

# The Role of FinTech-Enabled Financial Inclusion in Promoting Sustainable Development Goals

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**Abstract** - This paper examines how financial inclusion can promote the Sustainable Development Goals (SDGs) through FinTech, specifically in the context of Micro, Small, and Medium Enterprises (MSMEs) in Bangalore Urban. FinTech has drastically changed the way financial services are provided through fast technological changes and brought about digital payment services, peer-to-peer lending, and mobile banking to underserved populations. Although there are advantages, digital literacy needs, cybersecurity issues, and regulatory obstacles have hindered its complete use. The proposed research will be empirical in investigating the role of FinTech adoption in financial inclusion, creating MSMEs, and achieving the SDGs, especially SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), and SDG 9 (Industry, Innovation, and Infrastructure). The research design was a quantitative one; 80 owners and managers of MSMEs in Bangalore were given structured questionnaires. The SPSS software is used to analyse the data. The descriptive statistics and correlation analysis, regression analysis, and ANOVA were also conducted. The results show that 71 out of the top 100 MSMEs have used FinTech services, and 76 out of the top 100 MSMEs indicate that FinTech has been significant to their business development. The regression results show that 45.4% of the growth of MSMEs is predictable by the adoption of FinTech. Access to credit (0.352) and the use of digital payments (0.318) have the most positive impacts. These results indicate that FinTech has a good impact on MSMEs, financial inclusion, and sustainable development. Nevertheless, there are still issues, such as inadequate infrastructure and cybersecurity. The paper ends with the notion that FinTech is needed to enable sustainable economic development and proposes new studies to determine what barriers to adoption might be present and how the new technologies, like blockchain and AI, can be utilized to improve financial inclusion.

**Keywords:** FinTech, Financial Inclusion, Micro, Small, and Medium Enterprises, Sustainable Development Goals (SDGs), Digital Payments, Economic Growth, Credit Access

## I. INTRODUCTION

FinTech has impacted the global finance system, enhancing its accessibility, efficiency, and the inclusivity of financial services positively. One of the important tools to save MSMEs in economies that are developing, like India, is

FinTech. High transaction costs, limited access to credit, and financing are some of the challenges that MSMEs encounter. Dinh, (2025) Most MSMEs have still been left behind by conventional banks despite the improvements in digital infrastructure and governmental support. It is also a way to achieve the United Nations SDGs, especially SDG 1, SDG 8, and SDG 9 (Patwardhan, 2018; Danladi et al., 2023). Although FinTech has enabled financial inclusion through digital payment methods, peer-to-peer lending, and online banking, the positive impact of these on MSMEs and sustainability remains unclear (Alnasser Mohammed, 2025). Admittedly, FinTech has helped make finance more accessible, yet MSMEs continue to face multiple issues.

These are a lack of digital literacy, fear of cybersecurity issues, inadequate infrastructure, and complex laws and regulations. The relationship between FinTech and MSMEs, the effects of the SDGs, and financial growth have not been well established in developing countries. In general, most research on FinTech is dedicated to its benefits or to financial inclusion. However, the interdependence of FinTech adoption, MSME performance, and SDGs is not actively studied in Bangalore Urban, and prior research, in general, failed to consider such variables as awareness, barriers to adoption, and trust in FinTech systems.

- The current study will fill the gaps in the above study by providing an empirical analysis of this financial inclusion with FinTech and its role in the SDGs.
- This paper analyzes the effect of digital financial tools on the growth, access to credit, and formalization of MSMEs. Furthermore, it takes into account MSMEs' awareness, adoption, and challenges.
- The study provides valuable recommendations for creating more inclusive and sustainable financial systems for providers like policymakers, financial institutions, and FinTech providers.

The paper is organized as follows: Section 1, which explains the concept of FinTech in terms of improving the financial

inclusion of MSMEs and its relationship with SDGs. Section 2 gives an overview of the related literature on the effects of FinTech on financial inclusion and MSME growth. Section 3 provides methodology for this research, which includes data collection and its analysis methods. Section 4 provides the data analysis of the existing impacts of FinTech on the development of MSMEs. Section 5 provides the major findings and recommendations for future research to overcome the barriers to this adoption.

## II. LITERATURE REVIEW

Financial technology (FinTech) has become more and more converged with financial inclusion, which has become a theme that is popular in recent literature as a source of economic growth. Examples of FinTech innovations that have significantly improved access to finance services by the underserved populations include mobile payments, blockchain systems, and digital banking (Alade, 2025; Gomber et al., 2018; Ozili, 2018). These technologies reduce the transaction costs and make the services offered more efficient, enabling real-time financial transactions, thereby making it easier to engage in formal financial systems on a broader basis. Research shows that FinTech is a game-changer in the gap that has been created between the traditional financial sector and the unbanked population, particularly in developing economies (Haddad & Hornuf, 2019). FinTech has a lot of literature on the way in which it can be used in the attainment of SDGs to achieve financial inclusion. Digital financial services can directly help to alleviate poverty, promote economic growth, and develop infrastructure (Biradar & Kalra, 2025; Mohamed & Otake, 2025). There is empirical evidence that mobile money and digital payment systems enhance the financial stability of households, increase savings, and also decrease susceptibility to income shocks. On the same note, they found out that FinTech solutions can positively impact the performance of MSMEs, including access to credit, a decrease in operational inefficiencies, and an improvement of financial management (Nguyen, 2022).

The role of this FinTech is also demonstrated in a study carried out all over the world. In Kenya, bKash in Bangladesh, and the Unified Payments Interface (UPI) in India, services like M-Pesa, bKash, and Unified Payments Interface have helped millions of users to move out of informal to formal financial systems (Jack & Suri, 2014). These have brought more transparency to transactions, decreased the dependence upon cash-based economies, and formalized the economy. Furthermore, the increase in digital infrastructure, mobile subscriptions, and national digital identity programs has created a facilitating ecosystem to embrace FinTech. These are good outcomes, but some studies have revealed severe issues relating to FinTech adoption. One of the biggest barriers to the effective implementation of financial technologies by low-income populations is the digital and financial literacy gaps (Jose & Ghosh, 2025; Grohmann et al., 2018). Additional factors are trust issues, cybersecurity threats, and data privacy issues, which further limit adoption (Rajpal & Manglani, 2026). Moreover,

financial inclusion is hindered by gender differences and the inability to have formal identification documents, especially for women and members of the informal sector (Alnasser Mohammed, 2025; Ghosh & Vinod, 2017). It has also been shown that algorithmic bias and disproportionate digital infrastructure can even cause rather than lessen socio-economic disparities (Xu et al., 2025; Moolkham, 2025). The identified element can be considered as one of the determinants of the success of FinTech ecosystems, which is the regulatory framework. To protect the consumers and promote innovation, balanced regulation like open banking systems, digital public infrastructure, and regulatory sandboxes is required (Mărăcine et al., 2020; Das et al., 2026). The COVID-19 crisis further stimulated this, and a strong and comprehensive financial system. This can be used during a crisis.

In terms of both service accessibility, like mobile payments and online banking, and in terms of underserved populations, FinTech has provided a boost to financial inclusivity. However, it has challenges to overcome. Among these challenges are the issues of digital illiteracy, cybersecurity, and regulatory challenges. Despite FinTech contributing positively towards development and reduction in poverty through assisting MSMEs, the above-mentioned barriers have to be reduced in order for the financial systems to become sustainable and inclusive.

### *Research Objectives:*

- To determine how FinTech can improve the financial inclusion of MSMEs.
- To examine the role of FinTech-enabled financial services in attaining SDG 1, SDG 8, and SDG 9.
- The question: How can digital financial instruments like mobile payments, peer-to-peer lending, and digital banking affect the growth of MSMEs, their access to credit, and formalization?
- The questionnaire is to determine the awareness, adoption level, and the challenges of FinTech-based financial inclusion programs among MSMEs in emerging economies.

### *Research Questions:*

- In what ways has FinTech adoption enhanced MSMEs' access to financial services?
- How do FinTech solutions to MSMEs facilitate innovation-driven growth, decent jobs, and decreased poverty?
- What are the impacts of some of the FinTech tools, such as digital banking, alternative financing, and digital payments, on the performance of MSMEs and their integration into the formal economy?
- How aware are MSMEs in emerging economies of FinTech services? What are the barriers to adoption, and how do they view them?

*Hypothesis:*

H1: FinTech has an important impact on increasing financial inclusion in MSMEs.

H2: FinTech-based financial services have a great influence on the realization of the SDG 1 No Poverty, SDG 8, and SDG 9.

H3: Digital financial tools like mobile payments, peer-to-peer lending, and digital banking significantly and positively affect the development of SMEs, credit access, and the formalization of businesses.

H4: There is a strong relationship between the challenges encountered by SMEs in emerging economies and the awareness and adoption of FinTech-based financial inclusion initiatives.

### III. RESEARCH METHODOLOGY

*Research Design*

This study is informed by a quantitative research design, which seeks to determine the impacts of FinTech in fostering financial inclusion between MSMEs and how it affects SDGs. The most suitable method to investigate the relationships between the adoption of FinTech, the growth of MSMEs, and financial inclusion is quantitative, as it allows performing statistical analysis of vast amounts of data and drawing conclusions about the patterns, correlations, and causation. As the focus lies on the investigation of the impact of FinTech tools, such as digital payments, mobile banking, and peer-to-peer lending, on the outcomes, the quantitative design will allow measuring such variables as FinTech awareness, usage, and its influence on the business outcomes (e.g., growth, access to credit, formalization). The design will enable the empirical evaluation of the strength and direction of these relationships through such tools as the regression analysis, correlation coefficients, and ANOVA. This method is suitable in the framework of Information Systems (IS) research since it is possible to collect numerical data that displays the efficacy of digital financial solutions. The findings will be incorporated to develop evidence-based knowledge based on the role of FinTech systems in the digitalization of MSMEs and the integration of the latter into formal financial systems. Moreover, this quantitative methodology is aligned with the previous research of IS based on structured surveys and statistical analysis to gauge the performance of the system, its adoption rates, and user success.

The quantitative method is especially suitable in the setting of this research since it can be generalized to a population of MSMEs and has the ability to test the hypotheses statistically in order to establish the correlation between FinTech adoption and the most important outcomes, such as economic growth and financial inclusion. Such a method ensures objectivity, reproducibility, and the ability to find statistically significant trends that can influence policy-making and design next-generation FinTech solutions.

The theoretical framework under which the study will operate is geared towards exploring the relationship between FinTech adoption and the achievement of SDGs in the context of MSMEs. It is a model that takes into consideration significant variables influencing financial inclusion and MSME growth, and in particular, how financial innovations such as digital payments, peer-to-peer lending, and mobile banking can be leveraged to rejuvenate the economy.

This research has FinTech Access, FinTech Adoption, and Digital Literacy as independent variables. These are the direct variables that influence the mediating variable, which is the Financial Inclusion Index, which is a measure of how MSMEs are able to use and enjoy the formal financial services. Dependent variables are SDG 1, SDG 8, and Technological Innovation SDG 9, which are the higher-level SDG outcomes that are influenced by FinTech adoption.

Control variables like Business Type, Enterprise Size, and Annual Turnover are added in addition to the core variables to consider the difference in MSMEs and guarantee the correctness of the analysis. The connections in the conceptual framework imply that the adoption of FinTech has a direct effect on financial inclusion, which, in turn, has a positive impact on MSME growth and its contribution to SDGs.

Fig. 1, which is the visual representation of the major variables and how they are interrelated, demonstrates this framework, as digital financial tools can contribute to economic growth and bring wider social and economic benefits to MSMEs.

Fig. 1 is a conceptual framework of the study that shows the relationship between the FinTech variables and SDGs. The independent variables (access to FinTech, FinTech adoption, and digital literacy) have a direct impact on the mediating variable (Financial Inclusion Index). This further impacts the dependent variables, which are: poverty reduction SDG 1, SME growth SDG 8, and SDG 9. In addition, control variables, including the nature of the enterprise, the nature of the business, and the annual turnover, are also taken into account to project the differences between MSMEs and provide a more accurate analysis of the relationships.

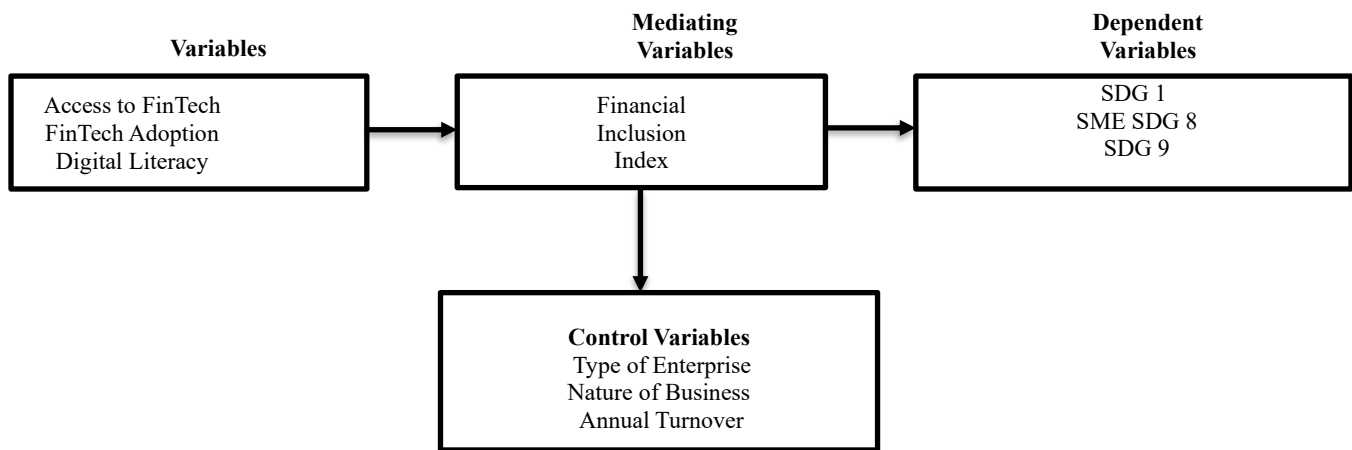


Fig. 1 Conceptual Framework of FinTech-Enabled Financial Inclusion and Sustainable Development Outcomes

*Data Collection Procedure*

This study employed a structured questionnaire of owners and managers of MSMEs in Bangalore Urban to gather the data. This questionnaire is particularly designed in a way that it would elicit the awareness, adoption, and impact of FinTech services to MSMEs. It was given out physically (offline) and online (Google Forms) to enable many people to participate. The questionnaire was directed at measuring various FinTech adoption areas like digital payments, mobile banking, peer-to-peer lending, and the effect on financial inclusion and MSME development. The sample was through convenience, and 80 MSMEs were picked based on their availability and preference to be in the sample. The data were checked in terms of completeness and consistency and analysed.

*Questionnaire Structure*

The questionnaire is well structured and divided into various sections to ensure that all the information that would be of interest to the research was obtained. The first section will gather demographic and business data. Those data comprise of the nature of venture, size and existence time. The second section focuses on awareness and adoption of FinTech services like digital payments, mobile banking, and digital lending platforms. The third section evaluates how FinTech can improve financial inclusion. Some examples of those inclusions are access to financial services, ease of use, and affordability. The fourth section looks at how FinTech has helped to develop MSMEs and Sustainable Development Goals, particularly in terms of income growth, job creation, and technological innovation. The Final part determines the obstacles to FinTech adoption, including the lack of digital infrastructure, cybersecurity risks, regulatory obstacles, and a lack of trust. A five-point Likert scale, with options like Strongly Agree being the highest and Strongly Disagree being the lowest, is used to measure all these answers.

*Sampling Process*

This study uses convenience sampling as a non-probability aspect of sampling, whereby the respondents are sampled

based on their availability and willingness to respond. The population sample consists of registered and unregistered MSMEs in Bangalore Urban, having various sectors and businesses. This survey was taken among 80 respondents representing MSMEs. This sampling method is considered appropriate due to time and resource constraints, but it also provides a lot of information regarding the FinTech adoption among MSMEs.

*Variables Used in the Study*

In this study, to examine how FinTech affects financial inclusion and performance of MSMEs, the independent and dependent variables are used. Independent variables are FinTech awareness, use of digital payments, use of credit, depending on FinTech, and trust in FinTech. The level of financial inclusion, MSME development with regard to business growth and income, and MSME contribution to Sustainable Development Goals, such as poverty reduction, creating jobs, and innovation, will be dependent variables. Moreover, some contextual variables like the size of the business, the nature of the enterprise, and years of operation are taken as control variables to have a more accurate result interpretation.

This paper focuses on the important variables to evaluate how FinTech has contributed to financial inclusion and MSME development. FinTech awareness, indicating the level of knowledge of MSMEs about digital financial services, digital payment use, which determines the level of FinTech adoption, FinTech credit access, and trust in FinTech platforms, is the independent variable. Financial inclusion, as measured by the Financial Inclusion Index, MSME growth, and contribution to SDGs 1, 8, and 9, is the dependent variable. Control variables include the size of business, the nature of business, and years of operation to minimize bias. The questionnaire will define these constructs and be analyzed using statistical methods to examine their effects on performance and financial inclusion of MSMEs.

*Analytical Tools and Techniques*

Dual-software analysis was applied to quantitative data analysis to provide strong verification. Initial data screening and descriptive statistics were conducted with the help of IBM SPSS Statistics (v.27.0). To enhance the ability to replicate scientific results, top-level statistical models and customized data visualizations were executed in a Python 3.10 environment. NumPy and Pandas were some of the significant Python packages used to manipulate the data, SciPy and Stats models to validate the regression and ANOVA results.

*Analysis:*

*Reliability Analysis (Cronbach's  $\alpha$ )*

The Cronbach's  $\alpha$  was computed to determine the reliability of the questionnaire that was collected to measure the FinTech-based financial inclusion among MSMEs.

TABLE I RELIABILITY STATISTICS

Cronbach's $\alpha$	No. of Items
0.842	8

The Cronbach  $\alpha$  in table I is 0.842, which implies that the questionnaire is highly reliable. Items 1-8 in the measurement of FinTech-based financial inclusion among MSMEs have high internal consistency.

*Interpretation:*

- Cronbach's  $\alpha=0.842$ : This value signifies a high degree of reliability of the questionnaire.
- Values above 0.70 are considered to be acceptable in social science research, generally.
- Therefore, variables used to measure Fin Tech-based financial inclusion among MSMEs show strong internal consistency.

**IV. RESULTS AND DATA ANALYSIS**

*Performance Metrics and Evaluation Criteria*

A number of performance indicators and assessment criteria were specified in this research and employed to evaluate the effectiveness and the influence of the adoption of FinTech by MSMEs. These metrics include:

• *Reliability (Cronbach's  $\alpha$ )*

This metric is used to assess the internal consistency and reliability of the questionnaire used for the study. A Cronbach's  $\alpha$  value of 0.70 and above is acceptable in social science research, and in this study, a value of 0.842 was obtained, which is a good indicator of high reliability of the instrument.

$$\alpha = \frac{N}{N-1} \left( 1 - \frac{\sum_{i=1}^N \sigma_i^2}{\sigma_{total}^2} \right) \tag{1}$$

In equation (1), where:

- $N$  = number of items
- $\sigma_i^2$  = variance of each item
- $\sigma_{total}^2$  = total variance of the sum of all items

• *Regression Model Evaluation*

The  $R^2$  is the measure that evaluates the extent of the variation in MSME growth that is described by the independent variables. This research has an  $R^2$  of 0.454, meaning that 45.4 % of the variance in the growth of MSMEs can be attributed to FinTech-related variables.

$$R^2 = \frac{\sum(Y_{\text{predicted}} - \hat{Y})^2}{\sum(Y_{\text{actual}} - \hat{Y})^2} \tag{2}$$

In equation (2), where:

- $Y_{\text{predicted}}$  = predicted values
- $Y_{\text{actual}}$  = actual observed values
- $\hat{Y}$  = mean of actual values

• *ANOVA (Analysis of Variance)*

The ANOVA table helps to understand whether the differences in groups (e.g., MSMEs that have and do not have access to FinTech) are statistically significant. To get a p-value less than 0.05, equation (3) is applied, and this means that the model is significant.

$$F = \frac{\text{Mean Square Between Groups}}{\text{Mean Square Within Groups}} \tag{3}$$

• *Coefficients in Regression Analysis*

The strengths of the relationship between each independent variable, like FinTech awareness, digital payment usage, and the dependent variable, which is MSME growth, are measured by using  $\beta$  Coefficients. The higher the  $\beta$ , the more it influences the growth of MSMEs.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \tag{4}$$

In equation (4), where:

- $Y$  = dependent variable (MSME growth)
- $X_1, X_2, \dots, X_n$  = independent variables (e.g., FinTech awareness, digital payment usage)
- $\beta_0, \beta_1, \dots, \beta_n$  = regression coefficients

• *Correlation Coefficients*

The measurement of the association between these two variables is done by the Pearson correlation coefficient (r). This study examined the perception of importance of the topic in the future, trust in the FinTech, and correlations between various aspects like digital infrastructure challenges and cybersecurity concerns.

$$r = \frac{\sum(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum(X_i - \bar{X})^2 \sum(Y_i - \bar{Y})^2}} \quad (5)$$

In equation (5), where:

- $X_i, Y_i$  = data points
- $\bar{X}, \bar{Y}$  = mean of X and Y

*Objective 1: To analyse the role of FinTech in enhancing financial inclusion among MSMEs.*

The survey results indicate that the access and usability of FinTech services among MSMEs are high. Approximately 71 % of the respondents reported agreeing or strongly agreeing that access to FinTech-based financial services, which include digital wallets, UPI, and online banking, has been given. However, on the same note, 76 % of the participants feel FinTech platforms are simpler to utilize compared to conventional banking systems. The digital financial solutions given by MSMEs are easily usable. This provides a significant aspect in promoting this. The study findings indicate that 80 % of the participants think that FinTech sites offer easy-to-use interfaces along with local language services, which can assist small businesses that retain business across several language markets. The study findings indicate that 83 % of the participants found reliable customer service on the FinTech sites, which enhanced their faith in online financial services. According to the results of the research, FinTech services can enable MSMEs to access financial services since they design easy-to-use financial services that are more effective in meeting the MSME requirements.

TABLE II FREQUENCY DISTRIBUTION OF RESPONSES FOR OBJECTIVE 1

Response	Frequency	Percentage (%)
Strongly Agree	24	30
Agree	33	41.25
Neutral	5	6.25
Disagree	8	10
Strongly Disagree	10	12.5
Total	80	100

Table II below shows the frequency and percentage of the answers to the question about the availability and ease of use of the FinTech-based financial services by MSMEs. Most respondents (71%) reported that they had access to these services.

*Objective 2. Contribution of FinTech to Sustainable Development Goals (SDG 1, SDG 8, SDG 9)*

The analysis shows that FinTech adoption has positive impacts on the economic development and sustainability objectives. The findings of the survey indicated that the majority of the participants felt that digital financial services allowed their businesses to expand and increase their income, which contributed to SDG 1 by increasing financial security. The availability of digital finance has enabled most owners of MSMEs to expand their operations as well as generate new employment opportunities as part of SDG 8, based on their feedback. By applying digital accounting software, online invoicing services, and digital banking technologies, the application by small firms will result in meeting SDG 9, hence the advancement of technology. The outcome is a very important factor towards sustainable economic development that benefits emerging economies.

TABLE III FREQUENCY DISTRIBUTION OF RESPONSES FOR OBJECTIVE 2

Response	Frequency	Percentage (%)
Strongly Agree	32	40
Agree	29	36.25
Neutral	13	16.25
Disagree	5	6.25
Strongly Disagree	1	1.25
Total	80	100

Percentage distribution of the frequency of the response concerning the contribution of FinTech towards attaining Sustainable Development Goals, mainly focusing on SDG 1, SDG 8, and SDG 9 are illustrated in table III. Most (76%) of the respondents strongly agreed or agreed with the fact that FinTech had a positive impact.

*Objective 3. Impact of Digital Financial Tools on MSME Growth and Access to Credit*

The regression model reveals that FinTech adoption significantly impacts MSME growth and access to credit. The  $R^2$  value of 0.454 indicates that 45.4% of the variation in MSME growth can be explained by FinTech-related variables, suggesting a moderate to strong impact of FinTech adoption on MSME development.

TABLE IV MODEL SUMMARY FOR OBJECTIVE 3

Model	R	$R^2$	Adjusted $R^2$	Std. Error
1	0.674	0.454	0.432	0.513

Table IV shows the Model Summary for the regression analysis performed on the relationship between FinTech adoption and MSME growth. The  $R^2$  of 0.454 shows that FinTech adoption can explain almost half of the variability in MSME growth.

TABLE V ANOVA TABLE FOR OBJECTIVE 3

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	15.824	4	3.956	15.042	0
Residual	19.711	75	0.263		
Total	35.535	79			

ANOVA table V determines whether the regression model is statistically significant. This p-value of 0.000 shows that the model is statistically significant, which supports the fact that the adoption of FinTech has a significant impact on the growth of MSMEs.

TABLE VI COEFFICIENTS TABLE FOR OBJECTIVE 3

Variable	$\beta$ Coefficient	t-value	Significance (p)
Constant	1.102	2.45	0.017
FinTech Awareness	0.284	3.12	0.003
Digital Payment Usage	0.318	3.54	0.001
Access to FinTech Credit	0.352	3.98	0
Trust in FinTech Platforms	0.221	2.67	0.009

Table VI Coefficients depicts the correlation between independent variables and the growth of MSME. FinTech Credit Access (= 0.352) had the most significant positive impact on the growth of MSMEs. The regression findings reveal that FinTech adoption can be of great value to MSME development and financial inclusion efforts. The independent

variables show that FinTech credit access ( $\beta = 0.352$ ) has the most powerful effect on MSME development, while digital payment usage ( $\beta = 0.318$ ) and FinTech awareness ( $\beta = 0.284$ ) show less impact. The results indicate that online financial services are more accessible to finance, speed up transactions, and facilitate business expansion, which leads to sustainable economic growth. The technological research in small business development facilitates the organizations to embrace improved environmental practices through the project. The research results indicate that FinTech is a valuable driver of sustainable economic growth in developing economies.

*Objective 4. Awareness, Adoption Level, and Challenges of FinTech among MSMEs*

As the correlation analysis shows, a number of significant correlations can be identified between the issues of FinTech and how MSMEs view its importance in the future. Particularly, there is a moderate positive correlation between Digital Infrastructure Challenges and Cybersecurity Concerns ( $r = 0.427$ ). Moreover, there is a positive correlation between Trust in FinTech and Future Importance ( $r = 0.310$ ), where MSMEs that trust digital financial services have higher chances of viewing FinTech as an important part of their future development.

TABLE VII CORRELATION MATRIX FOR OBJECTIVE 4

Variables	Digital Infrastructure Challenge	Cybersecurity Concern	Regulatory Difficulty	Trust in FinTech	FinTech Essential for MSME Future
Digital Infrastructure Challenge	1	0.427	0.225	-0.092	-0.016
Cybersecurity Concern	0.427	1	0.318	-0.115	0.023
Regulatory Difficulty	0.225	0.318	1	-0.041	0.155
Trust in FinTech	-0.092	-0.115	-0.041	1	0.31
FinTech Essential for MSME Future	-0.016	0.023	0.155	0.31	1

Table VII is the Correlation Matrix of the different challenges associated with Fintech and their effect on the perception of MSMEs regarding the significance of Fintech in the future. The table identifies critical connections, including the positive correlation between trust in FinTech and its importance in the future ( $r = 0.310$ ).

*Interpretation of Correlation Results*

1. Digital Infrastructure & Cybersecurity Concerns ( $r = 0.427$ ). There is a moderate positive correlation. The study found that MSMEs that face infrastructure limitations display greater cybersecurity threats.
2. Cybersecurity & Regulatory Difficulty ( $r = 0.318$ ). Respondents who perceive regulatory procedures to be difficult exhibit more cybersecurity threats.
3. Trust in FinTech & Future Importance ( $r = 0.310$ ). The study found that MSMEs that trust digital financial services display firmer belief in FinTech as a vital component for their upcoming development.

4. Digital Infrastructure & Trust in FinTech ( $r = -0.092$ ). The weak negative relationship shows that infrastructure problems reduce FinTech service trust.
5. Infrastructure Challenges & Perception of FinTech Future ( $r = -0.016$ ). This correlation shows very weak strength because infrastructure problems do not affect MSMEs' belief in FinTech value. Findings

*Findings*

The present study examined the role of FinTech in enhancing financial inclusion among MSMEs and its contribution toward achieving SDG 1, SDG 8, and SDG 9. According to the results of the analysis of 80 replies with the help of the SPSS tools (descriptive statistics, correlation analysis, reliability testing, and regression analysis), the following major findings were made:

*High Accessibility and Adoption of FinTech Services*

According to the descriptive analysis, most of the MSME respondents have access to FinTech services, including

online financial services, mobile banking, and digital payments. The findings indicate that FinTech platforms have a high level of perception of ease of use, availability, and efficiency that contribute to improved financial inclusion among small businesses.

- *FinTech Improves Access to Credit*

The researchers also discovered that FinTech platforms are highly effective in enhancing the availability of credit and the financial resources to MSMEs. Peer-to-peer lending services and digital lending platforms can be found, and avoid traditional barriers in banking, including complicated processes and collateral.

- *Positive Impact on MSME Growth and Business Performance*

Regression analysis shows that the use of FinTech positively affects the growth of MSMEs significantly. Electronic financial solutions enhance the efficiency of transactions, management of finances, and business growth opportunities, leading to higher productivity and profitability.

- *Contribution to Sustainable Development Goals (SDGs)*

The findings suggest that the overall economic and social growth is the outcome of the financial inclusion made possible by FinTech. Increased access to financial services facilitates the reduction of SDG 1, SDG 8, SDG 9.

- *Challenges Affecting FinTech Adoption*

Although there are merits, there are a number of challenges. Such challenges as the lack of digital infrastructure, cybersecurity, and regulatory challenges were mentioned by respondents. These barriers have the potential to affect the effective adoption of FinTech by MSMEs, particularly developing and emerging economies.

- *Strong Reliability and Validity of the Data*

The Cronbach  $\alpha$  (0.842) reliability test shows that the variables of the survey have a high internal consistency, meaning that the questions of the questionnaire can be used to measure the FinTech adoption and financial inclusion among the MSMEs.

#### *Limitations*

The research has a number of limitations, which can have an impact on the external validity and application. The sample of 80 MSMEs might not be representative of a wider population and the geographical orientation on the particular regions might not be applicable to other regions with different economic situations or regulations. Further, the cross-sectional nature of the study can be attributed to limitations in providing a snapshot of the adoption of FinTech at a particular period, as well as the possibility of bias in self-reported data. There may be some external influences, such as macroeconomic variables or cultural variables, that

could affect the adoption of FinTech, yet the study did not take these factors into account, in addition to the heterogeneity of technological infrastructure and financial sophistication of MSMEs. Future studies can be conducted to investigate with more representative samples and consider other variables that could help achieve a more comprehensive understanding of the role of FinTech among MSMEs.

## V. CONCLUSION

This paper identifies the great importance of FinTech in improving the financial inclusion of MSMEs, which will directly lead to SDGs. The data indicates that three-quarters of MSMEs (71 %) can access FinTech-based financial services, and 8 out of 10 of them considered the services easy to use, which is a strong indicator of the adoption of digital financial services. The regression model also illustrates that the adoption of FinTech positively influences the growth of MSMEs, with the value of  $R^2$  at 0.454, indicating a moderate to high relationship between FinTech and business growth. Moreover, FinTech solutions have helped in the realization of SDGs, particularly in poverty eradication (SDG 1), economic development (SDG 8), and technological advancement (SDG 9). However, the research also mentions obstacles such as digital infrastructural differences, cybersecurity, and regulatory obstacles as preventing the potential of complete adoption of FinTech. However, such barriers put MSMEs in a more sustainable economic development position since they have access to digital financial services. The study also concludes that digital lending and mobile banking, as FinTech services, affect the accessibility of credit and the formality of business in a significant positive way. However, there is a need for the following areas to be considered in future research work, including an increased capacity of the online framework, enhanced cybersecurity, and simplified regulation. In addition, future research may consider the implications that FinTech adoption will have for the sustainable development of MSMEs and overall development. The way through which the emerging technologies, such as blockchain and AI, can help to increase the levels of financial inclusion may also be explored in future research work. The complete benefits of FinTech adoption in achieving sustainable development and poverty alleviation can only be realized if more diverse samples and economic contexts are explored.

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