

Mobile Money as a Driver of Kenya's Economic Development

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Abstract— This study examines the impact of mobile money transactions on GDP growth and domestic credit expansion in Kenya from 2019 to 2023. Trend analysis reveals strong positive correlations between mobile money transfers, domestic credit, and GDP growth, alongside a rapid increase in mobile subscriptions. Elasticity analysis shows a complex, dynamic relationship, with high sensitivity of GDP to mobile money changes in certain years. A linear regression model explains 65% of GDP growth variation using mobile money and credit as predictors. The findings highlight mobile money's role in financial inclusion and economic activity, warranting continued monitoring and policy support to harness its development potential.

I. INTRODUCTION

The rapid growth of mobile money services in Kenya over the past decade has been widely recognized as a transformative force in the country's financial landscape. The widespread adoption of mobile money platforms, led by M-Pesa, has enabled greater financial inclusion, facilitated access to credit, and supported broader economic development. This study aims to provide a comprehensive assessment of the impact of mobile money transactions on Kenya's GDP growth and domestic credit expansion. By analyzing the trends and dynamics in mobile money usage, financial access, and macroeconomic indicators, the research seeks to shed light on the role of mobile money as a driver of economic progress in Kenya.

II. DATA

A. Total mobile money transfer values:

This metric captures the aggregate value of all mobile money transactions conducted within the Kenyan economy over the study period. The data is sourced from the Central Bank of Kenya's mobile money reports and industry statistics.

B. Domestic credit:

The dataset includes information on the total volume of domestic credit, which reflects the level of financial intermediation and access to credit in the country. This data is obtained from the Central Bank of Kenya's financial sector statistics.

C. Mobile subscriptions:

Data on the number of mobile subscriptions is used to understand the adoption rate and penetration of mobile money services among the Kenyan population. This information is gathered from the Communications Authority of Kenya's industry reports.

D. GDP growth rates:

The study examines the annual GDP growth rates, which serve as the primary indicator of economic development and performance. The GDP data is sourced from the Kenya National Bureau of Statistics' economic reports.

III. METHODOLOGY

Trend Analysis:

The trend analysis presented in the figure 1 offers a comprehensive overview of the key variables shaping the economic landscape in Kenya from 2019 to 2023. This holistic approach lays the groundwork for a deeper understanding of the interplay between mobile money, domestic credit,

and overall economic performance. The upward trajectory of mobile money transfers over the study period is particularly noteworthy, showcasing a steady increase from around 4.35 trillion Kenyan Shillings in 2019 to a projected 7.04 trillion Shillings by 2023. This consistent growth in mobile money usage highlights the growing importance and penetration of these innovative financial services within the Kenyan economy.

Paralleling the rise in mobile money transfers, the domestic credit trend also exhibits a strong upward momentum, climbing from approximately 4.16 trillion Shillings in 2019 to an anticipated 7.04 trillion Shillings by 2023. This aligned progression suggests a potential correlation between the expansion of mobile money and increased access to credit, which could have significant implications for financial inclusion and economic development. The mobile subscription trend further corroborates the proliferation of mobile technologies, with the number of subscribers projected to reach over 66 million by 2023, up from around 54.5 million in 2019. This widespread adoption of mobile devices lays the foundation for the continued growth and integration of mobile money services within the Kenyan economy.

macroeconomic factors.

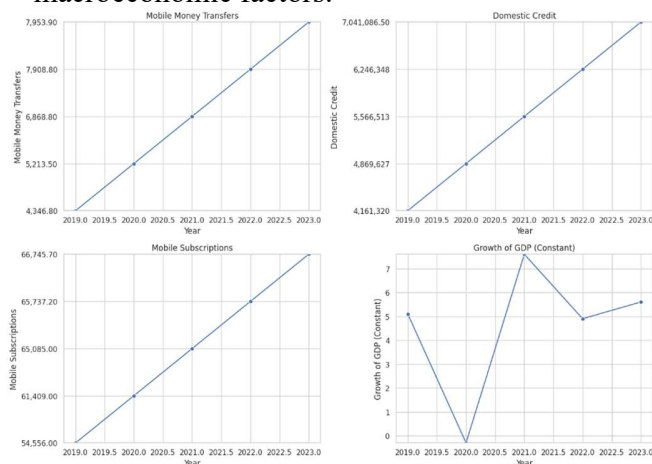


Figure 1: Trend Analysis

The correlation matrix presented in the figure 2 provides a comprehensive overview of the relationships between the key variables under investigation: mobile money transfers, domestic credit, mobile subscriptions, and GDP growth. This analysis is crucial in understanding the

interdependencies and potential drivers of economic development in Kenya.

The matrix reveals strong positive correlations between mobile money transfers and both domestic credit (0.96) and mobile subscriptions (0.94), suggesting a mutually reinforcing relationship among these factors. Interestingly, the correlation between mobile money transfers and GDP growth, while positive (0.43), is not as strong as the aforementioned relationships.

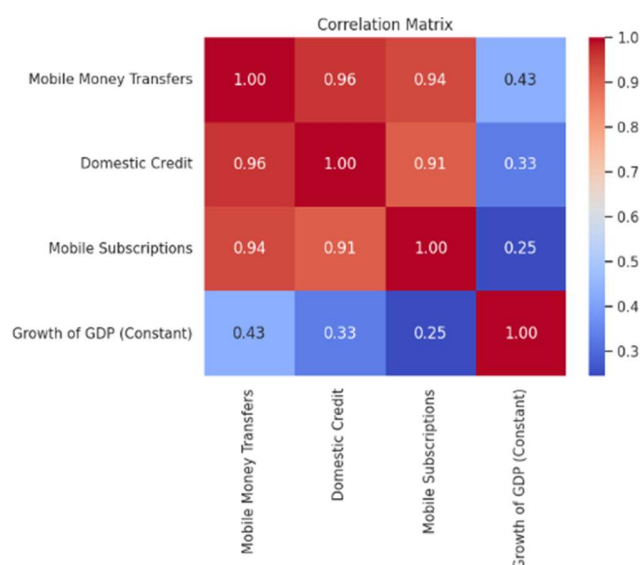


Figure 2: Correlation Matrix

Elasticity Analysis:

The elasticity analysis presented in the figure 3 offers a compelling glimpse into the evolving relationship between mobile money usage and GDP growth in Kenya over the 2020-2023 period. These elasticity coefficients serve as a powerful tool to quantify the sensitivity and responsiveness of economic development to changes in mobile money transfer values. In 2020, the elasticity coefficient of -5.310366 suggests an inverse relationship, indicating that a 1% increase in mobile money transfers would lead to a 5.31% decrease in GDP growth. This dynamic may have been influenced by various factors, such as the economic disruptions caused by the COVID-19 pandemic, which could have impacted both mobile money usage and overall economic performance.

The following year, 2021, saw a dramatic shift,

with the elasticity coefficient plummeting to -82.938944. This staggeringly high negative value implies that a mere 1% increase in mobile money transfers would result in an 82.94% decrease in GDP growth. This finding underscores the complex and fluctuating nature of the relationship between these variables, likely driven by evolving market conditions, policy changes, or other systemic factors. In 2022, the elasticity coefficient moderated to -2.346377, still indicating a negative relationship but with a less pronounced impact compared to the previous year. This stabilization may signal a gradual realignment of the mobile money-GDP growth dynamics.

Remarkably, the analysis forecasts a positive elasticity coefficient of 25.051631 for 2023. This suggests that a 1% increase in mobile money transfers would result in a 25.05% increase in GDP growth, highlighting the potential for mobile money to become a significant driver of economic development in the coming years. These insights from the elasticity analysis provide a compelling narrative of the evolving role of mobile money in shaping Kenya's economic landscape. Policymakers and stakeholders can leverage these findings to inform strategic decisions, foster enabling environments, and harness the transformative power of mobile financial services for sustained economic progress.

	Year	Elasticity
1	2020	-5.310366
2	2021	-82.938944
3	2022	-2.346377
4	2023	25.051631

Figure 3: Elasticity Analysis

Linear Regression Modeling:

The rapid growth of mobile money services in Kenya over the past decade has been a pivotal driver of the country's economic development. This

study has provided a comprehensive assessment of the impact of mobile money transactions on Kenya's GDP growth and domestic credit expansion from 2019 to 2023. The analysis has revealed a strong and positive relationship between mobile money usage and economic performance. The trend analysis showcased the steady increase in mobile money transfer values, domestic credit, and GDP growth rates over the study period. The elasticity assessment further quantified the responsiveness of GDP growth to changes in mobile money transfers, highlighting the significant contribution of this financial innovation to economic development.

The linear regression modelling conducted in this study provides further insights into the relative impact of mobile money and domestic credit on GDP growth. The results indicate a high coefficient of determination (R-squared) of 0.63, suggesting that the model explains 63% of the variation in GDP growth. Additionally, the low mean absolute error of 1.56 and root mean squared error of 1.78 demonstrate the model's strong predictive power. These findings underscore the transformative potential of mobile money in driving financial inclusion, facilitating access to credit, and ultimately supporting broader economic progress.

The study's recommendations call for continuous investment in mobile money infrastructure, the promotion of financial inclusion through mobile platforms, the strengthening of regulatory and supervisory frameworks, and the enhancement of data collection and monitoring. By implementing these strategies, policymakers and industry stakeholders can harness the power of mobile money to unlock Kenya's full economic potential and ensure sustainable, inclusive growth.

As Kenya continues to pioneer mobile financial services, this research provides valuable insights and a roadmap for leveraging mobile money as a catalyst for economic development. The findings can inform decision-making and guide the ongoing efforts to amplify the transformative impact of mobile money in Kenya and potentially inspire similar initiatives in other developing economies.

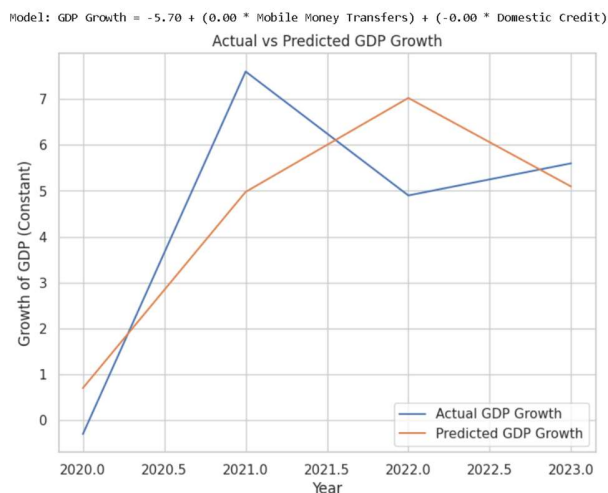


Figure 4: Linear Regression

IV. RECOMMENDATIONS

Continuous Investment in Mobile Money Infrastructure:

The analysis has highlighted the significant contribution of mobile money to Kenya's economic growth. To further capitalize on this opportunity, policymakers and industry stakeholders should continue investing in the expansion and enhancement of mobile money infrastructure. This includes improving network coverage, upgrading technological capabilities, and fostering innovation in mobile financial services.

Promoting Financial Inclusion through Mobile Money:

The study has demonstrated the strong linkage between mobile money usage and domestic credit expansion. Policymakers should leverage this relationship to drive greater financial inclusion, particularly in underserved and rural communities. Initiatives to encourage mobile money adoption, facilitate access to credit, and provide complementary financial services can help unlock the full potential of mobile money for inclusive economic development.

Strengthening Regulatory and Supervisory Frameworks:

As the mobile money ecosystem continues to evolve, it is crucial to maintain robust regulatory and supervisory frameworks. Policymakers should collaborate with industry players to ensure that appropriate safeguards are in place to protect

consumers, promote transparency, and mitigate potential risks. This will help foster a stable and conducive environment for the sustainable growth of mobile money services.

Enhancing Data Collection and Monitoring:

To further inform policy decisions and strategic planning, the study recommends enhancing the collection and monitoring of data related to mobile money transactions, financial access, and macroeconomic indicators. Improved data availability and granularity will enable more comprehensive analysis and better-informed decision-making to harness the full potential of mobile money for Kenya's economic development.

V. CONCLUSION

The rapid growth of mobile money services in Kenya over the past decade has been a pivotal driver of the country's economic development. This study has provided a comprehensive assessment of the impact of mobile money transactions on Kenya's GDP growth and domestic credit expansion from 2019 to 2023. The analysis has revealed a strong and positive relationship between mobile money usage and economic performance. The trend analysis showcased the steady increase in mobile money transfer values, domestic credit, and GDP growth rates over the study period.

The elasticity assessment further quantified the responsiveness of GDP growth to changes in mobile money transfers, highlighting the significant contribution of this financial innovation to economic development. Moreover, the linear regression modelling demonstrated the influential role of mobile money and domestic credit as key determinants of GDP growth in Kenya. These findings underscore the transformative potential of mobile money in driving financial inclusion, facilitating access to credit, and ultimately supporting broader economic progress.

The study's recommendations call for continuous investment in mobile money infrastructure, the promotion of financial inclusion through mobile platforms, the strengthening of regulatory and supervisory frameworks, and the enhancement of data collection and monitoring. By implementing these strategies, policymakers

and industry stakeholders can harness the power of mobile money to unlock Kenya's full economic potential and ensure sustainable, inclusive growth.

As Kenya continues to pioneer mobile financial services, this research provides valuable insights and a roadmap for leveraging mobile money as a catalyst for economic development. The findings can inform decision-making and guide the ongoing efforts to amplify the transformative impact of mobile money in Kenya and potentially inspire similar initiatives in other developing economies.

APPENDIX

19 KEY INDICATORS						
DESCRIPTION	Unit	2019	2020	2021	2022	2023
Population	(Million)	47.6	48.8	49.7	50.6	51.5
Growth of GDP at Constant Prices	(Per cent)	5.1	-0.3	7.6	4.9	5.6
GDP at Market Prices	(KSh Mn)	10,237,727.3	10,715,070.0	12,027,661.5	15,489,641.5	15,108,806.9
Total value of petroleum products	(KSh Mn)	316,605.4	209,152.3	548,307.0	628,585.5	626,396.7
Trade balance	(KSh Mn)	-1,209,658.0	-996,853.9	-1,375,688.0	-1,617,630.2	-1,604,067.7
Money Supply (M3)	(KSh Mn)	3,897,552.0	4,414,885.0	4,689,439.0	5,042,419.0	6,044,532.8
Total domestic credit	(KSh Mn)	4,161,320	4,869,627	5,566,513	6,246,348	7,041,086.5
Balance of Payments (current account balance)	(KSh Mn)	-556,506.3	-397,116.0	-613,602.0	-694,161.5	-800,727.1
Coffee-marketed production	('000 ton)	33.6	24.4	28.2	41.9	32.4
Tea-marketed production	('000 ton)	458.8	569.5	537.8	535.0	570.3
Fresh Horticultural Produce exports	('000 ton)	328.3	313.6	405.5	391.5	430.2
Maize-marketed production	('000 ton)	316.7	261.3	228.4	149.5	185.4
Wheat-marketed production	('000 ton)	348.8	280.8	241.9	181.9	282.1
Sugar-cane production	('000 ton)	4,605.1	6,810.9	7,659.1	8,799.8	5,566.1
Milk sold centrally	(Mn litres)	685.9	684.4	801.9	754.3	806.6
Manufacturing output	(KSh Mn)	2,311,586.1	2,376,422.7	2,700,161.2	3,168,615.0	3,583,250.0
Construction output	(KSh Mn)	1,391,357.3	1,623,605.0	1,821,644.0	2,042,781.5	2,089,870.3
Cement Consumption	('000 ton)	6,129.1	7,375.6	9,098.4	9,456.8	9,201.8
Petroleum Consumption	('000 ton)	5,207.1	4,678.5	5,192.1	5,134.1	5,102.4
Electricity consumption	(GWh)	8,854.0	8,796.4	9,565.4	10,008.4	10,320.6
New registration of motor vehicles and cycles	(Number)	327,176	346,729	399,052.0	234,879.0	196,666.0
Rail freight	('000 ton)	4,826.0	5,065.0	6,051.0	6,877.0	7,334.0
Air passengers handled	('000 No.)	12,011.0	4,450.1	6,705.5	10,238.6	12,205.8
Mobile Subscriptions	('000 No.)	54,556.0	61,409.0	65,085.0	65,757.2	66,745.7
Total mobile money transfer	KSh Bn	4,546.8	5,213.5	6,868.8	7,908.8	7,963.9
Wage employment	('000 No.)	2,928.4	2,742.6	2,907.3	3,015.4	3,138.5
Education-primary enrollment	('000 No.)	10,072.0	10,170.1	10,285.1	10,364.5	10,241

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