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Significance of SME Loans on the CMSME Entrepreneurs' Socio-economic Development and Financial Performance: Bangladesh Perspective

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Abstract: *The SME sector contributes nearly 25% of the GDP of Bangladesh and 80% of workforce of Bangladesh is engaged to SME sectors. The study employs a mixed-method methodology to identify whether SME loans can significantly impact the socioeconomic development of entrepreneurs. Again, the study investigates which categories of loanees of Cottage, Micro, Small, Medium and Large (CMSME) entrepreneurs can absorb the advantages of SME loans. Finally, the study determines whether SME loans have impacted the financial performance of the SME loan recipients. Because there are five clusters, including cottage, micro, small, medium, and large enterprises, the study specifically encountered each of them with the same questionnaire, collected a primary data set in Likert scale from 467 CMSME enterprises throughout Bangladesh, and statistically tested the responses. As a result of the ordinal responses being configured, the reliability and validity of the questionnaire were tested with Cronbach's Alpha. Using Linear Probability Model Regression with Variance Covariance Estimator (VCE) and Ordered Logit Regression with Variance Covariance Estimator (VCE), the study found significance in the first objective. The study found that cottage, micro, and small enterprises mostly benefited, respectively, from this loan. Using the log normalized values of net income before and after the loans received by these entrepreneurs, the study employed a paired t-test and confirmed that there is a significant impact of SME loans on the financial performance of the SME loan recipients. The novelty of this research lies in its comprehensive inclusion of all CMSME clusters within a single empirical framework. The study contributes to the existing field of literature by linking the firm performance and socio-economic development.*

Key-words: SME loans, socio-economic development, investigative survey, entrepreneurship, financial performance.

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1. Introduction

A study by Hossain (2023) showed that the SME sector in Bangladesh is a big contributor to the country's GDP. It's reportedly true that nearly 25% of the country's GDP is contributed by this big sector. Thus, the study on "Significance of SME Loans on the CMSME Entrepreneurs' Socio-economic Development and Financial Performance: Bangladesh Perspective" is focused on primary data and the final beneficiaries' perceptions regarding the SME loans' benefits that they absorb for their socio-economic development. It's all known that loans are cumbersome and create a burden on the payees. Thus, loanees always seek to refrain from implementing their business ideas. Thus, the national economy is hindered by the absence of business and services. Also, this hurdles the national income and GDP, which finally cycled to failure in socio-economic development. In this regard, SME loans are flexible and are disbursed by different banks and Non-Bank Financial Institutions (NBFIs) to entrepreneurs whose capital needs and employee structures meet the criteria. Simply put, SME loans seem to be a perfect solution to benefit very small business initiatives. The CMSME sector holds a significant proportion of total outstanding loans provided by banks and Non-Bank Financial Institutions (NBFIs). The following CMSME data shows the key statistics for finance provided up to 2021 in the CMSME sector and information on CMSME loans as a portion of total loans in Bangladesh. Figure 1 shows that CMSME loans outstanding from 2018 to 2022 are increasing, indicating that this loan has become more significant day by day. Figure 2 represents the CMSME loans as a percentage of total loans disbursed by banks and NBFIs, which, though concave and decreasing, is a significant portion of total loans.

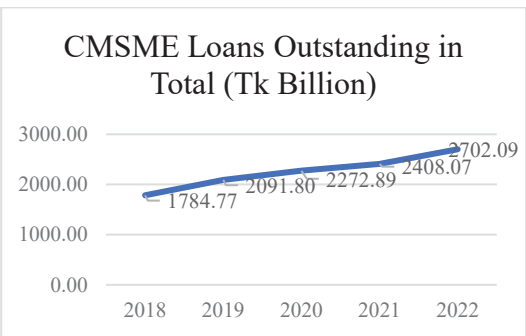


Figure 1: CMSME Loans Outstanding in BDT Billion

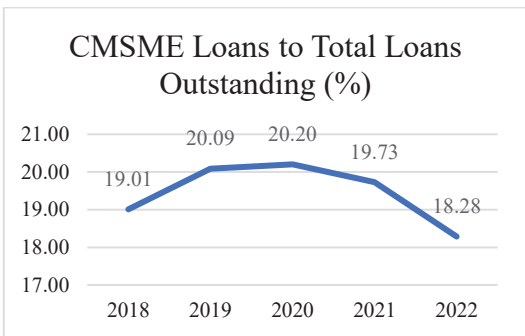


Figure 2: CMSME Loans to TL (%)

Source: ADB Asia SME Monitor 2023

But there should be acknowledgement from the final beneficiaries, who should also think so. Basically, that investigative concept creates the platform or rationale for the study. The contribution of CMSME in the GDP of Bangladesh is significant. The following figure will depict that:

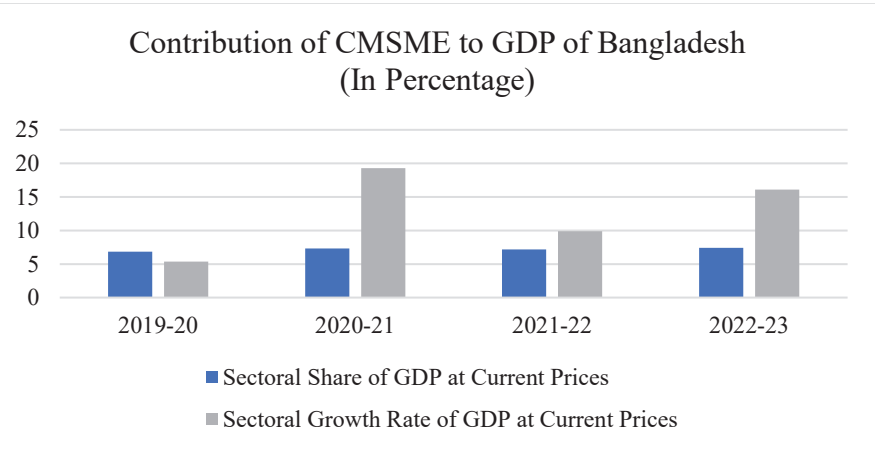


Figure 3: Contribution of CMSME to GDP in Bangladesh (In Percentage)

CMSME sector of Bangladesh is also empowering the country by alleviation of poverty and reduction of gender disparity by involving more women in economic activities. The following table will depict the scenario:

Table 1: Total Employment Created in CMSME sector in Bangladesh

Particulars	Cottage	Micro	Small	Medium	Large
Employees	13,168,327	558,870	6,600,685	706,112	3,466,856
Male	11,759,565	435,043	5,844,088	538,526	1,871,910
Female	1,408,762	123,827	756,597	167,586	1,594,946

Source: Bangladesh Bureau of Statistics

The definition of SME in National Industrial Policy (2016) is used to provide loans and screen loan applications, which is as follows:

Table 2: CMSME Definition and Investment Size

Serial	Industry Type	Investment Amount (Cost of Replacement and Fixed Assets' Value except for land and building of factory)	Number of Employed Workers

1	Cottage Industry		Below 10 lakhs	Below 16 employees
2	Micro Industry		10 lakhs to 75 lakhs	16 to 30
3	Small Industry	Manufacturing	75 lakhs to 15 crores	31 to 120
		Service	10 lakhs to 2 crores	16 to 50
4	Medium Industry	Manufacturing	15 lakhs to 50 crores	121 to 300
		Service	2 cores to 30 crores	51 to 120
5	Large Industry	Manufacturing	More than 50 crores	More than 300
		Service	More than 30 crores	More than 120

Source: National Industrial Policy, 2016

The SME loans are provided in specific sectors and sub-sectors' definitions at National Industrial Policy (2016), which were important to understand before conducting the study. The sectors and subsectors can be found in Table 3.

Table 3: Sector and Sub-Sectors of SME Loans

Manufacturing Sectors	**Agro-Business Sectors**	**Service Sectors**
Leather and leather goods	Poultry farms	Construction and real estate
Light engineering (Agricultural, agro-processing and electronic equipment)		Hospitals and clinics
Ready-made garments	Dairy farms	Education
Pharmaceuticals		Transport, storage, warehouse and communication
Paper, packaging and printing	Fishing and fish processing firms	Hotels and restaurants
Plastic industry		Computer, hardware and ICT goods
Electrical and electronic industry		Wholesale and retail trades

Source; National Industrial Policy, 2016

The study focused on different criteria based on literature reviews to understand what crucial factors are the key characteristics of SME loans that create differences from general commercial loans. SME loans are start-up and growing business-friendly; commercial loans are not of those types. Thus, six key independent factors with four control factors were identified basing on what Key Informant Interviews (KII) were conducted on the enterprises.

The study firstly wants to identify whether SME loans benefit the socio-economic development of the CMSME entrepreneurs. In its second objective, the study requires to understand which types of entrepreneurs are better able to absorb the benefits of SME loans and improve their socio-economic development than others. Finally, in its third objective, the study wants to know if the SME loans impact the financial performance of the CMSME enterprises.

The study contributes to the existing field of literature by using a perfect blend of primary data, that is used to meet the first and second research objectives and secondary data, that is used to meet the third research objective. The study used a good number of observation and variables that can contribute to the study's ability to explain the dependent variable. The study's outputs will provide a good base of further studies on SME financing in emerging economy contexts, and also enlighten stakeholders relevant to SME sector in emerging economies.

2.0 Literature Review

As of The Financial Express in its editorial (2020), Cottage, Micro, Small, Medium and Large Enterprises are jointly called CMSME in Bangladesh. As of an editorial of Dhaka Tribune (2022), CMSME contributes a lot in the country's national income and GDP. Bangladesh emphasizes a lot in CMSME because since 1971, Bangladesh is growing against poverty, illiteracy, and unemployment. These vicious cycles led common people to invest in business. But fund crisis is a big problem in LDC countries like Bangladesh. Thus, Abbasi et al. (2018) showed that SME loan is a great source of fund for small investors.

As per BBS (2013), Bangladesh has 7,900,000 SME enterprises, including the five categories of CMSME. Maximum of these CMSME enterprises is directly or indirectly concerned with SME loans. Definitely, these contribute to the country's economic power. But the research wanted to know whether these entrepreneurs are getting impacted by SME loans positively. A study

A study by Beck (2013) found that financial deepening can have a positive effect on the growth and reduction of poverty in the large small and medium-sized enterprise (SME) sector by addressing limitations in financing, facilitating the establishment of new businesses and entrepreneurship, and enhancing the allocation of resources, especially between subsistence micro-entrepreneurs and transformative entrepreneurs. Another study was done on the developing economies by Tambunan (2011) found that SMEs dominate the domestic economy, employing 96.2% of the workforce. Challenges include insufficient financial resources and marketing issues, while underrepresentation of women entrepreneurs is primarily due to limited education access and cultural or religious restrictions. Another study by Taiwo, Ayodeji, & Yusuf (2013) made a survey of 200 Nigerian SME/Entrepreneurial officers and managers. It revealed that common constraints that hinder small and medium-sized business growth, include lack of financial support, poor management, corruption, lack of training, infrastructure, insufficient profits, and low demand. The study recommends urgent government assistance to help entrepreneurs access finance, information, and modern technology to reduce operating costs and meet market competitions. Boschmans & Pissareva (2017) found that the lack of funding for SMEs with

high risk and potential returns, such as start-ups and innovative companies, is a significant issue. The study recommended that expanding financing options would help SMEs capitalize on development prospects and reduce susceptibility to credit market fluctuations and economic downturns.

Van Song et al. (2022) in a study based on Vietnam tried to understand the impact of SME financing in developing business environment focusing mainly on technical SMEs. The study found that Formal and informal SME funding, for example, may increase formal credit choice while decreasing informal credit option when it comes to the financial infrastructure and tax regulation. This has a substantial impact on GDP development and deepens the technological SMEs' business environment. Considering the earlier study, Van Song et al. (2022) used logistic binary regression model in the analysis because the data set was binary in nature.

Investigative research was done by Watambwa & Shilongo (2021) in Zimbabwe taking data from 2015 to 2019 to analyze the impact of SME financing on economic growth. The study used classical linear regression model to analyze the statistical significance. According to the estimated models, financing for SMEs significantly boosts economic growth in terms of GDP growth and tax revenue formation. It was discovered, meanwhile, that SMEs Financing had no appreciable impact on variations in the Poverty Datum Line's movement.

Niaz (2021) did a study blending socio-economic development and sustainable goals including financial inclusion strategies. The study found that Living standards, multidimensional poverty reduction, and sustainable livelihoods are all positively impacted by microfinance from MFBs. Microfinance, however, has no effect on societal advancement. Microfinance helps the impoverished more than those in rural areas, especially women who live in urban settings.

A detailed study was done by Ganbold (2008) in Mongolia that considered financial and regulatory constraints in SME financing in Mongolia. The study tried to focus on the duties and expectations from regulatory aspects that should be optimized to energize SME financing.

Economic security is a vital issue for developing and underdeveloped economies. Ciekanowski & Wyrębek (2020) tried to find out the impact of MSME on economic security and found significant relationship between variables.

Qureshi & Herani (2011) studied on Karachi tried to find the role of SME in maintaining socio-economic stability. This study aimed to determine the main funding barriers that SMEs in Karachi face, which can hinder their ability to grow and perhaps jeopardize their

liquidity and financial standing. The study revealed that due to strict collateral requirements, exorbitant markups, a drawn-out and complicated documentation process, and occasionally dishonest practices at banks and financial institutions, the majority of consumers and small and medium-sized enterprises (SMEs) are unwilling to borrow money from these institutions. The big corporate sector is what the lending institutions prefer to finance.

Asian Development Bank Institute published research where Aliyev (2019) studied on problems and opportunities for leveraging SME finance by using value chain in the aspect of Azerbaijan. The study found the significance of small and medium-sized businesses (SMEs) to the Azerbaijani economy, their financial accessibility, and the function of value chains in guaranteeing funding are all covered in this study. The process of preparing the paper has demonstrated that, although institutional, legal, cultural, and geographic barriers restrict SMEs' access to financing, these businesses primarily profit from bank loans.

Manzoor et al. (2021) did a study in the context of Pakistan to understand the role of SMEs in rural development that identified significant relation between SME's evolution and rural development.

In Bangladesh, SME loans have been a significant way to mobilize funds from surplus units to deficit units. A study by Rahmatullah, Mukul, and Islam (2014) was done to reveal how SME financing affects socio-economic phenomena, with special consideration given to financial inclusion and poverty alleviation, and the role of SME financing is satisfactory. Akterujjaman (2010) found that bank's reluctance to accommodate SME clients has been condemned for being taken over by informal SME loan channels. Regarding policy perfection and application, Khandker (2016) compared the SME sector with those of India and Pakistan and found that India and Pakistan have separate and effective ministries and autonomous bodies, while Bangladesh's SME Foundation is comparatively ineffective in formulating and implementing SME policies. The fact that SME financing significantly impacts entrepreneurship development is also shown in a study by Hasan (2019). A study on 200 borrowers by Rahid (2022) was done in Bangladesh, where SME financing shows some constraints regarding interest rates and documentation.

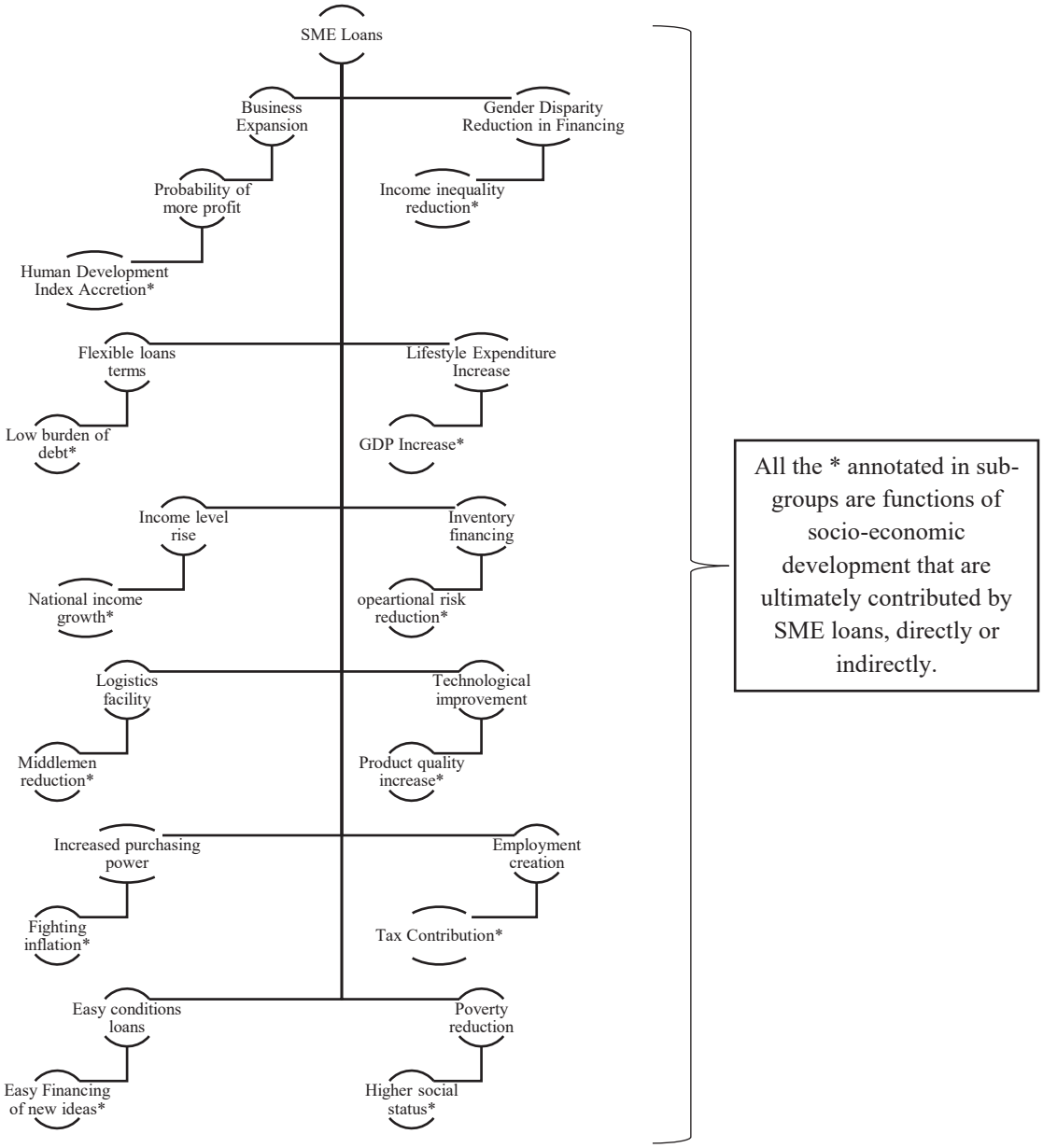
Finally, from the literature review, it can be said that most studies done in relevant fields have found some mixed impacts between SME financing and socio-economic development, where only a few studies are primary databased and properly clustered.

3.0 Research Gap and Novelty of the Research

As of the authors' latest knowledge, no studies used primary data from all of the clusters of SMEs including cottage, micro, small, medium and the large enterprises with a large sample

size in the contexts of emerging economies. The study used a mixed method approach of combining primary data and secondary data for reaching the research objectives, which is also an addition to the study's novelty in existing field of literatures.

4.0 Theoretical Framework and Hypothesis



Source: Author generated

There have been different studies relevant to SME financing and its impact on economic growth. Different parameters have underpinned the studies. Directly, no such theory has been placed that SME financing can contribute to economic growth or socio-economic improvement, rather, it's an investigative issue that holds success in different countries differently. Thus, the framework will focus on links that connect socio-economic growth with SME loans receiving benefits.

It's found in a study by Sari (2023) that as SME loans benefit business expansion, the opportunity for profitability increases, and thus the Human Development Index also gets positively impacte. Vele (1991) used HDI as an indicator of socio-economic development. Baloch (2018) found that there remains a relationship between gender disparity reduction in financing and income inequality reduction. Islam (1986) found that income inequality reduction impacts socio-economic development positively. Ofurum & Fubara (2022) said that flexible loan terms in SME loans cause a low debt burden on the loan-receiving enterprises, which ultimately impacts socio-economic development. OECD (2012) outlined that in the expenditure approach for calculating GDP, when expenditure increases, Gross Domestic Product (GDP) also rises, which contributes to socio-economic growth. On the other hand, Goyal (2014) told that SME loans also benefit the income level and uplift the purchasing power, which fights inflation and helps develop national income. It's difficult to take general loans that target financing inventory, which is the biggest part of business operations. But Chou et al. (2022) found that SME loans have no barriers to financing the inventory of enterprises, which covers operational risk, and operational risk reduction has a positive impact on firm value accretion. Many of the SME loans taken by entrepreneurs are from rural areas because farming, agrarian, and manufacturing facilities can be established in rural areas at low cost. Thus, Oguoma et al. (2011) showed that they require logistics facilities, which can be covered with SME loans, and middlemen profit can be minimized with them, which ultimately impacts socio-economic growth. We cannot properly apply cost-cutting strategies without technological innovation. And technological innovation requires long-term flexible loans at flexible rates. Thus, Shi et al. (2016) found that SME loans can help here in technological innovation relating to product quality development, which increases socio-economic development's pace. Revazov et al. (2020) found that As SME loans create opportunities for business expansion, employment opportunities also rise, creating socio-economic development. New startup financing is tough in general banking and stock market facilities. Sometimes, venture funds also lose interest in financing new ideas. As of Jha (2013), SME loans are dedicated in this perspective to the easy conditions in which loans are provided, and this finally contributes to socio-economic development. Bangladesh has been running a poverty rate reduction cycle for the last ten years at a rapid stage, where SME loans are a big benefactor. Niaz (2021) showed in his study that this is

causing the poverty rate to decline, lifestyle to uplift, and social status to increase. Thus, from all the aspects, it can be concluded that the factors relevant to SME loans that have been identified in this theoretical framework are directly or indirectly impactful or have the possibility of impacting socio-economic development. Thus, the variable identification in the methodology of the study is based on the factors identified in the theoretical framework.

The hypotheses gathered from the literature reviews and the theoretical framework which are to be tested in the study are listed below:

H_{a1}: There exists relationship between SME loans and socio-economic development of the SME loan receiving enterprises.

H_{a2}: There exists relationship between the financial performance and the SME loans received by the CMSME entrepreneurs.

5.0 Methodology

The study on "Investigating the Significance of CMSME Loans on the CMSME Entrepreneurs' Socio-Economic Development in Bangladesh" is based on Key Informant Interviews (KII) with the SME enterprises in Bangladesh. A survey questionnaire is prepared for that KII (Appendix-1). The questionnaire development stage was fully conscious of directional error. In details, rating "4" in case of positive replies or strong agreement or high values and "0" in case of negative replies or disagreement or weak values restrict directional error to occur. Otherwise, it can be misleading while not addressed. As of Chowdhury (2022), a questionnaire should be inclusive of the dependent and independent variable. Thus, an eleven variables questionnaire have been prepared where both dependent, independent variables and control variables have been included and set for KII to the respondents who are different types of enterprise owners.

5.1 Data and Sample Distribution

We structure and aggregate the data set selected and considered for primary data collection in the following ways:

1. At first, the total number of CMSME, (Cottage, Micro, Small and Medium Enterprise) which includes large enterprises (not larger than SME criteria) too, has to be identified (Bangladesh Bureau of Statistics, 2013)
2. In the SME Foundation statistics data, the following information has been found:

Table 4: Statistics of SME Enterprises in Bangladesh

Types of Enterprises	Numbers	Weights
Cottage	6,842,884	87.52%
Micro	104,007	1.33%

Small	859,318	10.99%
Medium	7,106	0.09%
Large	5,250	0.07%
Total	7,818,565	100%

(Source: SME Foundation, Bangladesh)

3. Sample size is calculated from this population (The SME loan receiving enterprises) using sample size determination formula from Cochran (1977). The sample size is 385 at 95% confidence interval,

$$\frac{(Z^2 \times p(1-p))/e^2}{1 + (\frac{z^2 \times p(1-p)}{e^2 \times N}}$$

Where, N = population size, e = Margin of error (percentage in decimal form) and, z = z-score, p = standard of deviation. The z-score is the number of standard deviations a given proportion is away from the mean. Here, N is referred to Table 4 for different types organizations, z is 2.58 for 99% confidence interval, margin of error is 0.05 and p is 0.5.

4. This procedure calculates a sample size of 385. But for regression analysis based on different types of enterprises, the sample size is increased to 467 total, including C, M, S, M, and L types of enterprises. Thus, based on the percentage weights of the categories of types of enterprises, the following number of samples have been considered of particular types of enterprises:

Table 5: Weight allocation and sample distribution

Types of Enterprises	Sample Numbers	Weights
Cottage	265	56.75%
Micro	53	11.35%
Small	70	14.99%
Medium	41	8.77%
Large	38	8.14%
Total	467	100%

Source: Author generated

5. Out of the sample sizes selected in Table 5, considering size of the enterprise, year of establishment, location of the enterprise and gender of the owners, random sampling has been done to meet the necessary sample numbers for the study.

5.2 Variables Identification, Econometric Model Formation and Hypothesis

The study considered twelve independent variables and one dependent variable. There have been different studies based on research objectives, which varied significantly and transformed the questionnaires and variables. That's why the variables have been considered as probable links that may define the dependent variable properly. Additionally, the theoretical framework contributed to the formation of the variable structure.

Table 6: Definition and Justification of Variables

Variables' Codes	Variables' Names (Binary Responses)	Justification
Q1DV: *Dependent Variable*	Has your business grown more than before?	Identifies whether the respondents' businesses have grown on the usage of the SME loans. When entrepreneurs' businesses grow for a particular reason, like SME loans, it means that this loan impacts the socio-economic development of the loan- recipients.
Q1IV: *Independent Variable 1*	Has your business enabled job creation?	It determines whether the receipt of the loan has resulted in increased access to jobs for unemployed communities.
Q2IV: *Independent Variable 2*	Are the SME loan terms easier than other types of loans?	Identifies whether the SME loans' terms and conditions are easier than conventional loans and advances.
Q3IV: *Independent Variable 3*	Has your income level increased significantly than earlier?	Identifies whether SME loans' usage contributed to personal income to the entrepreneurs.
Q4IV: *Independent Variable 4*	Do you pay more corporate tax than before?	Determines whether the businesses can generate more corporate taxes than before.
Q5IV: *Independent Variable 5*	Do you think that SME loan increased financial stability of your enterprise?	Identifies whether SME loans repaired the financial condition of the businesses and established financial stability.
Q6IV: *Independent Variable 6*	Do you think that you can manage a better social status than earlier when such loans were unavailable?	Identifies whether the status of the entrepreneurs taking SME loans evolved with better social status than before.
Q7CV: *Control Variable 1*	Size of Total Assets	The size of the Total Assets can impact the businesses' prospects, thus taken as a control variable.

Q8CV: *Control Variable 2*	Location of the enterprise	The location of the enterprise can impact the growth of the business and is thus considered a control variable.
Q9CV: *Control Variable 3*	Age of the enterprise	The experience and goodwill of the business are proportionate to the age of the business, thus being considered a control variable.
Q10CV: *Control Variable 4*	Gender of the Chairperson	The gender of the chairperson may impact the decision-making of the business, thus being considered a control variable.

Source: Author generated

The econometric model applicable to the Linear Probability Model (LPM) and Ordered Logistic Regression Model (Ologit) that is used in the study is given here:

$$Q_{1DV} = \alpha + \beta_{1Q1IV} + \beta_{2Q2IV} + \beta_{3Q3IV} + \beta_{4Q4IV} + \beta_{5Q5IV} + \beta_{6Q6IV} + \beta_{7Q1CV} + \beta_{8Q2CV} + \beta_{9Q30CV} + \beta_{10Q4CV} + \varepsilon_i \quad (i)$$

where,

α → The constant
β_i → Slope for all the independent variables
ε_i → Error Terms

5.3 Data Analysis Tools

1. STATA has been used for the statistical analysis required for the study.
2. Cronbach's Alpha is used for understanding the reliability and validity of the questionnaire following a study of Taber (2018). The study will incorporate this tool to test the questionnaire before other analytical tools are applied.
3. Descriptive statistics has been used for identifying data patterns in this study following a study by Dong (2023).
4. Correlation analysis has been done for understanding the inter-variables' connectivity and relational level and direction following a study by Senthilnathan (2019).
5. As all the variables' information received are binary responses, following a study of Vele (2019), Linear Probability Model (LPM) has to be used for analyzing the relationship between variables.

6. As of Parry (2020), Ordered Logistic Regression Model (Ologit) is also applicable for more robust analysis of hypothesis for ordinal data. Thus, in this study, additionally Ologit model has been used.
7. As there are many variables, there remains chances for multicollinearity which will be tested by Variable Inflation Factor (VIF) following a study of Akinwande et al. (2015).

6.0 Analysis

The analysis segment of this research is fragmented into five key parts, which are the five key types of SME loan-receiving enterprises. As already discussed in the methodology segment about the sample size and selection criteria of the types, the analysis segment will analyze all these sample sets individually with the similar analysis tools discussed in the methodology segment. Before jumping to segment-wise analysis, the reliability and validity of the questionnaire are checked with the Cronbach's Alpha.

6.1 Cronbach's Alpha

Table 7: Cronbach's Alpha

Average interitem covariance	0.9170
Number of items in the scale	11
Scale reliability coefficient	**0.9059**

Source: Author generated

The result found from Table 7 here represents that the questionnaire is highly consistent and reliable as the value is 90.59% and ranges from 80% to 100% which indicates excellent reliability and validity.

6.2 Descriptive Statistics

Table 8: Descriptive Statistics

Variable	Observations					Mean					Standard Deviation					Min	Max
	Large	Medium	Small	Micro	Cottage	Large	Medium	Small	Micro	Cottage	Large	Medium	Small	Micro	Cottage		
Q1DV	38	41	70	53	265	2.26	2.46	2.94	2.92	2.65	1.55	1.21	1.08	1.27	1.39	0	4
Q1IV	38	41	70	53	265	2.34	2.20	2.84	2.21	2.27	1.34	1.36	1.00	1.42	1.51	0	4
Q2IV	38	41	70	53	265	2.24	2.37	2.77	2.51	2.66	1.20	1.30	1.17	1.38	1.41	0	4
Q3IV	38	41	70	53	265	2.18	2.07	2.83	2.66	2.17	1.29	1.08	1.15	1.41	1.24	0	4
Q4IV	38	41	70	53	265	2.47	2.32	0.99	1.81	1.89	1.27	1.11	1.04	1.36	1.52	0	4
Q5IV	38	41	70	53	265	2.42	2.44	2.66	2.60	2.36	1.15	1.23	1.25	1.39	1.36	0	4
Q6IV	38	41	70	53	265	2.03	2.20	1.94	3.00	2.42	1.15	1.27	1.36	1.18	1.38	0	4
Q7CV	38	41	70	53	265	1.11	1.59	1.80	1.66	2.42	1.16	1.52	1.61	1.40	1.39	0	4
Q8CV	38	41	70	53	265	1.47	1.71	1.31	1.28	2.48	1.43	1.71	1.55	1.36	1.41	0	4
Q9CV	38	41	70	53	265	1.00	1.22	1.64	1.00	2.47	1.34	1.62	1.57	1.22	1.37	0	4
Q1CIV	38	41	70	53	265	0.50	0.54	0.71	0.60	2.48	0.51	0.50	0.46	0.49	1.42	0	4

Source: Author generated

The descriptive statistics represent the pattern of responses that the cottage, micro, small, medium, and large enterprise owners have provided. As seen in the table, all the data's maximum value is 4 and its minimum value is 0, as the data collected is ordinal. The mean value of the variables in cottage, micro and small entrepreneurs provide evidence of higher propensity to scale 2 to 4 (Neutral to Strongly Agree), while mean values in the other two provide evidence of higher propensity to scale 0 to 3 (Strongly Disagree to Agree). The standard deviation or variability is seen high in the cottage, micro, and the large entrepreneurs.

6.3 Correlation Matrix

A correlation matrix is valuable in the analysis of ordinal data for multiple reasons. A correlation matrix offers insights into the magnitude and orientation of connections between sets of ordinal variables. By examining the relationships between variables, the study can get insight into their interconnections and detect possible patterns or correlations within the data. Also, multicollinearity is a phenomenon in regression analysis when predictor variables exhibit a high degree of correlation with each other. A correlation matrix can assist in identifying strongly correlated pairings of ordinal variables, which may suggest the presence of multicollinearity. Addressing multicollinearity is crucial to ensuring the accuracy and dependability of regression estimates.

6.3.1 Correlation Matrix with P Values of Cottage Industry

Table 9: Correlation Matrix with P Values of Cottage Industry

Variables	Q1DV	Q1IV	Q2IV	Q3IV	Q4IV	Q5IV	Q6IV	Q7CV	Q8CV	Q9CV	Q10CV
Q1DV	1.00										
Q1IV	0.5964*	1.00									
	0.00										
Q2IV	0.5019*	0.3638*	1.00								
	0.00	0.00									
Q3IV	0.7149*	0.5554*	0.3813*	1.00							
	0.00	0.00	0.00								
Q4IV	-0.02	-0.01	0.07	-0.05	1.00						
	0.71	0.92	0.29	0.41							
Q5IV	0.6592*	0.5473*	0.3642*	0.5367*	0.06	1.00					
	0.00	0.00	0.00	0.00	0.36						
Q6IV	0.7498*	0.4571*	0.4168*	0.5340*	-0.04	0.6289*	1.00				
	0.00	0.00	0.00	0.00	0.57	0.00					
Q7CV	0.7709*	0.4855*	0.3830*	0.6019*	-0.03	0.5537*	0.7020*	1.00			
	0.00	0.00	0.00	0.00	0.61	0.00	0.00				
Q8CV	0.7318*	0.4991*	0.4426*	0.5784*	-0.04	0.5932*	0.6651*	0.6885*	1.00		
	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.00			
Q9CV	0.7432*	0.4853*	0.3841*	0.6115*	-0.11	0.5331*	0.6029*	0.6354*	0.7053*	1.00	
	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00		
Q10CV	0.7819*	0.4728*	0.4332*	0.6050*	-0.06	0.5774*	0.6412*	0.6185*	0.6929*	0.7472*	1.00
	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	

Here,

* Stands for 95% Confidence interval

Source: Author generated

The correlation matrix shows that there is a mixed relationship among the variables. But the maximum variables have a positive relationship with significance in P Values with each other. It represents that the variables detect chances of multicollinearity, but the possibility of that is very low, which can be tested further in the Variable Inflation Factor (VIF) test.

6.3.2 Correlation Matrix with P Values of Micro Industry

Table 10: Correlation Matrix with P Values of Micro Industry

Variables	Q1DV	Q1IV	Q2IV	Q3IV	Q4IV	Q5IV	Q6IV	Q7CV	Q8CV	Q9CV	Q10CV
Q1DV	1.00										
Q1IV	0.7032*	1.00									
	0.00										
Q2IV	0.6368*	0.3472*	1.00								
	0.00	0.01									
Q3IV	0.6396*	0.4097*	0.4448*	1.00							
	0.00	0.00	0.00								
Q4IV	-0.05	-0.06	0.08	-0.03	1.00						
	0.71	0.67	0.56	0.81							
Q5IV	0.7017*	0.6658*	0.3071*	0.4681*	-0.2843*	1.00					
	0.00	0.00	0.03	0.00	0.04						
Q6IV	0.6312*	0.2764*	0.5087*	0.3700*	0.02	0.3171*	1.00				
	0.00	0.05	0.00	0.01	0.86	0.02					
Q7CV	-0.5778*	-0.3317*	-0.3861*	-0.3510*	0.02	-0.3864*	-0.3503*	1.00			
	0.00	0.02	0.00	0.01	0.91	0.00	0.01				
Q8CV	-0.6319*	-0.4084*	-0.5678*	-0.4280*	-0.23	-0.3451*	-0.4792*	0.6153*	1.00		
	0.00	0.00	0.00	0.00	0.10	0.01	0.00	0.00			
Q9CV	-0.4084*	-0.2987*	-0.13	-0.10	0.03	-0.25	-0.20	0.17	0.23	1.00	
	0.00	0.03	0.37	0.48	0.81	0.07	0.15	0.23	0.10		
Q10CV	0.4425*	0.23	0.4143*	0.2994*	0.12	0.16	0.2979*	-0.2819*	-0.3728*	-0.2862*	1.00
	0.00	0.10	0.00	0.03	0.41	0.26	0.03	0.04	0.01	0.04	

Here,
* Stands for 95% Confidence interval

Source: Author generated

The correlation matrix shows that there is a mixed relationship among the variables with maximum of the variables having 95% significant P Values. This indicates that the database of these industry responses is highly diversified and has no chances of multicollinearity.

6.3.3 Correlation Matrix with P Values of Small Industry

Table 11: Correlation Matrix with P Values of Small Industry

Variables	Q1DV	Q1IV	Q2IV	Q3IV	Q4IV	Q5IV	Q6IV	Q7CV	Q8CV	Q9CV	Q10CV
Q1DV	1.00										
Q1IV	0.7045*	1.00									
	0.00										
Q2IV	0.7041*	0.5008*	1.00								
	0.00	0.00									
Q3IV	0.7743*	0.6029*	0.7436*	1.00							
	0.00	0.00	0.00								
Q4IV	-0.04	-0.07	0.01	-0.05	1.00						
	0.75	0.56	0.94	0.68							
Q5IV	0.6000*	0.5119*	0.4415*	0.5212*	-0.03	1.00					
	0.00	0.00	0.00	0.00	0.83						
Q6IV	0.3543*	0.2697*	0.4562*	0.4181*	-0.09	0.3121*	1.00				
	0.00	0.02	0.00	0.00	0.45	0.01					
Q7CV	-0.3831*	-0.18	-0.3322*	-0.3225*	-0.20	-0.2432*	0.05	1.00			
	0.00	0.13	0.01	0.01	0.10	0.04	0.70				
Q8CV	-0.6426*	-0.4913*	-0.4245*	-0.4320*	0.07	-0.3633*	-0.3012*	0.2523*	1.00		
	0.00	0.00	0.00	0.00	0.54	0.00	0.01	0.04			
Q9CV	-0.6991*	-0.5245*	-0.5583*	-0.6660*	0.01	-0.4252*	-0.3082*	0.22	0.5721*	1.00	
	0.00	0.00	0.00	0.00	0.90	0.00	0.01	0.07	0.00		
Q10CV	0.4401*	0.2816*	0.3658*	0.4021*	0.11	0.3604*	0.11	-0.2767*	-0.2618*	-0.3275*	1.00
	0.00	0.02	0.00	0.00	0.35	0.00	0.35	0.02	0.03	0.01	

Here,
* Stands for 95% Confidence interval

Source: Author generated

The correlation matrix shows that there is a mixed relationship among the variables with maximum variables having significant relationship at 95% confidence interval. This indicates that the database of these industry responses is highly diversified and has no chances of multicollinearity.

6.3.4 Correlation Matrix with P Values of Medium Industry

Table 12: Correlation Matrix with P Values of Medium Industry

Variables	Q1DV	Q1IV	Q2IV	Q3IV	Q4IV	Q5IV	Q6IV	Q7CV	Q8CV	Q9CV	Q10CV
Q1DV	1.00										
Q1IV	0.7793*	1.00									
	0.00										
Q2IV	0.6708*	0.6217*	1.00								
	0.00	0.00									
Q3IV	0.7017*	0.6340*	0.3897*	1.00							
	0.00	0.00	0.01								
Q4IV	0.8245*	0.6542*	0.5439*	0.5866*	1.00						
	0.00	0.00	0.00	0.00							
Q5IV	0.8228*	0.7847*	0.5717*	0.6918*	0.7619*	1.00					
	0.00	0.00	0.00	0.00	0.00						
Q6IV	0.3150*	0.3384*	0.4105*	0.24	0.19	0.23	1.00				
	0.04	0.03	0.01	0.12	0.24	0.14					
Q7CV	-0.5758*	-0.4192*	-0.3653*	-0.4537*	-0.4864*	-0.5319*	-0.26	1.00			
	0.00	0.01	0.02	0.00	0.00	0.00	0.11				
Q8CV	-0.7098*	-0.5655*	-0.4354*	-0.4351*	-0.7050*	-0.5824*	-0.18	0.3481*	1.00		
	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.03			
Q9CV	-0.6417*	-0.4383*	-0.3122*	-0.5515*	-0.7098*	-0.6162*	0.06	0.4450*	0.5572*	1.00	
	0.00	0.00	0.05	0.00	0.00	0.00	0.69	0.00	0.00		
Q10CV	0.6489*	0.4613*	0.4937*	0.5216*	0.5387*	0.6198*	-0.05	-0.26	-0.4806*	-0.5449*	1.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.10	0.00	0.00	

Here,
* Stands for 95% Confidence interval

Source: Author generated

The correlation matrix shows that there is a moderately mixed relationship among the variables with maximum of the variables having significance at 95% confidence interval. This represents that the database of these industry responses is moderately diversified, with little chance of multicollinearity.

6.3.5 Correlation Matrix of Large Industry

Table 13: Correlation Matrix with P Values of Large Industry

Variables	Q1DV	Q1IV	Q2IV	Q3IV	Q4IV	Q5IV	Q6IV	Q7CV	Q8CV	Q9CV	Q10CV
Q1DV	1.00										
Q1IV	0.7725*	1.00									
	0.00										
Q2IV	0.7802*	0.6899*	1.00								
	0.00	0.00									
Q3IV	0.7158*	0.6804*	0.7063*	1.00							
	0.00	0.00	0.00								
Q4IV	0.7306*	0.5061*	0.6195*	0.5230*	1.00						
	0.00	0.00	0.00	0.00							
Q5IV	0.6901*	0.5506*	0.5920*	0.6357*	0.7283*	1.00					
	0.00	0.00	0.00	0.00	0.00						
Q6IV	0.3588*	0.3794*	0.25	0.27	0.23	0.09	1.00				
	0.03	0.02	0.13	0.10	0.16	0.58					
Q7CV	-0.27	-0.25	-0.19	-0.25	-0.07	-0.07	-0.16	1.00			
	0.10	0.13	0.24	0.13	0.67	0.66	0.32				
Q8CV	-0.14	-0.13	-0.12	-0.15	-0.11	0.06	-0.19	0.5575*	1.00		
	0.39	0.44	0.49	0.37	0.50	0.74	0.26	0.00			
Q9CV	-0.25	-0.08	-0.07	-0.06	-0.10	-0.02	-0.02	0.28	0.5667*	1.00	
	0.13	0.65	0.69	0.71	0.57	0.92	0.92	0.09	0.00		
Q10CV	0.24	0.06	0.25	0.10	0.21	0.05	-0.07	-0.05	-0.3361*	-0.4393*	1.00
	0.15	0.72	0.14	0.54	0.20	0.78	0.68	0.78	0.04	0.01	

Here,
* Stands for 95% Confidence interval

Source: Author generated

The correlation matrix shows that there is a moderately mixed relationship among the variables. But the maximum variables have a positive relationship with each other, while showing a few variables being significant at 95% confidence interval. It represents that the variables detect chances of multicollinearity, but the possibility of that is very low, which can be tested further in the Variable Inflation Factor (VIF) test.

6.4 Linear Probability Model (with Variance Covariance Estimator)

In this segment, the Linear Probability Model (With Variance Covariance Estimator) will be used to test the significance level by p values, t-statistic, f-statistic and R-squared. The summary of individually calculated results for different types of enterprises' run in STATA is shown below at Table 14:

Table 14: Summary Results of LPM (with Robust Standard Errors)

Types of Enterprises	Observation	P Values	F Values	R-squared
Cottage	265	0.00***	116.11	82.27%
Micro	53	0.00***	37.49	88.25%
Small	70	0.00***	31.12	80.50%
Medium	41	0.00***	30.35	87.50%
Large	38	0.00***	68.15	85.47%

Here, *** denotes significance at 99% confidence interval. Source: Author generated

From the result, it's seen that out of the 265 observations, all the cottage, micro, small, medium, and large industries show significance among dependent and independent variables at a 99% confidence interval. The R-squared of all these industries is more than 80% in all cases, showing that changes in the dependent variables can be explained by changes in the independent variables in all cases by 82.27%, 88.25%, 80.50%, 87.50%, and 85.47% in cottage, micro, small, medium, and large industries, respectively. The F-statistic also represents a good level of model fitness among the respective sectors.

Now, the detailed summary of the beta coefficients (β), p values, and t-statistics for individual variables in five different industries is shown in the following table 15:

Table 15: Variable-wise LPM Regression Outcomes (With Robust Standard Errors)

Variables	β Coefficients					t Values					P Values				
	L	Me	S	Mi	C	L	Me	S	Mi	C	L	Me	S	Mi	C
Q1IV	0.33	0.15	0.23	0.22	0.08	2.51	1.57	2.44	4.03	2.27	**0.018****	**0.027****	**0.018****	**0.000*****	**0.024****
Q2IV	0.28	0.11	0.15	0.16	0.08	2.26	1.10	1.27	2.48	2.35	**0.032****	0.279	0.208	**0.017****	**0.019****
Q3IV	0.14	0.14	0.22	0.16	0.18	0.77	1.26	3.02	2.67	3.63	0.450	0.216	**0.004****	**0.011****	**0.000*****
Q4IV	0.34	0.26	-0.02	0.00	0.02	2.15	1.55	-0.44	0.08	0.67	**0.041****	**0.032****	0.662	0.937	0.502
Q5IV	0.12	0.06	0.11	0.20	0.06	0.87	0.56	1.55	2.95	1.51	0.390	0.577	0.127	**0.005*****	0.132
Q6IV	0.15	0.06	-0.02	0.25	0.17	1.20	0.92	-0.36	2.89	3.68	0.241	0.363	0.718	**0.006*****	**0.000*****
Q7CV	-0.18	-0.10	-0.06	-0.13	0.22	-1.92	-1.97	-1.46	-2.00	4.61	**0.066***	**0.058***	0.151	**0.052***	**0.000*****
Q8CV	0.23	-0.11	-0.15	-0.02	0.02	2.31	-1.74	-2.43	-0.24	0.43	**0.029****	**0.092***	**0.018****	0.814	0.665
Q9CV	-0.26	-0.02	-0.09	-0.15	0.11	-3.72	-0.24	-1.74	-2.76	2.10	**0.001*****	**0.013***	**0.086***	**0.009*****	**0.037****
Q10CV	0.21	0.38	0.15	0.17	0.23	0.66	1.51	0.65	1.19	4.61	0.513	0.142	0.515	0.239	**0.00*****

Here,
*** Stands for 99% Confidence interval
** Stands for 95% Confidence interval
* Stands for 90% Confidence interval

The result shows that in cottage industry (C), independent variables 3 and 6 are significant at a 99% confidence interval, while 1 and 2 are significant at a 95% confidence interval, and control variables 9 and 10 are significant at a 95% confidence interval. The results of micro industry (Mi) show that independent variables 1, 5, and 6 are significant at a 99%

confidence interval, while 2 and 3 are significant at a 95% confidence interval, and control variables 9 and 7 are significant at a 99% and 90% confidence interval, respectively. The results of small industry (S) indicate that independent variables 1 and 3 are significant at a 95% confidence interval, while control variables 8 and 9 are significant at a 95% and 90% confidence interval, respectively. The outcomes of medium industry (Me) indicate that independent variables 1 and 4 are significant at a 95% confidence interval, and control variables 7, 8, and 9 are significant at a 90% confidence interval. Finally, the results from large industry (L) indicate that independent variables 1, 2, and 4 are significant at a 95% confidence interval, while control variables 7, 8, and 9 are significant at a 90%, 95%, and 99% confidence interval, respectively.

6.5 Ordered Logit Regression Model (with Variance Covariance Estimator)

Ordered logistic regression is a useful method for examining ordinal result variables and gaining insight into the connections between predictor factors and ordered categorical responses. The study used it to create a model that predicts the likelihood of being in each category of the ordinal outcome variable based on the values of the predictor variables. Using the data set, Ologit regression analysis has found significance levels, Chi^2 values, and pseudo-R-squared values for each of the industries, which are summarized in the following table:

Table 16: Summary Results of Ologit (with Variance Covariance Estimator)

Types of Enterprises	Observation	P Values	Wald Chi-Squared	Pseudo R-squared
Cottage	265	0.00***	156.63	47.05%
Micro	53	0.00***	29.33	66.00%
Small	70	0.00***	27.7	57.25%
Medium	41	0.00***	45.27	64.11%
Large	38	0.00***	23.73	65.51%

Here, *** denotes significance at 99% confidence interval. Source: Author generated

From the result, it's seen that out of the 265 observations, all the cottage, micro, small, medium, and large industries show significance among dependent and independent variables at a 99% confidence interval. The pseudo-R-squared found are 47.07%, 66.00%, 57.25%, 64.11%, and 65.51% in cottage, micro, small, medium, and large industries, respectively. The Wald Chi2 also represents a good level of model fitness in the respective sectors.

Now, the detailed summary of the beta coefficients (β), p values, and z-statistics for individual variables in five different industries is shown in the following table 17:

Table 17: Variable-wise Ologit Regression Outcomes (with Variance Covariance Estimator)

Variables	β Coefficients					z Values					P Values				
	L	Me	S	Mi	C	L	Me	S	Mi	C	L	Me	S	Mi	C
Q1IV	2.24	0.94	1.41	1.62	0.24	1.70	2.30	2.93	3.35	2.06	**0.088***	**0.021***	**0.003*****	**0.001*****	**0.039****
Q2IV	1.25	0.53	0.87	0.86	0.18	1.79	1.10	1.33	2.95	1.67	**0.073***	0.272	0.182	**0.003*****	**0.094***
Q3IV	-0.11	0.64	1.00	1.15	0.52	-0.10	1.11	2.67	2.54	3.23	0.920	0.266	**0.008*****	**0.011****	**0.001*****
Q4IV	1.37	1.61	-0.14	0.36	0.08	1.75	1.49	-0.64	0.65	0.98	**0.080***	0.136	0.524	0.517	0.329
Q5IV	1.47	0.13	0.42	1.08	0.23	1.51	0.25	1.10	2.33	1.50	0.131	0.801	0.271	**0.020****	0.135
Q6IV	0.74	0.53	-0.15	1.58	0.56	0.76	1.33	-0.60	2.53	3.28	0.448	0.184	0.546	**0.011****	**0.001*****
Q7CV	-0.88	-0.61	-0.35	-0.97	0.73	-1.14	-1.82	-2.00	-3.09	3.92	0.254	**0.069***	**0.045****	**0.002*****	**0.000*****
Q8CV	0.43	-0.59	-0.63	0.05	0.05	0.62	-1.93	-1.92	0.09	0.29	0.539	**0.054***	**0.055****	0.926	0.768
Q9CV	-1.36	-0.09	-0.50	-0.99	0.39	-2.44	-0.19	-2.14	-2.75	2.11	**0.014****	0.848	**0.032****	**0.006*****	**0.034****
Q10CV	0.65	2.43	0.33	0.56	0.68	0.42	1.56	0.35	0.82	3.79	0.671	0.118	0.728	0.411	**0.000*****

Here,
*** Stands for 99% Confidence interval
** Stands for 95% Confidence interval
* Stands for 90% Confidence interval

Source: Author generated

The result shows that in cottage industry (C), independent variables 3 and 6 are significant at a 99% confidence interval, while 2 and 1 are significant at a 90% and 95% confidence interval, respectively, and control variables 7 and 10 are significant at a 99% confidence interval, while control variable 9 is significant at 95% confidence interval. The results of micro industry (Mi) show that independent variables 1, and 2 are significant at a 99% confidence interval, while 3,5 and 6 are significant at a 95% confidence interval, and control variables 7 and 9 are significant at a 99% confidence interval. The results of small industry (S) indicate that independent variables 1 and 3 are significant at a 99% confidence interval, while control variables 7, 8, and 9 are significant at a 95% confidence interval. The outcomes of medium industry (Me) indicate that independent variable 1 is significant at a 90% confidence interval and control variables 7, and 8 are significant at a 90% confidence interval. Finally, the results from large industry (L) indicate that independent variables 1, 2, and 4 are significant at a 90% confidence interval, while control variable 9 is significant at a 95% confidence interval.

6.6 Test of Multicollinearity

Multicollinearity is a term used in regression analysis to describe a scenario where two or more predictor variables in a model have a strong correlation with each other. It can lead to problems such as unreliable estimations of parameters, large standard errors, and challenges in interpreting the coefficients of individual predictors. Multicollinearity does not have a direct impact on the overall fit of the model, but it might complicate the process of isolating

the individual impacts of predictors on the outcome variable. A regression model employs the Variable Inflation Factor (VIF) as a metric to detect multicollinearity among predictor variables. Multicollinearity increases the variance of a coefficient estimate to a certain extent. The Variable Inflation Factor (VIF) is computed by dividing the variance of the coefficient estimate when a predictor variable is included in the model by the variance of the coefficient estimate when that variable is absent from the model. In this study, the summary of the VIF outcomes for every industry is shown in the following table 18.

Table 18: VIF Test Results for Multicollinearity

Variables	VIF					1/VIF				
	L	Me	S	Mi	C	L	Me	S	Mi	C
Q1IV	3.11	4.7	3.38	2.49	2.91	0.32	0.21	0.30	0.40	0.34
Q2IV	2.94	3.94	2.56	2.34	2.91	0.34	0.25	0.39	0.43	0.34
Q3IV	2.73	3.45	2.24	2.02	2.89	0.37	0.29	0.45	0.49	0.35
Q4IV	2.72	2.68	1.91	1.85	2.63	0.37	0.37	0.52	0.54	0.38
Q5IV	2.51	2.38	1.73	1.75	2.63	0.40	0.42	0.58	0.57	0.38
Q6IV	2.25	2.29	1.6	1.57	2.11	0.44	0.44	0.62	0.64	0.47
Q7CV	1.69	2.26	1.45	1.52	2.11	0.59	0.44	0.69	0.66	0.47
Q8CV	1.63	2.19	1.35	1.36	1.72	0.62	0.46	0.74	0.73	0.58
Q9CV	1.51	1.58	1.31	1.29	1.36	0.66	0.63	0.76	0.77	0.74
Q10CV	1.31	1.57	1.09	1.21	1.05	0.76	0.64	0.92	0.83	0.96
Mean VIF	**2.24**	**2.7**	**1.86**	**1.74**	**2.23**					

Source: Author generated

The results from VIF show that all the VIF scorers in all of the industries are less than 5. This represents that none of the results of the databases are facing multicollinearity in this research. It's also seen that cottage (C), medium (Me), and large (L) industries' mean VIF are higher than small (S) and micro (Mi) industries.

6.7 Paired t-test between Corporate Incomes before and after SME Loan

Considering the financial performance of the CMSME entrepreneurs, it can be determined whether their financial performance has significantly changed over time because of SME loans. For this, a paired t-test is used to find out the difference between the means of corporate income (after tax) before SME loans were received and after SME loans were received. The results are shown in the following table:

Table 19: Paired t-test Results

Values	Paired t-test (After-Before)				
	Large	**Medium**	**Small**	**Micro**	**Cottage**
P Values	0.0806*	0.0243**	0.0515*	0.0103**	0.0000***
t Values	1.7962	2.3406	1.9816	2.6612	5.9301

Here,
*** Stands for 99% Confidence interval
** Stands for 95% Confidence interval
* Stands for 90% Confidence interval

Source: Author generated

The results show that there is a significant difference between the means in all of the groups of enterprises. At a 99% confidence interval, the null hypothesis can be rejected for cottage industries; at a 95% confidence interval, the null hypothesis can be rejected for micro and medium industries; and at a 90% confidence interval, the null hypothesis can be rejected for small and large industries. The t-values in all cases prove that the means of financial performance after SME loans are higher than the means of financial performance before SME loans.

7.0 Findings

7.1 Major Findings

The study's questionnaire has demonstrated its reliability and validity through Cronbach's alpha. The descriptive statistics show that the mean of responses has a higher propensity on the scale from 2 to 4 among cottage, micro, and small entrepreneurs, while the responses from medium and large entrepreneurs have a higher propensity on the scale from 0 to 3. The standard deviation indicates a higher level of variability in the responses from cottage, micro, and large entrepreneurs. The correlation matrix with p values reveals that cottage entrepreneurs significantly correlate almost every variable in a mixed direction with the other variables. We find that variables 4, 8, and 9 in the case of microentrepreneurs are insignificant compared to changes in the other variables. We find significant correlations among other variables in mixed directions. Except for variable 4, small entrepreneurs exhibit significant correlations with one another in a mixed direction. Except for variable 6, medium entrepreneurs exhibit significant correlations with one another in a mixed direction. Except for variables 1, 2, 3, 4, and 5, all other variables have insignificant correlations with one another in large industries. The test of hypothesis for research objective 1 shows that the null hypothesis of relation between SME loans and socio-economic development can be rejected both in LPM with VCE and Ologit with VCE. Also, the test of hypothesis for

research objective 2 shows that, the null hypothesis for no relation between SME loans and the financial performance can be rejected.

Regression analysis using LPM with VCE, which demonstrates resilience against heteroskedasticity, reveals that SME loans significantly (99%) influence the socioeconomic development of all clusters, including cottage, micro, small, medium, and large entrepreneurs, fulfilling the study's primary objective. We conducted a deeper analysis of the first objective using Ologit with VCE, which is also robust against heteroskedasticity, and found the same outcome, thereby meeting the first objective of the study. The second objective of the study was to compare the regression outcomes of each cluster with the others. We found that cottage, micro, and small entrepreneurs can better exploit the benefits of SME loans than medium and large entrepreneurs, based on the number of independent and control variables used to explain the dependent variable. This finding meets the study's second objective. A paired t-test tests the financial performance proxied by corporate income (after tax), revealing a significant difference between the means of the before and after datasets. This indicates that SME loans significantly influence the financial performance of CMSME entrepreneurs, fulfilling the study's third objective. The test results show that the significance of the impact is 99% in cottage enterprises, 95% in micro-enterprises, and 90% in small, medium, and large enterprises. These results also support the findings from the tests done for the first and second objectives of the study. For post-regression diagnostics, we conducted a multicollinearity (VIF) test for each cluster and found no significant possibility of multicollinearity in all cases.

7.2 Other Key Findings from the Study

1. Independent variable 1, which is job creation, is almost significant in all of the cases of the industries. This means that SME loans have been successful in driving out unemployment problems and the poverty rate significantly.
2. As to tax payment, almost all of the groups are significant in making differences before and after the SME loans, which represent the contribution to the national income of Bangladesh.
3. C, M, S, M, and L entrepreneurs have acceded to the consent that they are adopting technological advancements in their enterprises due to this loan that is making Bangladesh a smart Bangladesh.
4. There is a mixed opinion that SME loan terms are easy compared to other conventional loans available.

5. SME loans impacted moderately on the income level and social status of medium and large entrepreneurs, while significantly affecting cottage, micro, and small entrepreneurs.
6. The fact that SME loans have contributed mostly to enterprises run by men is significant from the research.
7. The research found that firms with high asset sizes, a larger firm age, and a more urban location tend to take the least advantage from SME loans. It's been found that these enterprises are not fully dependent on SME loans; thus, the impact of SME loans is lower on those groups.

8.0 Conclusion

The study has focused on the responses from the root-level entrepreneurs in Bangladesh who have taken SME loans from different financial institutions. Few studies have relied on primary data from SME loan clients about the socio-economic changes resulting from these loans and the financial performance of the enterprises. The study leveraged insights from relevant primary database research to develop a framework and questionnaire that effectively addressed the research questions. Findings from the first research objective indicate that SME loans have a significant impact on CMSME entrepreneurs' socio-economic development. The study has proven the second research objective by using necessary regression analysis models that are robust against heteroskedasticity, revealing that cottage, micro, and small entrepreneurs benefit most from SME loans. To achieve the third research objective, we used net corporate income as a proxy for financial performance. We then conducted a paired t-test on both the before- and after-taking SME loan datasets, demonstrating a significant impact of SME loans. This study paves the way for future research that compares the socio-economic conditions of Bangladesh's SME sectors and firms' performance to those of other developing and developed countries.

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Appendix

A.1 Questionnaire on Investigating the Socio-Economic Significance of SME Loans for CMSME Entrepreneurs in Bangladesh

Demographic Information (Open Ended)

Name	
Age of the enterprise	
Size of the Total Assets	
Number of Employees Working	
Location	
Gender of the owner/s	
Age of the owner/s	
Types of Business	
Net Income of establishments for the three years before taking SME loans and for the three years after taking SME loans	

Questionnaire (Closed Ended)

Numbers	Questions	Strongly Agree*****	Agree****	Neutral***	Disagree**	Strongly Disagree*
1	Has your business grown more than before?					
2	Has your business enabled job creation?					
3	Are the SME loan terms easier than other types of loans?					
4	Has your income level increased significantly than earlier?					
5	Do you pay more tax than before?					
6	Do you think that SME loan's increased financial stability of your enterprise?					
7	Do you think that you can manage a better social status than earlier when such loans were unavailable					

Here,
***** represents 4
**** represents 3
*** represents 2
** represents 1
* represents 0

A.2 Questionnaire Formulation for Control Variable (Closed Ended)

Numbers	Control Variables	CMSME Types	Codes				
			4	3	2	1	0
8	Size of Total Assets	C	7 lacs to 10 lacs	5 lacs to below 7 lacs	3 lacs to below 5 lacs	1 lac to below 3 lacs	Less than 1 lacs
		M	60 lacs to below 75 lacs	50 lacs to below 60 lacs	35 lacs to below 50 lacs	20 lacs to below 35 lacs	10 lacs to below 20 lacs
		S	10 crore to below 15 crore	7 crore to below 10 crore	3 crore to below 7 crore	1 crore to below 3 crore	75 lacs to below 1 crore
		M	35 crore to below 50 crore	15 crore to below 35 crore	5 crore to below 15 crore	1 crore to below 5 crore	15 lacs to below 1 crore
		L	Above 120 crore	100 crore to below 120 crore	80 crore to below 100 crore	60 crore to below 80 crore	50 crore to level 60 crore
9	Location of the enterprise		Metropolitan	City	Upazilla	Thana	Village
10	Age of the enterprise		Above 10 years	5 years to below 10 years	3 years to below 5 years	6 months to 3 years	1 month to below 6 months
11	Gender of the Chairperson					Male	Female