The Impact of COVID-19 on the Average Loan Size of SMEs Finance with Respect to Bangalore, India.

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Abstract____ A study aimed to explore the rate of changes in the average loan size provided to SMEs during and before the Coronavirus pandemic in bangalore, during the period from 3/1/2019 to 25/4/2021. A study was conducted by collecting the average loan size granted to clients of MFIs for the period from 3/1/2019 to 29/1/2020 before the outbreak of the Coronavirus in India and for the period from 30/1/2020 to 25/4/2021 after the outbreak of the epidemic in India. The study adopted the descriptive approach, and quantitative data were collected. In line with the nature of the study, the event study method was employed. Descriptive and inferential statistics were employed to find out and analyze the relationship between the variables. The results of the regression analysis showed that there was a negative impact of Coronavirus (Covid-19) on the average loan size in the long term at a significance level of 0.05, as the Corona epidemic led to a decrease in the average loan size by Rs 31,829.56 in the long term comparative the case before outbreak of the Coronavirus, indicates that there are other factors affecting the loan size other than the Corona epidemic (Covid-19) that were not included in the estimated model, and the diagnostic tests showed that the estimated model is functionally appropriate.

Keywords: Microfinance, SMEs, Covid-19.

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1. Introduction

The economies of developing and developed countries went through the worst recession since World War II **(Nawaiseh, 2021),** as Coronavirus had already had a significant on the world economy, including India. Coronavirus caused a severe global economic recession in 2020, which led to economic activities in Most countries, including major economies such as the United States, China, the European Union, and India. Coronavirus has held up national and international supply chains, leading to poverty of essential commodities and raw materials. Industries such as manufacturing, retail, and logistics faced significant challenges. The COVID-19 pandemic has contributed to high unemployment and labor market turmoil as business closures and an economic downturn led to widespread job losses and an increase in unemployment rates. To mitigate the economic and social impacts, many countries have launched support programs to mitigate the impact on workers and companies, such as fiscal and monetary stimulus packages to support their economies and protect vulnerable populations from the impact of the pandemic.

India, being one of the largest economies in the world, has also been greatly affected by the COVID-19 pandemic. The pandemic led to an economic downturn as India's GDP growth rate fell sharply in 2020, reflecting the severe impact of the pandemic and subsequent lockdown measures. India's huge informal sector, which makes up a large portion of the labor force, has faced severe hardship due to business shutdowns. Job losses India's manufacturing and export industries have also been affected by supply chain disruptions, particularly for sectors that rely heavily on imported raw materials. The Indian government has introduced various stimulus packages and relief measures to support businesses, healthcare, and vulnerable populations.

2. Study Background

Many small and medium businesses in Kanakapura, like elsewhere in India, have been subject to temporary or even permanent closure due to the lockdown measures and restrictions imposed to the spread of COVID-19. These lockdowns have led to significant financial stress and loss of revenue for many businesses as the pandemic and related closures have reduced consumer demand **(Ikmal & et al,2020)**, resulting in lower revenues for small and medium businesses in Kanakapura, making it difficult

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for them to meet financial obligations, such as paying employees. and rent and suppliers. Small businesses with existing loans or lines of credit have also struggled to pay them back as a result of the economic downturn caused by the Coronavirus. This situation has led to an increase in loan defaults and increased financial pressure on the business. While a result of the spread of the pandemic, small banks, and MFIs have become more cautious about lending to SMEs in times of instability (**Shafi, Liu&Ren,2020**). With credit risk increasing, Banks and microfinance institutions have become more assertive in their lending standards, making it more difficult for MSEs to access the much-needed microfinance to maintain or grow their operations. **(Catalán & et al .2021).** Based on that the research aimed to investigate whether Coronavirus affected the average loan size provided to SMEs or not, compared to the case before the outbreak of the epidemic in Kanakapura.

3. Objectives of the Study

- To View the repercussions of the Coronavirus on the Indian economy
- To explore the rate of changes in the average loan size provided to SMEs over and before the Coronavirus.

Repercussions of the Coronavirus on the Indian Economy

The pandemic of coronavirus had a severe impact on the economy of India, causing disturbances in many economic sectors and then challenges in major economies. India witnessed a sharp contraction in its GDP in the 2020-2021 fiscal year due to the lockdown imposed to control the outbreak of the virus. In 2020-2021, the economy contracted by almost 24%, and the total GDP growth for the 2020-2021 fiscal year was Negative as the growth rate was -8.5 (World Bank). The pandemic led to an increase in the unemployment rate from (6.7%) in 2019, to reach (26%) in July 2020, as companies closed or reduced their operations, and this led to job losses in various sectors, as more than (140) million people lost their jobs during the period of the outbreak. During the pandemic, while wages were cut for some others, especially in informal and labor-intensive industries, most farmers across the country faced uncertainty. In light of the ongoing pandemic, more than 45% of households experienced a sharp decline in income across the country compared to the period before the outbreak of COVID-19. In light of the complete closure, the losses of the

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Indian economy were estimated at more than (380) billion rupees, or approximately (4.7) billion dollars, as there was less than a quarter of the movement in the Indian economy operating, or (2.8) trillion dollars. The pandemic has led to disruptions in supply chains as the pandemic has disrupted supply chains within India and globally. Industries that depend on imports have faced challenges in obtaining raw materials and components, which has affected production and exports. The spread of the pandemic and the complete shutdown of the economy had the greatest impact on Small and Medium Enterprises (SMEs), where more than 56% of these companies were affected. Enterprises that form an important part of economics of india, faced enormous challenges during the pandemic, forcing many of them to close temporarily or permanently. due to financial pressures.

Research Hypothesis:

The null hypothesis: Coronavirus (COVID-19) does not have an impact on the average loan size of small and medium enterprises in bangalore.

4. Research Methodology:

The study adopts the descriptive method. Quantitative data related to the size of the loans allowed to clients by microfinance institutions were used before and after the outbreak of the Corona pandemic, where January 2020 is an event that affects the size of the loans offered by MFIs. Loan size variable data was collected for the period 3/1/2019 to 29/1/2020 before the beginning of the coronavirus in India and for period 30/1/2020 to 25/4/2021 after the outbreak of the pandemic in India.

5. Findings and Discussions of the Study

Study Variables: The study variables are all of the following:

The dependent variable: **the average loan size.**

   The independent variable: **Dummy**: A dummy variable that takes the value (0) in normal conditions and (1) under the Corona pandemic.

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The study uses appropriate statistical methods to explore the rate of changes in the mean loan size provided to SMEs over and before the Coronavirus, a study has employed the statistical program EViews to get the results, where use the following model:

$$Average\ Loan\ Size = \alpha + \beta * Dumy + \varepsilon$$

Where:

the average loan size: the dependent variable (loans)

Dummy: the independent variable (a dummy variable that takes the value (0) in normal conditions and the value (1) under the Corona pandemic).

α: constant limit parameter.

β: regression parameters.

ε: the limits of random error: represents the portion of the loans that varies randomly as a result of other factors not included in the model.

The study will test the influence of coronavirus on financing SMEs by comparing average loan size before and after the pandemic reached India, as this is done in two stages as follows:

The First Stage: creating a new variable equal to the average size of loans before the pandemic minus the average size of loans after the pandemic, and then testing whether this variable is distributing based on normal distribution according to the Kolmogorov-Smirnov and Shapiro-Wilk tests, so we get the following:

Table No. (1) Normal distribution test

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dif	0.111	270	0.000	0.921	270	0.000
					a. Lilliefors Significance Correction	

Source: Prepared by the researcher using the statistical program (SPSS)

From the results of Table (1), it was found that the level of statistical significance is equal to 0.000, which is less than the level of significance of 0.05. Therefore, the null hypothesis will reject and it should accept the alternative hypothesis that the average loan size difference variable for the period before and after the pandemic doesn't distribution in the normal.

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Second Stage: since difference data is not normally distributed, therefore, it will be based on the Wilcoxon signed-rank test to compare the average loan size before and after the pandemic, as we get the following table:

Table No. (2) Wilcoxon Connected Lectures Test

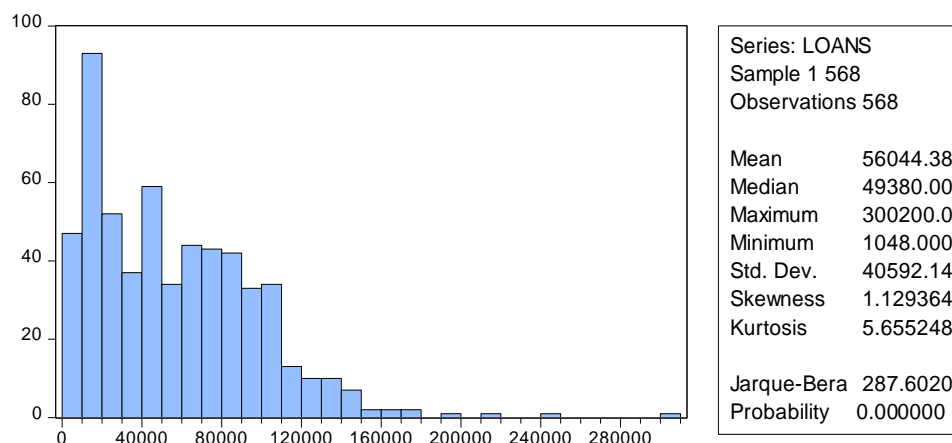|	Wilcoxon signed-rank test						
	Mean		Ranks				
Before - After	**Before**	**after**	**Negative**	**Positive**	**Ties**	**Z**	**Sig. (2-tailed)**
	77898.87	34889.36	228	42	0	-10.593	0.000

Source: Prepared by the researcher using the statistical program (SPSS)

The results of Table (2) show that the average size of loans before the Corona pandemic is INR 77898.87, the average size of loans after the outbreak of the Corona pandemic is INR 34889.36, and The number of positive ranks is 42 ranks, i.e. there are only 42 views of the average loan size, which was greater than it was after the pandemic, given overall views, and the negative ranks are 228, that is, there are 228 views of the average loan size, which was lower than was after the outbreak the pandemic. The Z value indicates that rejects the null hypothesis that the significance level is less than at 0.05, that is, it accepts the alternative hypothesis, and then there are significant differences between the average size of loans during the studied period before and after the pandemic, that is, there is a significant impact of the Corona pandemic "Covid-19" on the average loan size assuming the stability of the effect of the rest of the variables. It notes that it has a negative impact due to the decrease in the average loan size by 43009.52 after the pandemic, and accordingly, we judge that the Corona has a negative impact in the average loan size.

6. Statistical characteristics of the study variable

6.1. Descriptive of the loan size during the entire study period, and the normality distribution test of its series

Figure No. (1) Descriptive Loan Size During the whole Period of Study

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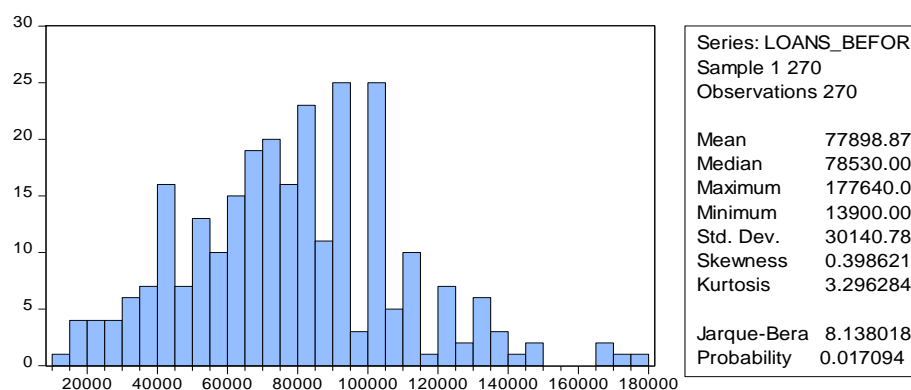| Series: LOANS	
Sample 1 568	
Observations 568	
Mean	56044.38
Median	49380.00
Maximum	300200.0
Minimum	1048.000
Std. Dev.	40592.14
Skewness	1.129364
Kurtosis	5.655248
Jarque-Bera	287.6020
Probability	0.000000

Source: Statistical Program Outputs (EViews).

Figure No. (1) that: The highest loan size to about INR 300,200 on 25/8/2020, and the lowest loan size to INR 1,048 on 19/2/2020, with an average loan size of INR 56,044.38, and a standard deviation of INR 40592.14, which is a deviation indicates that there is a large fluctuation in the size of loans during the study period, which suggests that this fluctuation may be attributed to effect of the Corona on the loan size. also, it was noted that the P-Value of the Jarque-Bera is less than of significance 0.05, and from it, will reject the null hypothesis and it should accept the alternative hypothesis that the loan size series is not following a normal distribution but this problem can be overcome by the statistical study because of the long of the series 568 views.

6.2. Descriptive of the loan size Before the Outbreak of Coronavirus

Figure No. (2) Descriptive Loan Size Before Outbreak covid-19

Series: LOANS_BEFOR	
Sample 1 270	
Observations 270	
Mean	77898.87
Median	78530.00
Maximum	177640.0
Minimum	13900.00
Std. Dev.	30140.78
Skewness	0.398621
Kurtosis	3.296284
Jarque-Bera	8.138018
Probability	0.017094

Source: Statistical Program Outputs (EViews).

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Figure No. (2): The highest loan size before the Corona pandemic amounted to about INR 177640 on 11/4/2019, and the lowest loan size amounted to INR 13,900 on 11/18/2019, with an average loan size of Rs 77898.87, and a standard deviation of INR 30,140.78. P-value of the Jarque-Bera is smaller of significance 0.05, and from that will reject the null hypothesis and it should accepts the alternative hypothesis that the loan size series is not following a normal distribution but this problem can be overcome by the statistical study because of the long of the series 568 views.

6.3. Descriptive of the loan size After the Outbreak of Coronavirus

Figure No. (3) Descriptive of the loan size after the Corona pandemic.
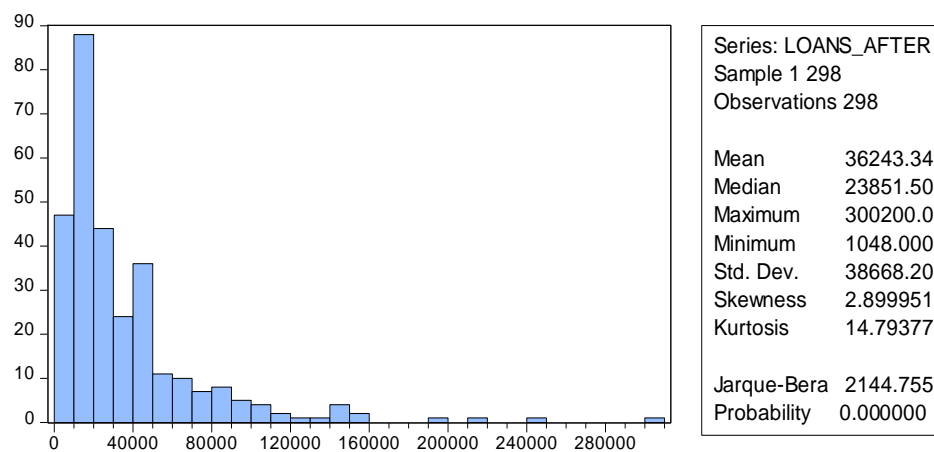
Source: Statistical Program Outputs (EViews).

The Figure No. (3) that: The highest loan size amounted to about INR 300,200 on 25/8/2020, and the lowest size of loans amounted to INR 1048 on 19/2/2020, with an average loan size of 36,243.34 rupees, and a standard deviation of INR 38668.20. A P-value of the Jarque-Bera is smaller of significance by 0.05, and from that it will reject the null hypothesis and it should accept the alternative hypothesis that the loan size series is not following a normal distribution but this problem can be overcome by the statistical study because of the long of the series 568 views.

6.4.Stationarity test graphically

Figure (4) shows a graph of the evolution of the loan size over time during the study period:

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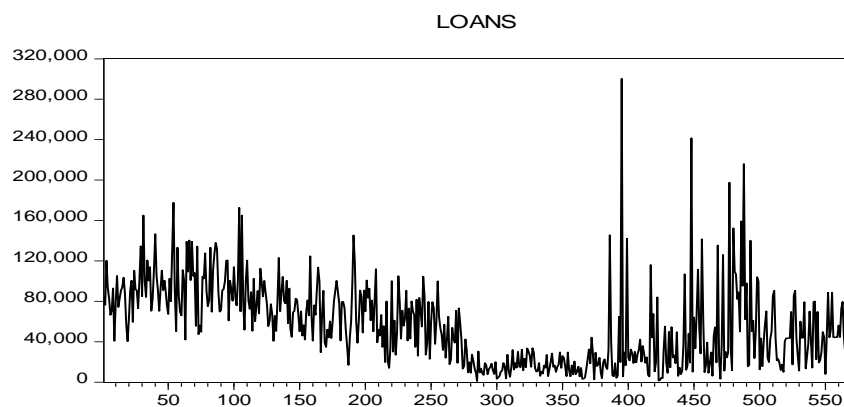
Source: Statistical Program Outputs (EViews.

Figure 4 clearly shows a series of the average loan size that is Stationary over time.

6.4. Unit root test of the Augmented Dickey-Fuller series of the average loan size

To confirm the previous result statistically, the unit root test was performed on the loan variable series using the Augmented Dickey-Fuller test, where we obtained the following:

Table No. (3) Results of the Level Stationarity Test for the average loan size variable

Augmented Dickey-Fuller		
Null Hypothesis: Average Loan Size has a unit root		
Exogenous: Constant		
Leg Length: 5 (Automatic – based on SIC, maxlag=18)		
Series	t-Statistic	Prob.*
Average Loan Size	-3.745950	0.0037
* Mackinnon (1996) one-sided p-values.		

Source: Statistical Program Outputs (EViews)

It is clear from Table (3) that P- Value of the (t-test statistic) for average Loan Size is smaller of 0.05, so will reject the null hypothesis and it should accept the alternative hypothesis that the time series for the Average Loan Size variable does not contain the unit root, thus the OLS method can be used for estimation.

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6.5.Estimation of the Model

To check the hypothesis of study "there is no effect of COVID-19 on the financing of small and medium enterprises," the regression model was estimated by the OLS method, which can be obtained from the following:

Table No. (4) the Results of the OLS Regression Model.

Dependent Variable: Average Loan Size				
Method: Least Squares				
Sample: 1 568				
Included observations: 568				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	77898.87	2122.509	36.70132	0.0000
DUMY	-41655.54	2930.323	-14.21534	0.0000
R-squared	0.263094	Mean dependent var		56044.38
Adjusted R-squared	0.261792	S.D. dependent var		40592.14
S.E. of regression	34876.38	Akaike info criterion		23.76052
Sum squared resid	6.88E+11	Schwarz criterion		23.77581
Log-likelihood	-6745.988	Hannan-Quinn criteria.		23.76649
F-statistic	202.0759	Durbin-Watson stat		1.53939
Prob(F-statistic)	0.0000			

Source: Statistical Program Outputs (EViews).

From the results of Table No. (4) that the value of the Durbin-Watson statistic is equal to 1.54, which is smaller than the value 2, meaning that the model suffers from an autocorrelation problem. To avoid this problem, the model was re-estimated, but after including the dependent variable as an independent variable, but with an earlier period, we get the table next:

Table No. (5) Results of the OLS Regression model.

Dependent Variable: Average Loan Size				
Method: Least Squares				
Sample: 1 568				
Included observations: 568				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	59628.19	3817.271	15.62063	0.0000
Average Loan Size (-1)	0.233561	0.041044	5.690427	0.0000

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| DUMY	-31829.56	3336.311	-9.540348	0.0000
R-squared	0.302536	Mean dependent var		55993.77
Adjusted R-squared	0.300063	S.D. dependent var		40610.04
S.E. of regression	33975.27	Akaike info criterion		23.70993
Sum squared resid	6.51E+11	Schwarz criterion		23.73290
Log-likelihood	-6718.765	Hannan-Quinn critter.		23.71889
F-statistic	122.3221	Durbin-Watson stat		2.095789
Prob(F-statistic)	0.0000			

Source: Statistical Program Outputs (EViews.

From the results of Table No. (5) shows the long-term correlation relationship (long-term elasticities) between the average loan size and the dummy variable that represents the Corona pandemic, where it was noted that the value of the coefficient of determination is approximately 30%, meaning that changes in the model variables are likely to explain 30% of the Changes in the size of loans and the remaining percentage of changes are explained by other variables that were not entered it in the estimation model. P- the value of (t) statistic indicates the significance of the dummy variable at the level of 0.05, and this means that there is a negative impact of the Corona pandemic on the average loan size in the long term at the significant level of 0.05, as the Corona pandemic led to an average decrease in the loan size loans by INR 31829.56.

P-the value of (F) is significance of model as a whole at a significance level of 0.05.

Hypothesis Test Result: findings of study showed that it found a significant impact of the Corona pandemic on the average loan size at a statistically significant level of 0.05 in the long term.

6.6.Stationarity Test of the Regression Model Residual Series

Figure (5) the Stationarity of the regression residual series in time;

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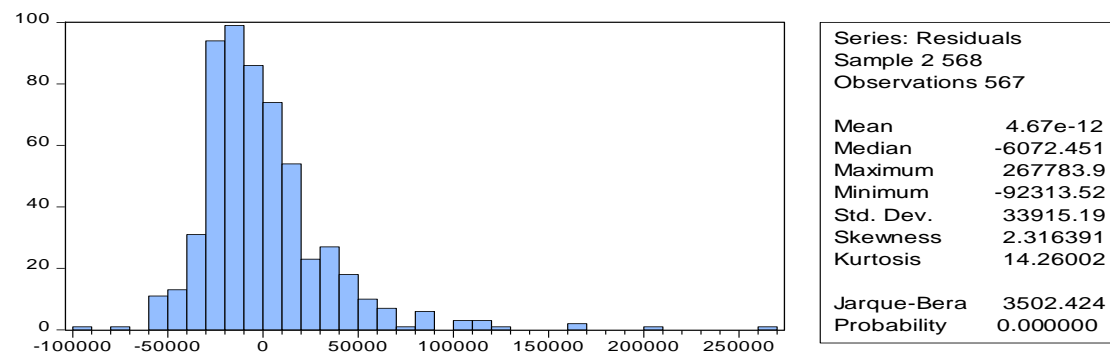*Eur. Chem. Bull. 2023,12(10), 11956-11969*
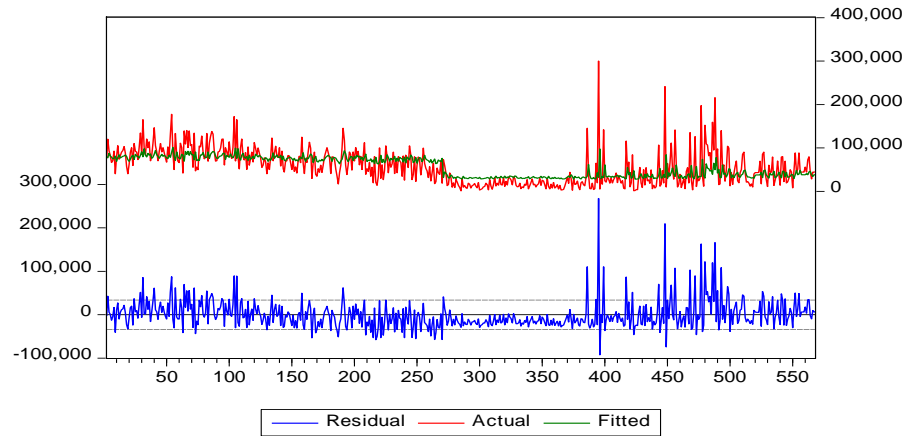
Source: Statistical Program Outputs (EViews)

Figure 5 clearly shows the Stationarity of the series of average loan sizes over time.

7. Diagnostic tests for the estimated model:

7.1. Normality Distribution Test of Residuals:

Figure (6) Results of the Normality Distribution Test for the Residuals of the Model

Source: Statistical Program Outputs (EViews).

The results of Figure (6) noted that P- the Value of the Jarque-bera is smaller the 0.05 and therefore the residuals series is not a normal distribution, another meaning, there are other factors that affect the average loan size other than the Corona pandemic, among these factors:

1. The reluctance of microfinance institutions to lend due to the lack of clarity in the future vision of the pandemic.

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2. Some SMEs were late in reback loans, and consequently, the cash flows of the microfinance institutions were reduced.

3. Low market price of the guarantees provided for loans, was offset by the reduction in the volume of loans offered by the microfinance institutions.

7. 2. Contrast stability test:

Table No. (6) shows the findings of the stationary test variance for the remainder of two models:

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.312514	Prob. F (2,564)	0.1000
Obs*R-squared	4.611811	Prob. Chi-Square (2)	0.0997

Source: Statistical Program Outputs (EViews).

The results of Table (6) showed that the probability value of the F & chi-square tests is greater than the level of 0.05, i.e. the null hypothesis of stability of random errors of the estimated model is accepted.

7. 3. The fit test of the functional form of the model:

Table No. (7) results of the appropriateness test of the functional form of the models:

Ramsey RESET Test			
Equation: UNTITLED			
Specification: LOANS C LOANS (-1) DUMY			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	0.542043	563	0.5880
F-statistic	0.293810	(1, 563)	0.5880
Likelihood ratio	0.295820	1	0.5865

Source: Statistical Program Outputs (EViews)

The results of Table (7) show that the P-Value of the three tests is bigger than 0.05, meaning that it should accept the Null hypothesis, and then the functional form of the estimated model is fits.

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8. **Conclusion**

Due to economic uncertainty and reduced cash flows, small and medium businesses faced challenges accessing microcredit and loans during the pandemic. MFIs have become cautious in extending credit, which has led to a possible decrease in financing opportunities for small and medium enterprises.

In Kanakapura, SMEs as in many parts of the world faced disruptions to their cash flow due to the lockdown, reduced consumer demand, and supply chain disruptions. This may affect their ability to repay existing loans and qualify for new ones. Consequently, the spread of the corona had a negative impact on microcredit, as many small and medium enterprises faced difficulty in accessing credit, while the volume of loans granted to customers in other projects decreased.

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