KENYA BANKERS ASSOCIATION 11TH ANNUAL

BANKING RESEARCH CONFERENCE 2022

WEDNESDAY 14TH TO **FRIDAY 16TH** SEPTEMBER

At The **Radisson Blu,** Nairobi – Kenya

8:30am - 1:00pm (EAT)

Banking Industry Dynamics on the Back of Technological and Financial Innovations, and Sustainability: Emerging Risks and Opportunities

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In collaboration with

The Mitsubishi Corporation Fund for Europe and Africa

CENTRE FOR RESEARCH ON

FINANCIAL MARKETS AND POLICY®

ABOUT KENYA BANKERS ASSOCIATION

Kenya Bankers Association is the umbrella body of the Banks licensed by the Central Bank of Kenya with a current membership of 47. The Association promotes and develops sound and progressive banking principles, practices and conventions and contributes to the developments of the sector. It influences the policy landscape by proactively engaging the policy development stakeholders for the development of a conducive business environment on behalf of its members. It also manages the public relations aspects of banking as a service industry. Kenya Bankers Association plays a major role in maintaining industrial relations through employee representatives; negotiating terms and conditions of employment; and arriving at settlements, provision assistance and guidance to the industry in interpretation and implementation of cost of living awards. KBA works to maintain close co-ordination and liaison with the Central Bank of Kenya, financial institutions, the Chamber of Commerce, management and educational institutions, Federation of Kenya Employers, and other such organizations for realizing the objects and purposes of the Association.

Moreover, KBA owns and operates the Automated Clearing House and in partnership with the Central Bank of Kenya has developed initiatives such as the Modernisation of Payment Systems (including the Cheque Truncation Project), the establishment of Currency Centres across the country, and the Kenya Credit Information Sharing Initiative.

ABOUT THE CENTRE FOR RESEARCH ON FINANCIAL MARKETS AND POLICY®

The Centre for Research on Financial Markets and Policy® was established by the Kenya Bankers Association in 2012 to offer an array of research, commentary, and dialogue regarding critical policy matters that impact on financial markets in Kenya. The Centre sponsors original research, provides thoughtful commentary, and hosts dialogues involving scholars and practitioners, and conferences on key financial market issues. Through these activities, the Centre acts as a platform for intellectual engagement between financial market experts, the banking sector and the policy makers in Kenya. It therefore contributes to an informed discussion that influences critical financial market debates and policies.

Visit ***www.kba.co.ke/research-center*** to access the suite of research publications.

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From the CEO, Kenya Bankers Association

It is my singular honour to welcome you all to the *11th KBA Annual Banking Research Conference* and thank you for taking time to join us. Over the last ten years, we have consistently hosted the Kenya Bankers Association Banking Research Conference, driven by our commitment to deeply engage with our stakeholders and anchor the banking sector's development on evidence from research and analytics in areas we consider critical for enhancing the industry's contribution to economic growth and development.

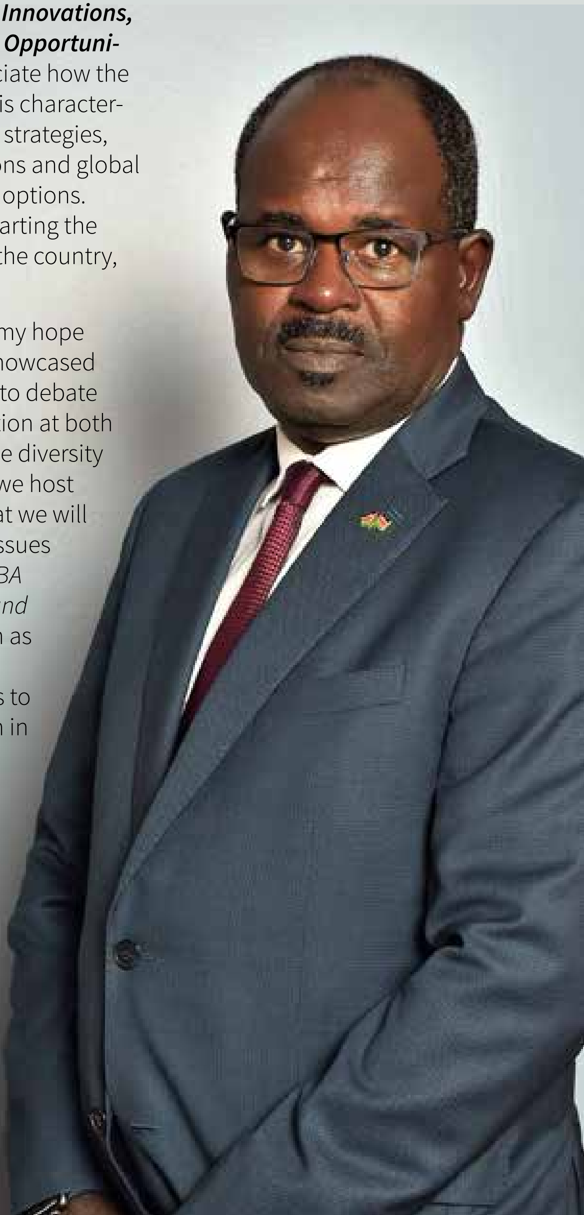
As we hold our 11th annual conference, I take this opportunity to specifically acknowledge our dedicated researchers, reviewers, and discussants for your invaluable input in keeping the engagements alive and research driven by evidence as you generate insightful contributions to the various thematic areas. At KBA, we strongly believe that it is out of a candid engagement with stakeholders, underpinned by rigorous analysis, that we can mine robust ideas supportive of financial sector's growth and development aspirations.

We take note of the fact that some of the issues that we addressed in our first *Research Conference* in 2012 and the subsequent sessions have either given rise to practical solutions or have motivated further investigations by other researchers. The themes we have picked to focus on have undoubtedly resonated with the desire of the industry to be at the frontier of knowledge and practice.

I must also highlight the fact that, over the past two conferences, we have opened up contributions of papers to include pieces that are methodological in nature; providing insights towards practical solutions to challenges affecting banking operations. In addition, and as you will notice in this conference, we have one framework paper – drafted by a legal practitioner in the banking sector – assessing the legal and regulatory framework for digital financial services in the country. We have also broken boundaries to host research papers from countries in the region. Indeed, we continue to widen the scope and catchment area for the insights we so need for the banking sector in the region.

Our theme this year is ***'Banking Industry Dynamics on the Back of Technological and Financial Innovations, and sustainability – Emerging Risks and Opportunities'.*** Under this theme, we seek to appreciate how the current operating environment for banks is characterized by evolving risk and its management strategies, the emergence and adoption of innovations and global focus on green and sustainable financing options. These developments are at the core of charting the path for the future of banking not only in the country, but also globally.

As I wish us all well in the conference, it's my hope that the outcome of our research being showcased at this conference will contribute not just to debate but will also be a basis for policy formulation at both institutional and national levels. Given the diversity of our stakeholders and researchers that we host in this conference, we do not envisage that we will necessarily have a common view on the issues to be discussed. In recognizing this, the *KBA Centre for Research on Financial Markets and Policy®* collaborates with institutions such as the Central Bank of Kenya, the Academia, International Institutions and Think-Tanks to ensure that objectivity is maintained even in instances of divergent views



Dr. Habil Olaka, EBS
CEO, Kenya Bankers Association

From the Director, KBA Centre for Research on Financial Markets and Policy®

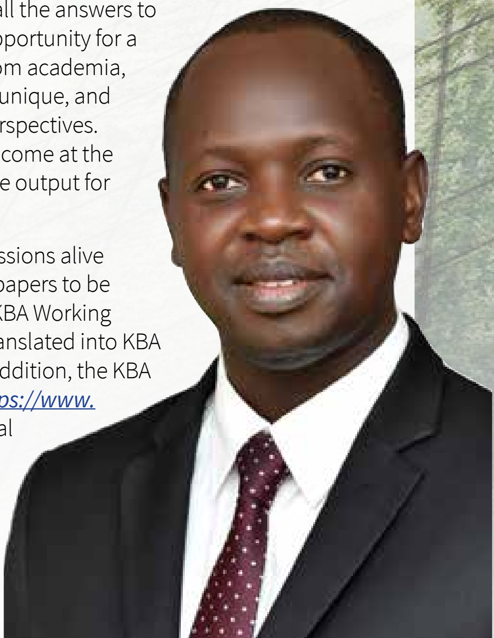
The *11th Kenya Bankers Association Banking Research Conference* presents an opportunity to reflect on the current banking environment along three critical and interrelated areas that underpin the nexus between finance and economic growth.

The papers to be presented and discussed at this conference aim to generate evidence-based insights and further stimulate a policy discussion, while focusing on:

- **First,** assessing the individual and compounding impact of the COVID-19 pandemic and its containment measures as well as the emergent elevated credit risk on bank's credit portfolio composition and adjustments, while drawing implications for the evolution of credit and thus economic performance going forward;
- **Second,** examining the implications of the emerging digital financial services and innovations on the banking sector performance – specifically on deposit mobilization, credit portfolio allocations, risk management, profitability, and financial inclusion; and
- **Third,** interrogating the status and trends in the uptake of green finance and sustainable finance, and examining their implications for banking sector stability and profitability; comparing the impact of conventional/brown finance and green/sustainable finance on economic activity, as well as ascertain the possibilities of reaching an optimal mix of the two types of finance in the transition period.

Over the three days, the conference may not provide all the answers to these questions, but it will undoubtedly provide an opportunity for a comprehensive reflection. The diversity of authors- from academia, policy institutions and banking sector practitioners is unique, and allows for the interrogation of issues from different perspectives. The ensuing rigour of the presentations that does not come at the expense of policy and business relevance is a desirable output for all players in the financial system.

Even beyond the conference, we intend to keep discussions alive on the theme area. But ultimately, all the conference papers to be presented will be reviewed and published under the KBA Working Paper Series (*www.kba.co.ke/research-centre*) and translated into KBA Policy Briefs for a wider non-technical readership. In addition, the KBA working paper series shall be hosted on EconStor (*https://www.econstor.eu*), to expand their visibility and shape global views about the banking environment in Kenya.



Dr. Samuel Tiriongo
Director, KBA Centre for Research on Financial Markets and Policy®

Sponsor Acknowledgment

The International Union for Conservation of Nature (IUCN) (https://www.iucn.org/) is a membership Union that comprises of both government and civil society organizations. IUCN is an international organization working in the field of nature conservation and sustainable use of natural resources. It is involved in data gathering and analysis, research, field projects, advocacy and education. By harnessing the experience, resources and reach of its more than 1,400 Member organisations and the input of some 15,000 experts, IUCN is the global authority on the status of the natural world and the measures needed to safeguard it. With financial support from the Mitsubishi Corporation Fund for Europe and Africa (MCFEA) (https://www.mitsubishicorp.com/gb/en/csr/mcfea/), IUCN Eastern and Southern Africa Office (IUCN ESARO) is supporting countries to develop and implement sustainable finance initiatives in the region.

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Programme

DAY ONE:

WEDNESDAY 14th SEPTEMBER, 2022

8:30 – 8:40 am	Welcome Remarks – **Dr. Samuel Tiriongo, KBA**
8:40 – 8:50 am	Remarks by the CEO, KBA - **Dr. Habil Olaka**
8:50 – 9:00 am	Remarks - **Luther Anukur, IUCN ESARO Regional Director**
9:00 – 9:15 am	Remarks - **Chairman of the KBA Governing Council** **Mr. John Gachora, NCBA Group CEO**
9:15 – 9:35 am	Keynote Speech – **Dr. Julius Muia – Principal Secretary, National Treasury and Planning**
9:35 – 10:00 am	***Health Break and Photo Session***
10:00 – 11:00 am	***Risk-Based Credit Pricing in Kenya: The Role of Banks' Internal Factors*** **Presenters:** Hillary Mulindi, Kiplangat Josea, and Dr. Samuel Tiriongo (KBA) **Discussant:** Jared Osoro, FSDA
11:00 – 12:00 pm	***Fintech and Bank Stability in a Small-Open Economy Context: The Case of Kenya*** **Presenters:** Jared Osoro (FSDA) and Kiplangat Josea (KBA) **Discussant:** Dr. Samuel Tiriongo, KBA
12:00 – 1:00 pm	***Climate Change, Climate Policy Relevant Sectors and Banking Sector (In)Stability*** **Presenters:** Gillian Kimundi (Strathmore University) and Reuben Wambui (UNEP-FI) **Discussant:** Camilla Tallam
1:00 pm	Closing Remarks

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DAY TWO:
THURSDAY 15th SEPTEMBER,2022

8:30 – 8:40 am	Welcome Remarks – **Dr. Samuel Tiriongo, KBA**
8:40 – 9:40 am	***The Fintech Ecosystem and Effective Financial Inclusion: Evidence from Kenya*** **Presenters:** Prof. Kodongo Odongo (University of Witwatersrand) **Discussant:** Dr. Peter Wamalwa, CBK
9:40 – 10:40 pm	***Sustainable Financing, Climate Change Risks and Bank Stability in Kenya*** **Presenters:** Maureen Odongo, Dr. Roseline Misati, Caren Kageha, & Dr. Peter Wamalwa (CBK) **Discussant :** Reuben Muhindi (UNEP-FI)
10:40 – 11:00 am	***Health Break***
11:00 – 12:00 pm	***The Greening of Kenya's Banking Sector: - Macro-Financial Stability Implications of a Low Carbon Transition*** **Presenters:** Camilla Talam & Lucy Maru (KCB) **Discussants:** Nuru Mugambi, Andrew Young School of Public Policy – GSU, Sustainable Banking & Finance Network Secretariat Advisor. Prof. Kodongo Odongo (University of Witwatersrand).
12:00 – 1:00 pm	***The Effect of FinTech Innovation on Efficiency and Risk of the Banking Industry in Kenya (Methodological Paper).*** **Presenter:** Dr. Rogers Ochenge (Embu & Strathmore University) **Discussant:** Dr. Ferdinand Othieno (Strathmore University)
1:00 pm	Closing Remarks

DAY THREE:
FRIDAY 16th SEPTEMBER, 2022

8:30 – 8:35 am	Welcome Remarks – **Dr. Samuel Tiriongo, KBA**
8:35 – 9:35 am	***Bank Credit Portfolio Allocation in Pre and Post Covid Times, - The Power of Inherent Risks*** **Presenter:** David M. Ndwiga **Discussant:** Dr. Jackson Mdoe (Kenyatta University)
9:35 – 10:35 am	***Digital Financial Services Regulations: Their Evolution and Impact on Financial Inclusion in East Africa*** **Presenter:** Ronald Ochen & Enock Will Nsubuga Bulime (EPRC-Uganda) **Discussant:** Dr. Radha Upadhyaya (University of Nairobi)
10:35 – 10:55 am	***Health Break***
10:55 – 11:55 am	***Impact of COVID-19 Pandemic on Bank Lending - A Sectoral Analysis*** **Presenter:** Stephanie Kimani, NCBA Bank **Discussant:** Dr. Caroline Kariuki, Strathmore University
11:55 – 12:55 pm	***Legal & Regulatory Framework for Digital Financial Services in Kenya – A Case for Urgent Reforms (Framework Paper)*** **Presenter:** Jackson Macharia Githu (Equity Bank) **Discussant:** Dr. Samuel Tiriongo, KBA
12:55 pm	Closing Remarks by CEO, KBA – **Dr. Habil Olaka**

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OVERVIEW
OF THE CONFERENCE PAPERS

1. *Risk-Based Credit Pricing in Kenya: The Role of Banks' Internal Factors*

Authors: Hillary Mulindi, Kiplangat Josea, & Samuel Tiriongo, KBA

Globally, credit scoring adoption has been on the rise on account of increased access to data, computing power, and the need for efficient credit allocation that is supportive of entrenching financial inclusion and economic growth. Relatedly, the adoption of risk-based pricing has gained traction, and, in this paper, we use annual bank level and macroeconomic data spanning the period 2003-2021, to estimate a panel model assessing the drivers of price of credit. Credit pricing in Kenya is affected by the bank size, credit risk, and efficiency among others. In particular, the larger the size of the bank, the lower the price of credit. Overall, the results reveals that the implementation of risk-based pricing will be heterogenous and dependent on bank-specific characteristics and more importantly the macroeconomic environment, especially the business cycles,

2. *Fintech and Bank Stability in a Small-Open Economy Context: The Case of Kenya*

Authors: Jared Osoro (FSD-A) & Josea Kiplangat (KBA)

This paper seeks to examine the effect of Fintech credit on bank stability using an unbalanced panel dataset of 37 commercial banks in Kenya between 2013 and 2020. The recent evolution of Fintech comes with the promise of being both revolutionary and disruptive. The temptation of a unidirectional expectation that effects of Fintech will only be positive masks the potential destabilization effects, hence the motivation to examine possibility of its being a source of fragility in the banking sector in Kenya. We employed both static panel models and a dynamic panel of System Generalized Method of Moments (GMM) that lead us to the conclusion that Fintech credit has not occasioned concerns of market fragility. If anything, the empirical results reveal that the FinTech credit is associated with higher bank stability in the sense that FinTech intermediated credit is associated with a higher Z-score suggesting higher overall bank stability. The relationship is however nonlinear, with the squared term of the FinTech credit being negative and statistically significant. We infer that the influence of FinTech on bank stability is inverted "U" type relationship. Bank-specific factors such as equity to assets, asset quality and cost-to-income rations having a strong influence on bank stability. That is a pointer to the possibility of the current magnitude of Fintech credit – the possible conduit of instability – not being associated with fragility, with the likelihood of that changing as its share of bank assets grows with time.

OVERVIEW
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3. Climate Change, Climate Policy Relevant Sectors and Banking Sector (In)Stability

Authors: **Gillian Kimundi (Strathmore University) and Reuben Wambui (UNEP-FI)**

This paper examines the time-varying nexus between Climate Risk Drivers, Climate Policy Relevant Sectors (CPRSs) and Banking Sector Stability. Using quarterly output growth data from climate variables, 5 CPRSs and a banking stability index, we demystify which of and to what extent these sectors are granger-caused/predictable by physical climate risks and how this translates to Banking Sector Stability. We also gauge banks' vulnerability to transition risks via a similar sectoral channel by examining the response of the stability index to negative shocks on CPRS outputs. Evidence suggests that Agriculture is the sole channel of physical risk transmission, whereas the Manufacturing and Utilities sector are becoming increasingly critical/significant channels for transition risks. The results also show that during the COVID-19 period, all CPRSs have become increasingly linked to the banking sector, effectively strengthening the microeconomic transmission channel of climate risk drivers.

4. The Fintech Ecosystem and Effective Financial Inclusion: Evidence from Kenya

Authors: **Kodongo Odongo (University of Witwatersrand)**

We examine the effect of the fintech ecosystem on the utilization of formal financial services such as savings, credit and capital markets instruments in Kenya. We deploy Probit regression on data from FinAccess Survey for 2016 and 2021. Findings suggest that the fintech ecosystem facilitates credit evaluation and fosters credit use, offer financial products and services that better match users' needs hence fostering their usage of those services, but does not mitigate the distance barrier. Second, the probability of an individual enjoying fintech ecosystem services falls by at least 19% if the individual resides in Northern Kenya. Third, the fintech ecosystem increases the probability of usage of traditional services of financial institutions by at least 5.2%. Fourth, the financial inclusion gains of the fintech ecosystem are not uniform across all user categories. We recommend several policy actions such as improved provisioning of physical infrastructure in remote areas, fiscal policy incentives, and affirmative action on financial inclusion.

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5. *Sustainable Financing, Climate Change Risks and Bank Stability in Kenya*

Authors: **Maureen Odongo, Roseline Misati, Caren Kageha, and Peter Wamalwa (Central Bank of Kenya)**

This study analyses the impact of climate risk indicators on bank stability in Kenya based on descriptive and quantitative approaches on quarterly data covering thirty-five banks over the period 2009 to 2021. The analysis reveals a distinct warming trend, variable rainfall pattern and an increasing trend in greenhouse gas emissions especially in the agriculture and transport sectors. Banks' climate financing for sustainable projects remains low. Empirical findings using dynamic panel estimation reveals adverse impact of temperature changes and rainfall variability on bank stability and credit risk arising from non-performing loans. The stress testing results reveal vulnerability of the banking sector to climate change as the probability of defaulting increases in moderate, severe, and extreme temperature changes. The results affirm banks' important role in managing financial stability risks while providing sustainable climate financing and the need to strengthen synergies between private and public sustainable financing for target priority sectors.

6. *The Greening of Kenya's Banking Sector:- Macro-Financial Stability Implications of a Low Carbon Transition*

Authors: **Camilla Talam & Lucy Maru (KCB)**

Against the backdrop of climate-mitigation and green growth policies as well as regulations account for climate-related risks in the financial sector, this employs the Computable General Equilibrium model and Merton's Distance to Default model to study the implications of Kenya transitioning to a low carbon economy through introduction of a carbon tax on a carbon intensive sector. The study finds that a carbon tax would result in rise in general prices, and lower investment to GDP. These adverse effects are offset by a rise in real GDP and narrower fiscal and current account balances supported by a rise in government revenue and higher exports in low-carbon intensive sectors. A carbon tax policy would have adverse effects on firms in carbon intensive sectors, though the effects are varied which hedges the probability of default of a portfolio and allows for natural diversification to mitigate the adverse effects of such a policy for the banking sector. The tax may also increase resilience in low carbon intensive firms which a bank may have exposures to thus mitigating the environmental risks for these banks' exposures.

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7. *The Effect of FinTech Innovation on Efficiency and Risk of the Banking Industry in Kenya*.

Authors: **Rogers Ochenge (Embu & Strathmore University)**

Cognizant of the recent revolution in financial technology (FinTech), this paper explores the effect of FinTech development on bank risk-taking behavior in Kenya over the period 2008 to 2021. The study first develops a FinTech index using text mining technology and then relates this index to bank-risk taking in a dynamic panel regression model. The study uncovers the following empirical results: (i) The impact of FinTech on bank's risk-taking shows a "U" shape, first falling and then rising. That is, at early stage of development, FinTech reduces risk-taking, but as key technologies mature and FinTech companies directly compete with traditional commercial banks, FinTech exacerbates risk-taking. (ii) The impact of FinTech is heterogeneous across bank sizes. Specifically, large banks are more sensitive to changes in FinTech development compared to small and medium-sized banks.

8. *Bank Credit Portfolio Allocation in Pre and Post Covid Times, - The Power of Inherent Risks*

Authors: **David M. Ndwiga**

The study seeks to determine how the bank credit allocation has evolved in pre – covid, covid and post covid era amid uncertainties. Study focused on credit risk, liquidity risk, industry competition and operating efficiency for 2010 – 2021 period. Panel ARDL was applied for bank level data while sectoral level ARDL models were applied for sectoral analysis. The study found credit, liquidity, covid are all negatively related to bank credit allocation. In addition, interaction of covid with credit and liquidity risks reveal that the effect of liquidity risk is more pronounced. Recovery era simulation posits that personal household sector would register the highest allocation with real estate sector allocation being last. The study calls for more vigilance in the post pandemic times as credit risk is likely to reveal itself amid relaxation in loan reclassification. Further, a more proactive monetary policy is advocated for to address the liquidity distribution challenges.

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9. *Digital Financial Services Regulations: Their Evolution and Impact on Financial Inclusion in East Africa*

Authors: **Ronald Ochen & Enock Will Nsubuga Bulime (EPRC-Uganda)**

In this paper, we examine the evolution of digital financial services regulatory frameworks and their effects on financial inclusion and innovations in East Africa. Specifically, the study sought to answer the following research questions; what regulatory factors that drive or hinder digital financial usage in the face of the pandemic? How do digital financial services affect conventional banking services? And how did the COVID-19 policy responses on the digital payments space affect digital financial services and how has it influenced financial inclusion and innovations? The results obtained from a mixed methods approach reveals that there are still lapses in the National Payments Systems regulatory frameworks regarding consumer protection, differences in the duration for licensing, uneven and exorbitant legal fees for obtaining a license within the EAC. Moreover, applying panel data analysis techniques to annual data from 2007 to 2021, empirical results indicate that digital financial services is driven positively by the regulations, Covid-19 policy responses, and financial inclusion in the East African region. Overall, these results suggests that efforts towards enhancing financial inclusion are vital for advancing digital financial services as evidenced by a positive relationship with mobile money transactions.

10. *Impact of COVID-19 Pandemic on Bank Lending - A Sectoral Analysis*

Author: **Stephanie Kimani**

From a public health to economic crisis, the COVID-19 pandemic amplified the strengths, weaknesses, opportunities, and threats across various sectors. In light of the varying support from policymakers, the subsequent economic recovery has been uneven constituting a need to safeguard rebound prospects. To this end, developments in the banking sector have been of key interest given its

OVERVIEW
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primary role in financial intermediation and as the primary supplier of credit in the economy. This paper investigates the severity of the COVID-19 shock on the banking sector and subsequent implications on its financial intermediation role as a credit provider to various sectors in Kenya. As a result, it interrogates the drivers of credit supply to the private sector with specific focus on credit risk, bank stability and the COVID-19 pandemic itself. Moreover, the paper also examines the dynamics within the banking sector, especially growth in both traditional and nontraditional digital lending.

11. Legal & Regulatory Framework for Digital Financial Services in Kenya – A Case for Urgent Reforms

Authors: **Jackson Macharia Githu (Equity Bank)**

This paper reviews the legal and regulatory framework governing digital financial services in Kenya including some of the key unanswered questions by the current regulatory framework. In particular, the paper focusses on the question of the legal definition of the rapidly evolving payment services, the architecture of the regulatory framework of the digital financial services and the regulation of digital lenders. The paper identifies that there are risks and opportunities in the current regulatory framework and the regulatory regime should strike the required balance. Further, the paper posits that the current legal regime will need to be improved to respond to the rapid changes in the digital financial services. Overall, the paper makes suggestions on changes to the legal framework.

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