

# Financial Literacy and Business Success: Bridging Knowledge Gaps for Enhanced Profitability

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**Abstract** - The performance of a corporation is strongly influenced by financial literacy. Making intelligent financial decisions helps company owners and managers to directly influence profitability and economic success. Many small and medium-sized companies (SMEs) lack financial understanding, which leads to inadequate resource allocation, bad cost control, and reduced profitability. This is so even if SMEs are fairly important. If one wishes to succeed over long run in business, a big obstacle that has to be closed is the discrepancy between theoretical knowledge of finance and its real implementation. This paper uses many research approaches in order to examine the link between financial literacy and the performance of every given organization. A questionnaire concerning their degrees of financial literacy in areas including risk management, budgeting, and investing was sent to two hundred small and medium-sized companies (SMEs). The research examined company performance metrics over a year including cost-efficiencies, income growth, and profit margins. Retroactive data analysis using regression modeling sought to determine how financial literacy affects profitability. Small and medium-sized firms (SMEs) with high degrees of financial literacy showed typically better profit margins of 15.8% and revenue growth of 12.3%. This runs counter to those SMEs with low degrees of financial literacy, 7.4% and 6.1% respectively. Strong advanced budgeting organizations also displayed a 10% rise in cost-efficiencies.

**Keywords** - Financial literacy, business performance, SMEs, profitability, cost-efficiency.

## I. INTRODUCTION

Strong financial literacy among entrepreneurs helps them to be better equipped to make decisions that will result in effective capital allocation, resource optimization, and steady company success [1]-[3]. The outcome of a lack of information regarding cash, bad financial management tactics include inadequate planning, mishandling of investments, and an incapacity to correctly identify hazards. Drawing from [4]-[9].

The lack of practical application of financial literacy in corporate management is the issue this research intends to uncover and address especially among small and medium-sized enterprises (SMEs). Many company owners overlook using financial literacy as a tool meant to boost profitability and efficiency, even if it is becoming more and more relevant.

The major goals of this investigation include of these: With particular eye toward profitability, income

development, and cost-efficiencies specifically, Examining the link between corporate success and financial literacy. To determine the specific degrees of financial literacy most likely influencing the operations of the business.

The novelty of this research is in its measurement of the direct influence financial literacy has on the success of companies employing empirical data from a wide range of small and medium-sized companies (SMEs).

This research enriches the body of existing knowledge by providing legislators with useful perspectives from small and medium-sized company owners. The research emphasizes the requirement of customized solutions for financial literacy in order to manage issues particular to a given industry.

## II. RELATED WORKS

Studies by [8] for small and medium-sized enterprises (SMEs) with higher degrees of financial literacy, for example, revealed that these companies were more likely to implement successful financial management techniques, which at last produced better financial performance. In[9] discovered that financial literacy corresponds with both income increase and reduction of operational inefficiencies in small businesses. Businesses lacking financial literacy can find it difficult to manage their cash flow, therefore restricting their capacity to generate profits as well as their chances for expansion [10]. Studies on the link between financial literacy and decision-making have concentrated on several publications. [11] resolved to find out whether financial literacy may affect managerial decisions. Moreover, [12] investigated how small and medium-sized companies (SMEs) control risk via financial education. With an emphasis on the specific consequences of financial literacy on important metrics of corporate performance, our research seeks to overcome this deficit.

## III. PROPOSED METHOD

The proposed method Emphasizing profitability, revenue growth, and cost-efficiencies in small and medium-sized companies (SMEs), the method presented in this research seeks to impartially evaluate the impact of financial literacy on company performance. The strategy is a mixed-methods one combining an evaluation of financial literacy based on a survey with a research of

data on corporate performance over one year which is shown in figure 1.



Figure 1: Proposed Process

IV. DATA COLLECTION

Since it is the phase of data collecting responsible for gathering the required information on the degrees of financial literacy and the markers of business development. First in the process are small and medium-sized companies (SMEs), who undergo a structured survey. The aim of the questions in this survey is to evaluate the degree of financial literacy in important sectors such risk management, investment planning, budgeting, and financial decision-making. This poll will assist to assess theoretical understanding of financial concepts as well as pragmatic use of them in actual business environments.

The structure of the survey answers, which consist of questions evaluating several aspects of financial literacy and related scores, is shown in the table 1 that follows. Following that, the answers are categorized according to low, moderate, or high degree of financial literacy each responder possesses, depending on the general score one achieves in all the areas.

TABLE 1: DATA COLLECTION

SM E ID	Budg eting Knowl edge (Score: 0-5)	Inves tment Knowl edge (Score: 0-5)	Risk Mana gement (Score : 0-5)	Fina ncia l Deci sion Ma king (Score: 0-5)	Tot al Fina ncia l Lite racy Scor e (Out of 20)	Pro fit Ma rgin (%)	Rev enue Gro wth (%)	Cost Effic iency (%)
SM E00 1	4	3	4	4	15	12.5	10.8	8.2
SM E00 2	2	2	2	3	9	5.6	3.2	2.1
SM E00 3	5	4	5	5	19	18.2	15.0	12.3
SM E00 4	3	3	2	3	11	7.1	4.5	3.9
SM E00 5	4	5	3	4	16	10.9	8.7	6.5

Starting with survey data, one should o The first four columns offer the results based on financial literacy assessments of four important aspects of finances. Every one of the following elements, budgeting, investment knowledge, risk management, and financial decision making, is considered when scoring the respondent on a range from 0 to 5 for every area: Taken combined, these

four components offer the overall score, which falls between 0 and 20 and serves as a general benchmark of financial literacy.

Second: Knowledge Regarding the Corporate Performance o The most important markers of business performance found in the last three columns. Derived from the financial data of every small and medium-sized company (SME over a period of twelve months, are the Profit Margin, Revenue Growth and Cost Efficiency (%) for every one of them. These figures are from corporate financial reports and business records that the relevant companies sent.

Depending on their total financial literacy score, low, moderate, or high, small and medium-sized firms (SMEs) fall into various categories. Using this classification allows one to examine the profitability, expansion, and cost economy performance of businesses with varying degrees of financial understanding with respect to one another.

Process of Data Collection:

To gather information regarding financial literacy, one either conducts in-person interviews with financial managers or business owners or an online survey. Every participant is supposed to complete the survey, which uses multiple-choice questions and case-based situations to gauge their understanding. By use of answer scoring and overall score computation, one can determine the general financial literacy of any company.

Examining internal records, financial statements, income reports, budget reports, helps one compile the data required to evaluate the success of the business. These indicators are watched over a year to offer a full picture of the company's success.

Once these data have been acquired, the research will be able to connect the indicators of business success with the scores of financial literacy. This will make it reasonable to look closely at how financial knowledge affects operational efficiency and profitability of small and medium-sized firms (SMEs). Later on, the results of this approach will form the foundation of the statistical analysis.

V. FINANCIAL LITERACY ASSESSMENT, DATA ANALYSIS, AND REGRESSION MODELING

Financial Literacy Assessment:

Assessment of Financial Competency Financial literacy can be assessed by means of a structured survey intended to probe four main aspects of financial understanding. These are understanding of budgeting, financial decision making, risk management, and investing abilities. Every question in these fields has participants' responses scored on a 0 to 5 scale; a higher score indicates stronger knowledge of financial ideas and application capacity which is shown in table 2. Each small and medium-sized firm (SME) receives a Total Financial Literacy Score by combining the four category results once the survey is completed. This figure falls into Low, Moderate, or High classification and reflects the general degree of financial literacy.

TABLE 2: PARTICIPANT'S FINANCIAL LITERACY SCORE

SME ID	Budgeting (0-5)	Investment (0-5)	Risk Management (0-5)	Financial Decision Making (0-5)	Total Score (Out of 20)
SME001	4	3	4	4	15
SME002	2	2	2	3	9

TABLE 3: DATA COLLECTED

SME ID	Financial Literacy Score	Profit Margin (%)	Revenue Growth (%)	Cost Efficiency (%)
SME001	15	12.5	10.8	8.2
SME002	9	5.6	3.2	2.1

This enables one to identify specific areas where enhanced profitability, development, and efficiency brought about by financial education could be found. This method shows in table 3, offers a complete and statistically solid approach to the extent to which financial literacy influences the performance of a corporation. By providing perceptive research of the ways in which particular financial knowledge effects profitability and development, the regression model helps to construct future financial education programs for small and medium-sized businesses (SMEs).

## VI. RESULTS AND DISCUSSION

The primary instrument utilized in this research is Python; statistical analysis and regression modeling then make use of its data analysis tools (Pandas, NumPy, SciPy, and StatModels). Jupyter notebooks can help to create an interactive environment where the simulation scripts may run and be organized. Working with large datasets spanning numerous small and medium-sized companies (SMEs), Intel Core i7 processors with 16 GB of RAM are employed to efficiently manage the computational load which is shown in table 4.

The proposed approach is compared with other currently applied approaches using two benchmarks: Traditional Survey-Based Analysis and Machine Learning-Based Prediction.

The key simulation parameters/hyperparameters include:

- Number of SMEs in Sample: 200
- Financial Literacy Survey Questions: 20
- Regression Method: Multiple Linear Regression (MLR)
- Control Variables: Industry type, company size
- Learning Algorithm for Comparison: Random Forest Regression
- Performance Metrics: R-squared, Mean Squared Error (MSE), Mean Absolute Error (MAE), Root Mean Squared Error (RMSE), and F-statistic

TABLE 4: SIMULATION SETUP/PARAMETERS

Parameter	Value
Number of SMEs in Sample	200
Survey Questions	20
Regression Method	Multiple Linear Regression
Control Variables	Industry type, company size
Learning Algorithm	Random Forest Regression
Number of Trees in RF	100
Max Depth in RF	10
Min Samples Split (RF)	2
Simulation Tool	Python (Pandas, NumPy, SciPy, StatsModels)
Computers Used	Intel Core i7, 16GB RAM

### Performance Metrics

1. R-squared ( $R^2$ ):
  - The coefficient of determination is a statistical measure of how successfully the control variables, financial literacy score, explain the variance in the dependent variable, business performance. This gives one a gauge of the fraction of the variation in the dependent variable that one would predict given the elements independent of the dependent variable.
2. Mean Squared Error (MSE):
  - Using the mean squared error (MSE), one computes the average squared difference between the values projected and those observed. Reduced MSE indicates improved model performance since larger errors with more degree of severity are penalized more severely.
3. Mean Absolute Error (MAE):
  - The mean absolute error, or MAE, measures the average absolute difference between the projected and actual values. Whereas the MAE shows a linear evaluation of error, the MSE squares the mistakes but does not square them.
4. Root Mean Squared Error (RMSE):
  - Root Mean Squared Error (RMSE) is a measurement of error stated in the same unit as the target variable. Finding the RMSE calls for square root of MSE. It is successful in recognizing models that produce significant prediction errors since it is sensitive to significant errors, which helps it to find such models.
5. F-statistic:
  - The F-statistic is a statistical test used to find if the model generally significantly affects the variable of interest. Comparatively to the model in issue, an intercept-only model, that is, one without any predictors, is assessed. A

larger F-statistic denotes better properly fit of the model with the data.

TABLE 5: MSE (MEAN SQUARED ERROR)

Number of SMEs	Traditional Survey-Based	Machine Learning-Based	Proposed Method (MLR)
40	5.60	4.85	3.95
80	5.45	4.72	3.85
120	5.35	4.65	3.78
160	5.25	4.55	3.60
200	5.15	4.50	3.52

As the size increases, consistent decrease in the mean squared error (MSE) for the suggested approach suggests a prediction accuracy enhancement. The proposed method frequently demonstrates decreased MSE values when compared to the conventional methods and those based on machine learning. This implies that it generates, with less squared errors, more accurate projections shown in table 5.

TABLE 6: RMSE (ROOT MEAN SQUARED ERROR)

Number of SMEs	Traditional Survey-Based	Machine Learning-Based	Proposed Method (MLR)
40	2.37	2.21	1.99
80	2.33	2.18	1.96
120	2.31	2.16	1.94
160	2.29	2.13	1.89
200	2.27	2.12	1.87

Regularly lower than those of the conventional and machine learning-based approaches are the RMSE values of the proposed method. Fast dropping root mean square error (RMSE) as size increases reveals increasing model accuracy and precision shown in table 6. This shows that among several strategies, the recommended one is better in lowering the prediction errors.

TABLE 7: MAE (MEAN ABSOLUTE ERROR)

Number of SMEs	Traditional Survey-Based	Machine Learning-Based	Proposed Method (MLR)
40	1.85	1.72	1.48
80	1.78	1.65	1.41
120	1.70	1.60	1.38
160	1.65	1.55	1.30
200	1.62	1.50	1.25

According to the proposed method, the mean absolute error (MAE) is routinely fewer than those of the conventional approaches and the machine learning based techniques shown in table 7.

TABLE 8: R<sup>2</sup> (R-SQUARED)

Number of SMEs	Traditional Survey-Based	Machine Learning-Based	Proposed Method (MLR)
40	0.62	0.68	0.76
80	0.63	0.69	0.78
120	0.64	0.70	0.80
160	0.65	0.72	0.83
200	0.66	0.73	0.85

The value of R<sup>2</sup> rises with increasing sample size; this implies that the model becomes more accurate as more data is taken into account shown in table 8.

TABLE 9: F-STATISTIC

Number of SMEs	Traditional Survey-Based	Machine Learning-Based	Proposed Method (MLR)
40	6.35	7.20	9.10
80	6.50	7.40	9.45
120	6.70	7.60	9.80
160	6.90	7.85	10.20
200	7.05	8.00	10.50

This implies that among the many strategies, the model explains a more part of the variations in corporate performance. The rising proportionate F-statistic associated with sample size indicates that the model can produce reasonable and significant forecasts shown in table 9.

## VII. CONCLUSION

Regarding the prediction of company success based on their degree of financial literacy, the results of the simulation and analysis show that the recommended strategy presents far better results than the present models applied. The proposed method routinely produces improved results across a spectrum of performance parameters including MSE, RMSE, MAE, R<sup>2</sup>, and F-statistic. This reveals how exactly and robustly the system catches the link between company performance and financial literacy. Lowering of errors, shown by reduced MSE, RMSE, and substantial average error values, helps to emphasize the model's accuracy. Moreover, the higher R<sup>2</sup> and F-statistic values suggest that the proposed model clarifies more of the variance in corporate performance. This qualifies it as a more reliable predictor than traditional methods based on machine learning. The generalizability and scalability of the concept are underlined by the consistent increase in outcomes corresponding with bigger sizes. The results of this research underscore the need of adding financial literacy into corporate decision-making and imply that the recommended strategy has the capability to give substantial insights to small and medium-sized firms (SMEs) striving to enhance their profitability. Basically, the recommended strategy not only closes the difference between financial knowledge and profitability but also provides an accurate and more effective method for evaluating the influence of financial literacy on the performance of a business unit.

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