost, reaffirming the operationally intensive nature of silk production (see Figure 3)

The gross return earned per enterprise is ₹18,54,627.50, reflecting substantial revenue generation from silk production activities. After accounting for total production costs, the net return realized by the enterprise is ₹751804.62. The positive and sizeable net return indicates that silk weaving enterprises are economically viable and

capable of generating considerable income for entrepreneurs. The gross return–cost ratio, also referred to as the output–cost ratio, is estimated at 1.681. This implies that for every rupee invested in silk production, the enterprise generates a return of ₹1.68, yielding a net gain of ₹0.68. The profit percentage, calculated at 68.17 percent, further confirms the profitability of silk enterprises.

Overall, the results presented in Table 2 demonstrate that despite high production costs particularly variable costs related to raw silk and labour silk enterprises remain financially rewarding. However, the profitability is closely tied to effective cost management and stable market prices for silk products, suggesting that fluctuations in input costs or output prices could significantly influence enterprise performance.

Table 2: Total average cost and return from the enterprise

Sl. No.	Details of cost and returns	Cost (Rs)
1	Total fixed cost(A)	105465.37
2	Total variable cost (B)	997357.51
3	Total cost (C)	1102822.88
4	Gross return	1854627.50
5	Net return	751804.62
8	Gross return - Cost ratio or Output-Cost ratio	1.681
9	Profit (percentage Share)	68.17 %

Source: Table 1

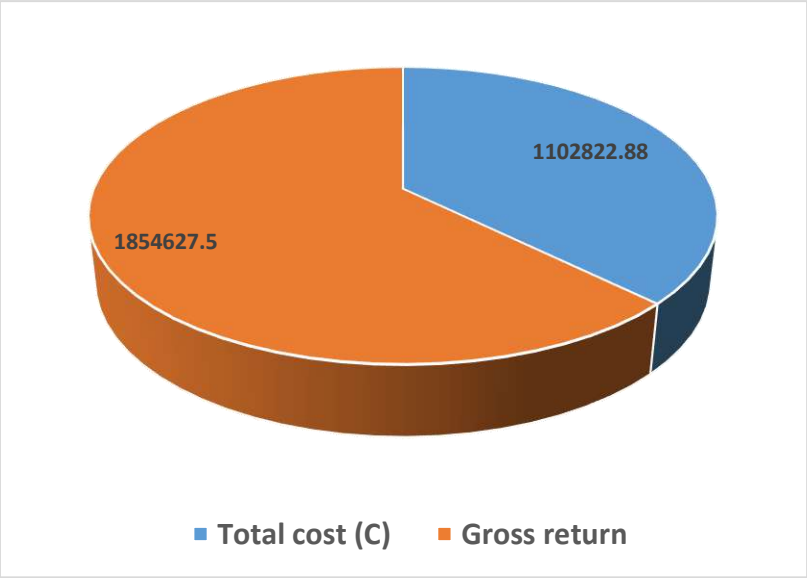

Figure 3: Cost & Return of the enterprise

C. Correlation between Output–Cost Ratio and Selected Variables

Table 3 is a table displaying the correlation coefficients of output-cost ratio (a performance measure of the enterprise) and eleven independent variables of Muga silk handloom enterprises chosen. The findings show that there is a different level of association between the performance of the enterprise and the socio-economic and the enterprise-related features of the entrepreneurs.

Out of the variables under investigation, the annual income significantly and positively correlates with the output-cost ratio (r = 0.7124, significant at 1% level). And this means that companies that have a greater annual revenue are more likely to be cost efficient and would have a higher return to unit of investment, potentially because of better scale of operations, quality access of inputs and better market connectivity.

The present study's findings corroborate previous research highlighting the multifaceted nature of entrepreneurial success in the silk sector, although it extends this understanding by focusing on specific geographic and socio-economic nuances [1]. Specifically, the study observed that entrepreneurial orientation, characterized by aspects such as perseverance, significantly influences business performance among micro and small enterprises in the Kamrup district, aligning with broader findings on entrepreneurial success [7]. However, despite the inherent demand for Assamese silk products, the industry often struggles with profitability due to inefficiencies within its value chain.

The output-cost ratio also has a good and very meaningful correlation with experience (r = 0.4231). This implies that more experienced entrepreneurs can have a better opportunity of controlling production processes, minimize wastage and react to market conditions hence improving the performance of an enterprise. In a similar manner, there is a positive and significant correlation (r = 0.3811) between performance and mass media exposure, which suggests that information accessibility in terms of market, technology and prices is important in enhancing efficiency and

profitability. There are also positive and significant correlations on such variables as type of business (r = 0.3107), organization pattern (r = 0.3782) and capital availability or loan facility (r = 0.3849) with the 1 percent level of significance. Such results indicate that companies possessing superior organizational structures, diversified or specialized kinds of business and sufficient access to credit have greater chances to attain greater output-cost ratios. Access to capital also facilitates raw silk procurement and implementation of better practices in good time and this has a positive effect on returns.

The level of education has got a positive correlation but low with the performance of the enterprise (r = 0.1272), significant at 5 percent. This implies that formal education can have a slight role to play in increasing decision-making and management skills, yet the traditional knowledge and experience can take the leading role in silk weaving businesses.

Conversely, other variables like family size, exposure to training, social involvement and age are positively and statistically non-significant with the output-cost ratio. It means that in the current study, these factors do not directly or directly affect enterprise performance. The lack of significant influence of training exposure could indicate the quality, length, and applicability of training programmes, and age and family size might have no direct impact on the efficiency of operations.

On the whole, the correlation analysis shows that the economic and business-related issues like income, experience, information accessibility, organizational framework, and availability of capital are more instrumental in defining the performance of Muga silk handloom business than demographic factors. The findings support the need to increase financial access, information dissemination, and enterprise management skills to make silk handloom enterprises more profitable and sustainable.

Table 3: Correlation coefficient of Output-Cost Ratio of the Muga silk handloom enterprises along with eleven variables

Sl.No	Independent Variable	Correlation coefficient (r)	't' Value
1	Education Level	0.1272*	1.685
2	Family Size	0.1023	0.9862
3	Experience	0.4231**	5.0854
4	Training Exposure	0.1058	1.1751
5	Mass media exposure	0.3811**	4.1252
6	Annual income	0.7124**	1.1314
7	Social participation	0.0685	0.7351
8	Type of business	0.3107**	3.0321
9	Organizational pattern	0.3782**	4.0358
10	Capital availability or Loan facility	0.3849**	3.7208
11	Age	0.0621	0.5057

*Significant at 5% level of significant
** Significant at 1% level of significant

D. Challenges Faced by Silk Entrepreneurs

The issues that affect the entrepreneurs in the silk industry are very multidimensional and include environmental vulnerabilities, market forces, financial conditions, and structural inefficiencies in the industry.

i. Environmental and Climate Change-

Sericulture is an agro-based industry that is extremely sensitive to the environment and weather changes especially changes in temperature and humidity [18], [19]. Climate change has proved to be a significant menace, and hot weather and unpredictable rainfall conditions have negatively impacted the mulberry growing and silkworm breeding procedures [18]. In other places like Assam, frequent flooding, and unpredictable weather are other factors that affect cocoon production and processing of silk, and thus, production becomes harder and harder to predict [4]. Such uncertainties in the environment directly reduce the productivity and income stability of the silk entrepreneurs.

ii. *Competitiveness and Shifting Consumer Trends-*

The entrepreneurs in the silk business are in a rather competitive market whereby the traditional silk items are competing with the modern replacements and changing consumer trends. Among the most significant weaknesses is the competition with synthetic fibers, which have the same visual appeal and much lower price, thus, decreasing the demand of natural silk products [19]. Also, the sale and distribution of fabricated or machine-produced fabrics, which are usually combined with artificial fibers and sold as pure silk endangers real silk manufacturers by disrupting the pricing mechanism and consumer confidence.

In addition, despite the opportunities of digital platforms, the traditional consumers do not want to use online buying channels, which constrains the digital accessibility and growth prospects of silk entrepreneurs.

iii. Financial and Economic limitations-

The biggest bottleneck remains to be financial constraints especially to small scale silk traders and traditional weavers. Lack of access to capital, credit facilities, and insurance cover in case of crop failures or loss of production limit the growth of the enterprises and make them more vulnerable to risks [4]. Some reports show that traditional silk clusters have profitability gaps, whereby the revenues received are usually too low to support long-term operations unless it is supported by a third party or the government. Moreover, the growing reliance on imported raw silk and silk yarn in countries like Vietnam and Brazil has influenced the domestic cost structures, which makes the local entrepreneurs vulnerable to the foreign price changes [20].

iv. Operational and Structural Problems-

The reorganization of silk businesses no longer as the traditional household-based business operations to the form of competitive commercial organizations is fraught with several operational issues. The availability of skilled artisans at sericulture regions has been diminished by labour shortages which are spurred by urbanization and movement of younger generation towards other sources of livelihood [19].

Moreover, the continuous technological loopholes, such as the usage of outdated reeling, weaving techniques, and

processing, lead to the reduced productivity and quality disconnect compared to the world leaders, such as China [21]. The lack of infrastructure, insufficient mechanization, and insufficient branding practices also impede the high value domestic and export markets [1], [21].

E. Major Problems Encountered by Silk Weavers

- Unequal Employment and Earnings: Seasonal and demand-based nature of weaving silk leads to variable work and earnings with the greatest impact on the wage weavers and unsold inventory and late payments after COVID affecting the independent weavers.
- Inappropriate availability of raw material: Sensitive and extreme prices of the silk yarn (Muga, Mulberry), supply chain interruptions, and low purchasing power increase expenses and stop production, particularly in cases of small and independent weavers.
- Absence of Institutional Credit: The unavailability of formal finance necessitates high-interest informal lending, which results into indebtedness and curtails investment, modernization and growth.
- Poor pay and exploitation Aware of the stagnant piece-rate wages, no contract, non-payment and no social security benefits, wage weavers are very vulnerable.
- Technological Backwardness: Relying on outdated looms, high upgrade prices, inadequate credit, and insufficient training makes the company less productive and competitive.
- Weak Market Intermediaries and Middlemen Dominance: In the absence of direct market and digital access, the marginalized groups have to rely on the intermediaries, which lead to low price realization and the perpetuation of inequality.
- Lack of Social Security: Lack of interest in welfare programs increases the risk of vulnerability as a crisis occurs and prevents younger generations in the profession.

VI. CONCLUSION

The paper comes up with the fact that the business of silk production is very costly in nature and variable costs especially raw silk and labour form the cost structure. The largest part of the total production cost is solely composed of raw silk, and therefore the profitability of the enterprises is highly sensitive to variations in the input prices and supply conditions. The low percentage of fixed costs is also an indication of a low commitment to technological investment and thus could limit the growth of productivity, as well as scale, over time.

The economic feasibility of the production of silk projects is high though the production cost is high. The gross and net returns are quite high, and the output-cost of 1.68 is favourable which confirms the fact that silk weaving is still a profitable entrepreneurial activity in the study area. The profitability is however strongly correlated with good cost management, availability of working capital and consistent market prices which implies that it can be exposed to external shocks.

The correlation analysis also brings to the fore that economic and organizational variables like annual revenue, experience, access to credit, mass media exposure, nature of business, and organizational pattern are very critical in the performance of the enterprise. These results indicate that more advanced, established, and connected entrepreneurs have a greater potential of attaining greater efficiency and returns. Conversely, other demographic characteristics like age, family size and involvement in social activities do not have direct effects on performance and the weak effect of training exposure supports the need to introduce more relevant and effective capacity-building programmes.

Simultaneously, the challenges that have been associated with the silk entrepreneurs are persistent such as the instability of the income, the shortage of raw materials, the lack of institutional finance, the backwardness of technology, the poor market connections, and the lack of social protection system. These limits do not only impact on the present profitability but also pose a risk to the long-term viability of the industry as well as deterring future involvement.

The study in general indicates that integrated policy interventions aimed at stabilizing the supply of raw materials, widening of affordable institutional credit, enhancing access to the market, encouraging technological upgrading, and expanding the welfare coverage are necessary. These structural challenges need to be tackled in order to improve the economic performance, resilience, and sustainability of the silk businesses in Assam.

REFERENCES

[1] C. Das, R. R. Saharia, P. Das, A. Baruah, and M. Islam, "Economic performance of muga silk entrepreneurs in Assam, India," *International Journal of Agriculture Extension and Social Development*, vol. 8, no. 1, p. 496, 2025. Available from: https://doi.org/10.33545/26180723.2025.v8.i1h.1572

[2] K. Gogoi and K. K. Phukan, "Muga silk production and engagement of family in different category of silk production: A study in Lakhimpur district of Assam, India during 2013–23," *International Journal for Multidisciplinary Research*, vol. 7, no. 1, 2025. Available from: https://doi.org/10.36948/ijfmr.2025.v07i01.34852

[3] S. Hazarika and B. Saikia, "Sericulture in the Lakhimpur district of Assam: Unravelling the threads of tradition and development," *International Journal of Agriculture Extension and Social Development*, vol. 7, no. 2, p. 152, 2024. Available from: https://doi.org/10.33545/26180723.2024.v7.i2c.318

[4] M. A. Hussain, S. S. Rasid, S. A. Hussain, and R. Sut, "Sericulture in Assam: A decade of trends, challenges, and opportunities," *Journal of Entomology and Zoology Studies*, vol. 9, no. 8, pp. 71–76, 2024. Available from: https://www.entomologyjournals.com/assets/archives/2024/vol9issue8/9198.pdf

[5] N. Saloi and S. Hazarika, "Factors affecting production of silk yarn and cocoon in Assam," *Journal of Livestock Science*, vol. 15, no. 1, p. 53, 2024. Available from: https://doi.org/10.33259/jlivestsci.2024.53-59

[6] Borah, "Socio-economic status of women entrepreneurship – A case study of Morigaon district in Assam," *IOSR Journal of Humanities and Social Science*, vol. 19, no. 7, p. 26, 2014. Available from: https://doi.org/10.9790/0837-19712633

[7] H. Majumder *et al.*, "Entrepreneurial orientation and business performance: A study on micro and small entrepreneurs of Assam," *Türk Bilgisayar ve Matematik Eğitimi Dergisi*, vol. 12, no. 10, p. 7272, 2021. Available from: https://doi.org/10.17762/turcomat.v12i10.5618

[8] H. Mazumdar, "Evaluating the role of community resource person in the establishment of the Startup Village

Entrepreneurship Programme (SVEP) ecosystem in West Bengal," *International Journal for Research in Applied Science and Engineering Technology*, vol. 12, no. 10, p. 1143, 2024. Available from: https://doi.org/10.22214/ijraset.2024.64795

[9] Md. M. H. Sawrov and R. Sheikh, "Unpacking the factors that drive the success of Nakshi Kantha businesses in Jamalpur, Bangladesh," *Economic Insights – Trends and Challenges*, no. 4, p. 71, 2023. Available from: https://doi.org/10.51865/eitc.2023.04.06

[10] International Sericultural Commission, "Silk industry statistics," 2021. Available from: https://www.inserco.org/en/statistics

[11] M. B. Bora and A. Borgohain, "State and muga silk industry in independent Assam," *International Journal of Social Science and Economic Research*, vol. 3, pp. 495–504, 2018. Available from: https://ijsser.org/2018files/ijsser_03__35.pdf

[12] Goswami, B. Rabha, and V. Veer, "Muga silk – The golden thread of Assam," in *Bioprospecting of Indigenous Bioresources of North-East India*, 2016, pp. 279–294. Available from: https://doi.org/10.1007/978-981-10-0620-3_17

[13] M. Gogoi, A. Gogoi, and B. Baruah, "Exotic muga silk: Pride of Assam," *International Journal of Applied Home Science*, vol. 4, no. 1, pp. 72–78, 2017. Available from: https://www.researchgate.net/publication/306232689_Muga_Silk-_The_Golden_Thread_of_Assam

[14] M. Devi and K. Basumatary, "An economy of reeling, spinning, and weaving in Vanya silk with reference to Muga and Eri silk," *Universal Journal of Agricultural Research*, vol. 10, no. 6, pp. 627–638, 2022. Available from: https://doi.org/10.13189/ujar.2022.100604

[15] M. Shekar and S. Veeramani, "Financial inclusion through insurance and pension schemes," *European Business and Management*, vol. 3, no. 6, pp. 105–112, 2017. Available from: https://www.sciencepublishinggroup.com/journal/paperinfo?journalid=175&doi=10.11648/j.ebm.20170306.13

[16] J. Jain and A. Ratan, "Developing a conceptual model to sustain handloom silk industry at Sualkuchi, Assam, India," *European Journal of Sustainable Development*, vol. 6, no. 3, p. 413, 2017. Available from: https://doi.org/10.14207/ejsd.2017.v6n3p413

[17] A. R. Sengupta, R. Gupta, and A. Biswas, "Computational fluid dynamics analysis of stove systems for cooking and drying of muga silk," *Emerging Science Journal*, vol. 3, no. 5, pp. 285–292, 2019. Available from: https://doi.org/10.28991/esj-2019-01191

[18] S. Ashrith *et al*., "Organic sericulture practices and potentials: A review on sustainable silk production," *International Journal of Advanced Biochemistry Research*, vol. 9, no. 8, pp. 651–655, 2025. Available from: https://www.doi.org/10.33545/26174693.2025.v9.i8i.5282

[19] D. Thrilekha *et al*., "Performance of new double hybrids of bivoltine silkworm derived from high temperature and muscardine tolerant foundation crosses," *Journal of Entomological Research*, vol. 48, no. 2, pp. 171–175, 2024. Available from: https://doi.org/10.5958/0974-4576.2024.00030.5

[20] D. M. Madhu *et al*., "Global market analysis of India's silk industry: Trade dynamics and competitiveness assessment," *Journal of Scientific Research and Reports*, vol. 31, no. 5, pp. 712–724, 2025. Available from: https://doi.org/10.9734/jsrr/2025/v31i53067

[21] Department of Science and Technology (DST), Government of India, *Indian Textiles & Apparel Sectorial System of Innovation (ITSSI) Report*, 2023. Available from: https://dst.gov.in/sites/default/files/Indian%20Textiles%20Sectorial%20System%20of%20Innovation%20%28ITSSI%29%20Report_0.pdf