

Growth Drivers of Informal Manufacturing Enterprises: A Study of Assam in Northeast India

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Abstract

The growth of small informal enterprises is of utmost importance, as they are widely recognised as a crucial source of employment and income in many developing countries. This article examines the factors driving firm growth in the informal manufacturing sector, based on data from a survey of 205 enterprises in Assam, Northeast India. Using a multinomial logit regression model, the study reveals that several factors related to both the entrepreneur and the enterprise significantly influence growth. Entrepreneurs with formal education are more likely to experience business growth, highlighting the importance of education in enhancing entrepreneurial skills. The research also finds a positive link between female ownership and firm growth, indicating that women-led businesses are more likely to grow. In terms of enterprise characteristics, the research shows that larger firms tend to experience higher growth compared to smaller ones. Similarly, businesses that maintain proper financial records are more likely to achieve growth, emphasising the importance of financial management. The study also identifies low product demand as a significant constraint on growth, limiting expansion opportunities for these enterprises.

Keywords: Growth, Informal, Enterprise, Manufacturing, Entrepreneur

Introduction

Small enterprises in the informal sector are widely recognised as a crucial source of employment and income in many developing countries. In these economies, micro and small businesses often serve as a primary means of livelihood. For many entrepreneurs, establishing a small business is not a first choice but a last resort (Beck et al., 2005). Consequently, the

survival and growth of these enterprises are of utmost importance. Growth significantly reduces the likelihood of business closures (Rauch & Rijskik, 2013). Given the critical role that growth plays, understanding the factors that determine the growth of these enterprises becomes essential. This study aims to address this question by exploring the determinants of growth in small businesses within the informal sector. Based on a survey of 205 informal manufacturing enterprises conducted between January and June 2017 in the North-Eastern Indian state of Assam, the research sheds light on this issue. In India, the unorganised or informal manufacturing sector is defined by the national accounting system as all manufacturing units not registered under the Factories Act, 1948 (sections 2m(i) and 2m(ii)) or run by government/public sector enterprises. In recent years, the informal manufacturing sector has gained considerable importance, not only for its role in generating employment but also for its contributions to production, income, exports and capital accumulation (Subrahmanya, 2004). In fact, the informal segment of India's manufacturing sector accounts for about a quarter of its gross value added (GVA) and around three-fourths of its employment (Goldar, 2023).

Sharing around 3% of India's population, Assam is a state in the north-eastern part of India. The study merits attention in the context of Assam because informal manufacturing enterprises play an important role in the economy of Assam. With 98% of manufacturing enterprises, the sector contributes around 21% of the value added in the manufacturing sector and accommodates about 69% of manufacturing workers in the state (CSO, 2016; and NSSO, 2017). Considering the importance of the sector in the industrial map of a state like Assam, identification of growth determinants of the enterprises in the unorganised manufacturing sector is important from policy perspectives. The article is arranged as follows: the

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second section presents a brief review of related literature. The third section describes the data and methodology used in the study. The fourth section discusses the main findings of the study. A Conclusion with policy implications is presented in the last section.

Growth Determinants of Enterprises - Literature Review

Numerous variables influence the growth of enterprises, with firm size being a key factor. While some studies have found a positive relationship between firm size and growth, such as Bentzen et al. (2012), others report mixed results. For instance, McPherson (1996) observed that firm size did not significantly impact survival. Firm age is another variable often associated with growth, as older firms are assumed to have more experience. However, Coad and Tamvada (2012) found a negative relationship between firm age and growth in India, challenging this view. Business registration is considered important, with formal registration potentially increasing profits and productivity (Fajnzylber et al., 2011; Boly, 2015), though Williams and Kadir (2016) found weak evidence for a positive impact. Proper record-keeping and financial management are also linked to enterprise growth (Khadim & Choudhuri, 2019). Access to credit is another widely discussed determinant of growth. While Fowowe (2017) found that financial constraints negatively affect growth, McPherson et al. (2010) observed that access to credit had no significant impact on micro-enterprise growth. The gender of the business owner is another factor, with Deshpande and Sharma (2013) finding that female ownership can positively affect growth, challenging the belief that female-owned businesses face more growth barriers (Brush, 1992). Subcontracting or linkages with larger firms are considered important for growth (Sahu, 2010), although Tokman (1978) argued that small firms tied to large firms may struggle to accumulate capital. Human capital, or the owner's entrepreneurial skills, also plays a role, though findings on its impact are mixed (Brown et al., 2005). Location is another important factor, with Bigsten and Gebreyesus (2007) finding that firms in capital regions tend to grow faster.

Despite the extensive literature on firm growth, there is limited research on the growth determinants of informal manufacturing enterprises in India, with notable exceptions including Sasidharan and Raj (2014). Our article aims to contribute by exploring additional entrepreneur and firm-specific variables that could influence the growth of informal manufacturing enterprises. Moreover, there is a noticeable lack of evidence on the growth determinants of informal manufacturing enterprises at the regional or state level, particularly in India's north-eastern region. This research seeks to address this gap.

Data, Methodology and Variables Description

Primary Data and Sampling Design

The study uses a multi-stage sampling technique to generate data. In the first stage, Assam's 27 districts¹ were stratified based on the contribution of the unregistered or informal manufacturing sector to the district domestic product. Three strata were created: districts with a higher proportion than the state average, districts close to the state figure and districts with a lower proportion. Two districts from each stratum, totalling six districts, were randomly selected. In the second stage, one to two urban centres/municipalities and 20–30% of community development blocks from each district were purposively selected based on the concentration of selected enterprises. Four sectoral categories of manufacturing—furniture (wood and cane), textiles and apparel, food and beverages and fabricated metal products—were chosen, accounting for 71% of the informal manufacturing sector's value-added output in Assam (NSSO, 2013). Sample enterprises were selected using non-random methods, such as accidental and network sampling, with efforts made to minimise the limitations of these methods. A total of 205 manufacturing units were surveyed between January and June 2017. Firm owners were interviewed personally by using a structured questionnaire. Distribution of the sample enterprises is presented in Table 1.

Table 1: Distribution of the Sample Enterprises

Districts		Industry Groups				
		Textile and Wearing Apparel	Food Product and Beverages	Furniture (Wood and Cane)	Fabricated Metal	All
Tinsukia and Lakhimpur	Above state average	21	20	23	15	79 (38.53)
Dibrugarh and Darrang	State average	19	17	18	20	74 (36.09)
Dhubri and Goalpara	Below state average	9	17	14	12	52 (25.37)
Total		49 (23.90)	54 (26.34)	55 (26.82)	47 (22.92)	205 (100)

Source: Field Survey; Figures in parentheses indicate percent share.

Methodology

A multinomial logit model has been used to identify the determinants of growth among the enterprises. There are different definitions of growth. We consider growth as a change in size during a determined time (Dobbs & Hamilton, 2007). In the field survey, enterprises' owners were asked whether they had experienced growth/stagnation/decline in their volume of business (in terms of sales) in the past 4–5 years. This is our dependent variable, and we name this variable's growth status. The code given to an enterprise according to its growth status is as follows: 1 = if the firm has been facing decline or contraction, 2 = if the firm has been stagnating and 3 = if the firm has been experiencing growth. In the multinomial logit model, out of the j^{th} ($j = 1 \dots m$) categories of the dependent variable, one category is considered as a

reference category and the probability of choosing other categories is compared to the probability of choosing the reference category. If the first category is the reference category, for $j = 2 \dots m$, the predicted log-odds are given by

$$\text{Ln} [p(Y_{j=2 \dots m})/p(Y_{j=1})] = \alpha_j + \sum_{k=1}^K \beta_{jk} X_{ik} \quad (I)$$

Where X_{ik} is a set of explanatory variables, β_{jk} are corresponding unknown population parameters, α is the constant term and Y_j is the categories of growth status (Giri & Goswami, 2017). The exponentiation of predicted log-odds for $j = 2 \dots m$ gives the respective probabilities. By deducting the sum of probabilities for $j = 2 \dots m$ from one, the probability of the reference category is obtained. Firms that report their status as stagnating form the base category in our analysis as presented in Table 2.

Table 2: Growth Status of the Enterprises (Percent)

Categories of Manufacturing Activities	Declining	Stagnating	Growing
Textile and wearing apparel	18.37	30.61	51.02
Food product and beverages	31.48	46.29	22.22
Furniture (wood and cane)	43.63	45.45	10.90
Fabricated metal	25.53	51.06	23.40
The manufacturing sector (all)	30.24	43.41	26.34

Source: Field survey.

Description of Explanatory Variables

The explanatory variables included in the model:

- *Sales Revenue (as a proxy for firm size)*: Monthly sales revenue of the enterprise (in Log).

- *Age of the Enterprise*: Years of operation as on 2017 since the year of initial operation (in Log).
- *Sex of the Owner*: Dummy variable with D = one for male; D = zero otherwise.

- *Type of Enterprise²*: = Dummy variable with D = one if the firm is an establishment otherwise D = zero.
- *Human Capital of the Owner*: Human capital of the owner is measured in the form of formal education level and training of the owner. For the level of education of the owner, two dummies have been used. Owners with primary education, i.e., a minimum of five years of schooling but less than 10 years and zero otherwise are one category, owners with secondary level education i.e. a minimum of 10 years of schooling or more and zero otherwise, are the second category; and finally, owners with below primary education are taken as the reference category. Training variable is taken in dummy form with D = one if the owners have formal and informal training; D = zero otherwise.
- *Institutional Credit*: Access to institutional credit. Dummy variable with D = one if the enterprise has availed institutional credit; D = zero otherwise.
- *Urban Location*: Dummy variable with D = one for firms located in urban areas; D = zero otherwise.
- *Registration Status of the Enterprises*: Dummy variable with D = one, if the firm is registered (with any government authority) or has a license; otherwise D = zero.
- *General record-keeping or maintenance of accounts* by the enterprise. It is a dummy variable with D = one if the firm maintains regular accounts; otherwise, D = zero.
- *Government Assistance*: Dummy variable. D = one for enterprises that received government assistance; otherwise D = zero.
- *Subcontracting or Linkage with Other Firms/ Agencies/Contractors*: Dummy variable with D = one for the enterprises involved in subcontracting; otherwise D = zero.
- *Sectoral Groupings Dummy*: With manufacturing of fabricated metal as the reference category, three manufacturing activities dummies have been incorporated, viz. D1 = one if the firm is engaged in the manufacturing of textiles and wearing apparel and D1 = zero otherwise; D2 = one if the firm is engaged in the manufacturing of food and beverages and D2 = zero otherwise; D3 = one if the firm is engaged in the manufacturing of furniture (wood and cane) and D3 = zero otherwise. Summary statistics of the explanatory variables used in the multinomial logit regression are presented in Table 3.

Table 3: Summary Statistics of the Explanatory Variables Used in the MNL

Variables	Regression				
	Observations	Mean	Std. Dev.	Min.	Max.
Monthly sales revenue (logs)	205	11.24	1.11	7.94	14.22
Male owner	205	0.88	0.32	0	1
Age of the firm (logs)	205	2.26	0.89	2.39	3.99
Firm owner with primary education	205	0.44	0.25	0	1
Firm owner has secondary or above education	205	0.58	0.49	0	1
Firm owner has no education or below primary education	205	0.17	0.38	0	1
Owner has training (formal and informal)	205	0.36	0.48	0	1
Institutional credit	205	0.32	0.47	0	1
Urban location	205	0.44	0.49	0	1
Registration	205	0.55	0.49	0	1
Enterprise type	205	0.76	0.43	0	1
Maintenance of accounts	205	0.34	0.47	0	1
Government assistance	205	0.20	0.40	0	1
Manufacturing textiles and wearing apparel	49	0.24	0.43	0	1
Manufacturing food and beverage	54	0.27	0.51	0	1
Manufacturing furniture	55	0.27	0.44	0	1
Manufacturing fabricated metal	47	0.23	0.41	0	1

Results and Discussion

The estimated multinomial logit coefficients are presented in Table 4. The coefficients for the size proxy indicate a positive association with firm growth and a negative association with decline. This suggests that as firm size increases, the likelihood of growth rises, while the likelihood of decline decreases relative to stagnation. In comparison to fabricated metal manufacturing, textile and apparel manufacturing units are more likely to experience growth. Finally, our results demonstrate that firms that maintain regular accounts are more likely to grow.

Regarding the entrepreneurial-level variables, our analysis shows that higher education levels of the firm owner are positively correlated with increased growth potential. Additionally, we have found a significant association between the sex of the entrepreneur and the growth of the enterprises. Although the relationship is weak, our findings suggest that female-owned firms have a higher likelihood of growth compared to those owned by males. This aligns with recent studies highlighting the rise in female-owned unorganised manufacturing enterprises in India (Goldar & Agarwal, 2024).

Table 4: Multinomial Logit Regression for the Determinants of Growth of the Firms

<i>Explanatory Variables</i>	<i>Contracting</i>	<i>Growing</i>
Sales revenue (log) of the enterprise	-0.496* (0.288)	0.726** (0.291)
Age (log) of the enterprise	0.160 (0.189)	-0.0521 (0.236)
Type of the enterprise	0.253 (0.563)	-0.421 (0.747)
Manufacturing textiles and wearing apparels	-0.334 (0.662)	2.006*** (0.701)
Manufacturing food and beverage	0.0836 (0.406)	-0.593 (0.505)
Manufacturing Furniture (Wood and Cane)	0.195 (0.514)	-0.0962 (0.752)
Enterprise located in the urban area	0.151 (0.369)	0.584 (0.506)
Registration of the enterprise	0.342 (0.428)	-0.385 (0.576)
Linkage/contract with other firms/agencies	-0.444 (0.653)	-0.358 (0.616)
Regular accounts maintained by the enterprise	0.118 (0.533)	0.960* (0.559)
Government assistance received by the firm	0.107 (0.557)	0.0674 (0.559)
Access to institutional credit by the firm	0.218 (0.453)	0.0805 (0.492)
Sex of the owner	0.191 (0.771)	-1.165* (0.813)
Firm owners with minimum five years of schooling but less than 10 years	-0.0451 (0.517)	1.558* (0.834)
Owners with minimum 10 years of schooling or more	0.364 (0.498)	1.918** (0.795)
Training of the owner	0.177 (0.387)	0.177 (0.460)
Constant	3.852 (2.961)	-9.791*** (3.147)

Number of observation = 205

Log pseudo-likelihood = -183.89

Wald chi2(32) = 63.47

Prob > chi2 = 0.0009

Pseudo R² = 0.17

Note: *p<0.1; ** p<0.05; *** p<0.01; figures in the parenthesis are standard error.

Barriers to Growth

During our field surveys, we asked enterprise owners to identify specific challenges or constraints they faced in running their businesses. The aim was to gain insights into factors that may hinder the growth of these small

firms. The most commonly reported obstacle was a shortage of capital, cited by 26% of respondents, followed by a shortage of workers (21%). Additionally, 12% of enterprises reported low demand for their products as a significant issue. Power cuts and shortages of raw materials were each reported by 7% of the firms

as problems. Interestingly, 37% of the firms indicated that they did not face any specific problems. To explore whether these challenges are significantly associated with firms' growth status, we expanded the main model of growth determinants by incorporating the reported problems. In this extended model, a value of one is assigned to firms that reported a particular problem, while

a value of zero is assigned to those that did not, except for firms that indicated they did not face any specific issues. Our estimation reveals that (Table 5) firms who report low demand as a problem are more likely to experience a decline and less likely to witness growth in their business. So far as the other variables are concerned, we get the same results as found for the first model (Table 4).

Table 5: Multinomial Logit Regression for the Determinants of and Barriers to Growth of the Firms

<i>Explanatory Variables</i>	<i>Contracting</i>	<i>Growing</i>
Monthly Sales revenue (log) of the enterprise	-0.479 (0.314)	0.676** (0.322)
Age of the enterprise (log)	0.217 (0.211)	-0.142 (0.248)
Type of the enterprise	0.493 (0.642)	-0.234 (0.852)
Textiles and wearing apparels	0.0729 (0.713)	2.692*** (0.766)
Manufacturing of food and beverage	0.431 (0.572)	-0.295 (0.562)
Manufacturing of Furniture (Wood and Cane)	0.111 (0.558)	0.421 (0.801)
Enterprise located in the urban area	0.0269 (0.409)	0.696 (0.573)
Registration of the enterprise	0.442 (0.481)	-0.356 (0.639)
Regular accounts maintained by the enterprise	0.142 (0.567)	1.374** (0.652)
Government assistance received by the firm	-0.343 (0.622)	0.218 (0.602)
Access to Institutional credit by the firm	0.221 (0.496)	0.160 (0.550)
Linkage/Contract with other firms/agencies	-0.806 (0.717)	-0.449 (0.704)
Sex of the owner	0.616 (0.886)	-1.442* (0.862)
Owners with minimum 5 years of schooling but less than 10 years	-0.205 (0.549)	1.896** (0.878)
Owners with minimum 10 years of schooling or more	0.315 (0.517)	2.094*** (0.795)
Training of the owner	0.199 (0.418)	0.0488 (0.511)
Owner reports lack of capital as a problem	-0.0987 (0.418)	0.127 (0.510)
Owner reports shortage of workers as a problem	-0.844 (0.560)	-0.650 (0.555)
Owner reports power cut as a problem	0.257 (0.729)	1.108 (0.852)
Owner reports shortage of raw material as a problem	0.726 (0.743)	-0.503 (0.818)
Owner reports low demand for their products as a problem	1.473*** (0.499)	-39.60*** (1.044)
Constant	2.876 (3.149)	-9.643*** (3.482)

Number of observation = 205

Log pseudo-likelihood = -167.18

Wald chi2(42) = 2469.56

Prob > chi2 = 0.0000

Pseudo R² = 0.24

Note: *p<.1; ** p<.05; *** p<.01; figures in the parenthesis are standard error.

Conclusion and Implications for Policy

The primary contribution of this article is its comprehensive exploration of the various entrepreneur and firm-specific determinants influencing the growth of informal manufacturing enterprises. The findings emphasise the significance of the firm owner's

characteristics in determining business growth. Specifically, the level of education of the firm owner is positively associated with the growth status of the enterprises. A key policy implication drawn from this is the importance of investing in human capital development, particularly through improving the formal education of enterprise owners, if we aim to foster

growth in these businesses. The study also reveals a positive relationship between female ownership and business growth, suggesting the potential for developing women's entrepreneurship, especially in the field study locations. This calls for efforts to enhance the educational levels and technical skills of women to promote their involvement in business. In terms of firm-level characteristics, the results indicate that larger firms are more likely to experience growth, while smaller firms face greater challenges, with many struggling to survive or even experiencing decline. Additionally, firms that maintain financial accounts are more likely to grow, highlighting the importance of financial management skills in fostering business expansion. Therefore, it is recommended that financial institutions and government agencies focus on improving the financial management capabilities of entrepreneurs. Among the various challenges faced by these firms, the study identifies low demand for their products as a significant constraint on growth. This lack of demand is contributing to the contraction of businesses. The question of whether this low demand is due to a general economic downturn or the inferior quality of products offered by informal manufacturing enterprises could be a subject for future research.

Notes

1. In 2017, Assam had 33 administrative districts. At that time, secondary data on the district-wise contribution of the unorganised manufacturing sector to the district domestic product were available only for the year 2011, when Assam had 27 districts.
2. The National Sample Survey Office (NSSO) in India classifies the unorganised enterprises into two broad types. Own Account Enterprises (OAEs), those who use family labour and are also known as household enterprises, and establishments, those who use hired labour.

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