Impact of covid-19 pandemic on mobile money agents operating on Cairo road in Lusaka.

Singogo K.[1] and Dr. Mweshi G.K[2]
ZCAS University – Lusaka, Zambia

ABSTRACT: The World Health Organization (WHO) recommended utilizing mobile money to minimize the transmission of the COVID-19 virus through contactless and cashless activities wherever feasible. The Bank of Zambia (BOZ) responded on March 30, 2020, with mitigating measures that allowed for the use of mobile money services to mitigate the pandemic's negative economic. The regulations sparked complaints from mobile money agents, who claimed that the implementation had harmed their business operations. The major goals of this study were to determine the extent of the impact of COVID-19 pandemic on Cairo Road's mobile money agents. An empirical evaluation was used to assess the pandemic's impact on the agent's business, which addressed the research gaps that this study attempted to fill. A targeted group of 148 agents on Cairo Road was surveyed using an exploratory method and structured closed ended questions. Primary data was collected via a structured survey that included nominal scale yes or no check boxes and a mix of responses on a Likert 5-point scale. The Taro Yamane statistical approach was used to calculate the sample size of 107 agents and to draw generalized inferences and conclusions for this population. For the 40 research questions in the questionnaire, a reliability analysis was performed using the Statistical Package for Social Sciences (SPSS) Descriptive statistical analysis was used to produce more meaningful data. Inference statistical analysis used a research hypothesis to test data to reach conclusions about the variable associations. The study found that the COVID-19 epidemic had a negative impact on the operations of mobile money agents on Cairo Road, where business was better before the pandemic. The decrease in business performance is attributed to the reduction on fees which also reduced the sales revenue which sustains business operations. The availability of float did not boost the number of customer base as customer transactions depended on the availability of cash as well. Some customers would prefer to wait for the agent to find float by borrowing from another agent whereas others would go to transact with another agent. There was more savings than spending done due to the uncertainties during the pandemic.

I. INTRODUCTION

Mobile Network Operators (MNOs) mobile money agents operating on Lusaka's Cairo Road play an important role in facilitating bill or utility payments, customer registration, and the exchange of mobile money on phone for cash in and cash out operations, as well as earning commission for these services. Mobile money is a digital framework that enables the storing and transfer of electronic currency across mobile devices and on mobile phones (Parekh & Hare, 2020). Zambia was the first country to provide mobile money services in 2002. Currently, MTN MoMo, Airtel Mobile Money, and ZAMTEL Kwacha are three mobile money mobile schemes that have significant ties with regulated commercial banks, microfinance, government, financial technology businesses, local markets, other institutions, and stakeholders. As a result of the global pandemic caused by COVID-19, World Health Organization (WHO) recommended utilizing mobile money to reduce the transmission of the COVID-19 virus through contactless and cashless activities (Aji, et al., 2020). The Bank of Zambia responded on March 30, 2020, with directives that encouraged the use of mobile money services to mitigate the pandemic's negative economic effects. The mitigating measures caused a lot of concerns among mobile money agents since it had an impact on operations during the COVID-19 outbreak. This study looked into the opportunities and risks that the COVID-19 outbreak posed to mobile money agents operating on Lusaka's Cairo Road.

II. BACKGROUND

The first human case of COVID-19 caused by the SARS-COV-2 was reported in December 2019 by officials in Wuhan City, China. Environmental samples taken from the city's Huanan wholesale seafood market suggested that Wuhan City was the source of this outbreak (World Health Organization, 2020). On March 18th, 2020 Zambia's first COVID-19 case was reported (Phiri, 2020). As a result of the pandemic effects of COVID-19, the World Health Organisation (WHO) suggested using mobile money as a safer option where possible to limit the spread of the virus through contactless and cashless activities (Aji, et al., 2020). The Bank of Zambia followed the WHO mitigation measures to reduce mobile money transaction fees and increase transaction per individual

from 10,000 USD$546 to USD$$1,093 (Bank of Zambia, 2020). Countries that ended fee waivers witnessed a rise in sales as per MTN Group reported 24.5% in Southern and East Africa which included Zambia. Similarly, Airtel also noted that revenue grew by 47 % mainly Zambia, Tanzania, Uganda and Malawi (GSMA, 2021). Pre-COVID-19 pandemic, Bank of Zambia recorded statistics that showed 4.3million active accounts in Zambia (Mwansa, 2020). During COVID-19 pandemic, it reported mobile money transactional value that soared by 16% (Phiri, 2020). According to central bank's statistics, the number of active accounts increased by 30% and active agents increased by 10% (FSDZambia, 2021). However, mitigation measure also posed a risk to the sustainability of agents' business who depended primarily on this transaction revenue to sustain business operations. Other factors that impended the growth of mobile money services in Zambia were limited liquidity and customer income (Chipa & Mwanza, 2021).

Research problem : The COVID-19 pandemic affected cash-in and cash-out mobile money agents' business which decreased in revenue and customers. From the population of 148, about 37 mobile money agents closed their business operations along Cairo Road during the pandemic as a result of no physical contact, closures and lockdowns and less activity. Concerns that the SARS-COV2 was spread through contact with physical cash affected the agents' transactions which relies on the exchange of physical cash for deposits and withdrawals. Whilst the COVID-19 epidemic business impact is known, the extent to which it affected mobile money agents' business operations on Cairo Road is unknown as no studies have been done to ascertain this. Hence the motivation for this study.

Research objectives
(i) To examine the extent that COVID-19 impacted mobile money agents on Cairo Road.
(ii) To investigate agent float and liquidity on the performance of mobile money agents' operations.
(iii) To evaluate the Bank of Zambia mitigation measures impact on mobile money agents on Cairo Road.
(iv) To examine the impact of Bank of Zambia mitigation measures on mobile money agents' Customers on Cairo Road.

Research questions
(i) What impact did the Bank of Zambia mitigation measures have on mobile money agents on Lusaka's Cairo Road?
(ii) What impact did the COVID-19 pandemic have on mobile money agents on Lusaka's Cairo Road?
(iii) What impact did the Bank of Zambia mitigation measure have on mobile money agent's Customers on Cairo Road?
(iv) How did the agent float and liquidity affect the performance of mobile money agents' operations on Lusaka's Cairo Road?

III.   LITERATURE REVIEW

Mobile Money increase in Sub-Saharan during COVID-19 Pandemic : Because of the rising number of user accounts in Sub-Saharan Africa, including Zambia, mobile money usage has surged. During the epidemic, mobile money users traded USD$490 billion, according to Zandt (2021). Forbes (2021) also stated that mobile money reached nearly USD$500 billion which accounted for 43% of new accounts following-on from the socio-economic challenges arising from the pandemic. Sub-Saharan Africa increased by 18% with transactions totaling USD$27.4 billion. According to Holtz (2021), by the end of 2020, Sub-Saharan Africa would account for 64% of global transacted value, with USD$490 billion in transaction value and a 24% increase in active agents (FinDev, 2020).

Bank of Zambia Regulatory Measures Response to COVID-19 Pandemic : According to Andersson-Manjang et al. (2020), various mitigation measures where implemented to help mobile money agents to continue business operations which reported significant growth and expansion during the pandemic. Regulation inventions provided temporary relief and reduced the potential of the virus spreading through less physical contact (Kipkemboi, et al., 2021). Measures taken by the Bank of Zambia included: Account registration flexibility for Know Your Customer (KYC): More consumers were able to make remote payments.

Regulatory Mitigation Measures effects on Mobile Money Agents : Lowering the barriers by Bank of Zambia allowed more people to register with ease (Gelb, et al., 2020). According to FSD (2021), the bank reported the increase in the number of active mobile money agents, subscribers, active accounts and transactions. In a similar case in Senegal, taxis drivers switched to mobile money to avoid contamination and business doubled on the streets since COVID-19 hit (Peyton, 2020).

According to the findings of a global survey performed by Bazarbash, et. al (2020), several concerns concerning cash handling were highlighted among mobile money agents as a result of the mitigating measures employed. Customers loaded accounts with cash deposits, which provided a significant danger and exposure to COVID-19, adding to the difficulty of mobile payments in combatting the virus (FSD Zambia, 2021). Float and liquidity difficulties, where agents did not have enough cash to complete deals or ran out of currency and were unable to function, were the most commonly mentioned obstacle in another poll (GSMA Intelligence, 2021). Regulations may have had a beneficial or negative influence on agents, causing considerable increase or loss of transaction values, company expansion or closure in Zambia (Ojong & Asongu, 2021). However, there is no way of knowing what effect it will have on brokers trading on Cairo Road in Lusaka. Due to a lack of understanding on the problem, the research was necessary to bridge the gap between the limited knowledge on Pandemic of COVID-19 impacts on mobile money agents' business performance. The findings of the study will be important in creating policy regarding mobile money agents and revising existing regulation to enable MNOs function more efficiently and create more resilient systems. This research will add to the corpus of knowledge and lay the groundwork for future studies.

IV. CONCEPTUAL FRAMEWORK

The independent variable impacts the dependent variable. As a result, the antecedent (cause) is the independent variable, while the dependent variable is the result (effect). The relationship between these variables is influenced by intervening factors (Abiodun-Oyebanji, 2017). According to Figure below, this research examined the effects of the COVID-19 epidemic (independent variable) on the agents who work with mobile money (dependent variable). Regulations, float and liquidity, customers, and income are the connecting variables which will help establish between the relathiosnhip between COVID-19 pandemic and mobile money agents on Cairo road.
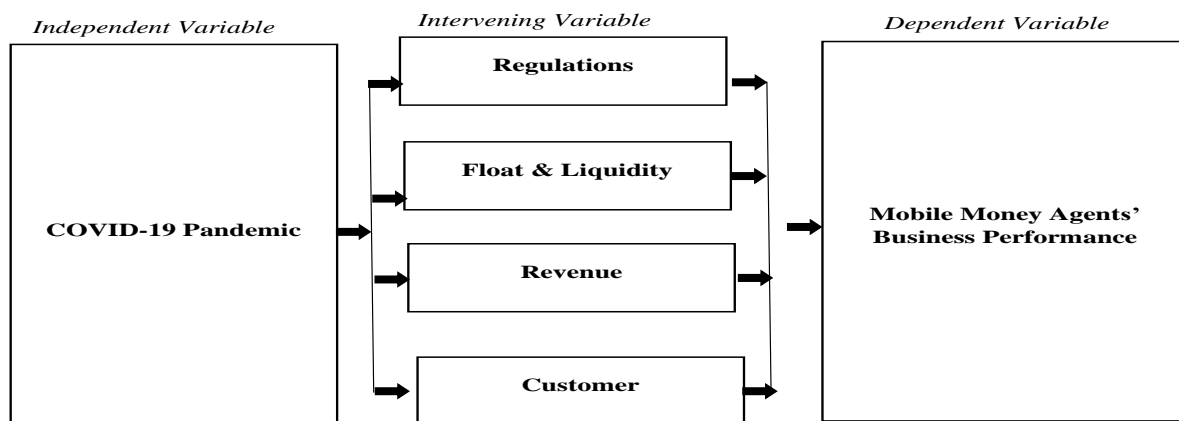

Figure: Conceptual Framework

V. THEORETICAL FRAMEWORK

Theory of Regulation : Stigler's Theory of Economic Regulation, according to Lodge et al (2016), posits that regulations exist to help or harm the general public by resolving market failures. According to Stigler, regulations are put in place to safeguard and benefit consumers, and regulations that harm recipients are tied to a societal aim or a perversion of regulatory philosophy. The industry's private interests are served by regulation (Peltzman, 2021). Posner, on the other hand, believes that much regulation is meant exclusively to benefit that business (Carrigan & Coglianese, 2016). This study is supported by this theory based on this idea to determine if the regulation would benefit or hinder the agents' business on Cairo Road in Lusaka, or whether it will suit the bank's private interests.

Sampling Methods and Sampling Techniques : This study employed stratified (probability) sampling to ensure that each participant from a subgroup had chance of being selected, equally, as well as randomly sample based on willingness and availability to participate (Barratt 2009). MTN, Airtel, ZAMTEL, and Multi-MNO-Booth were separated into subgroups for each participant. Participants were picked at random based on their proportion to the size of the group (Hillson, et al., 2015). Agents, according to FSD Zambia (2019), work ten hours a day and are based on float and liquidity availability. Because the chosen individuals may not be representative of the other features, this sort of study sampling is prone to bias (Shantikumar, 2018).

This study followed an exploratary research design which used a closed-ended survey to obtain quantitative data views of mobile money agents' performance of the business during COVID-19 contagion. This type of research is an exploratory research design as there is no design of this type of study done before and findings from this study can be used for further development research (Bosu, 2018). The use of questionnaire permitted the researcher to gain more insight about the variables in one time and whilst data was collected about real world environment (Davison, 2022). This study's sampling frame was collected from a targeted demographic of 148 Mobile Network Operator mobile money agents that conduct business on Cairo Road in Lusaka, Zambia. To make inferences and findings that were generalized to this group, the sample size of 107 calculated using Taro Yamane's statistical approach as follows (Project Writers, 2015).

Data collection : The primary data collected used a delivery and collection questionnaire containing closed-ended questions, nominal scale yes or no check items (Dalati, 2018), and a mix of responses grouped in a Likert 5-point scale with response anchors; a middle (neutral), one side positive, and the other side negative (Joshi & Pal, 2015). The participants' work of filling out the structured questions was also made easier and faster as a result of this. The organized closed-end questions also help to ensure consistency in the participants' replies, as well as data that is simple to tabulate and analyse (Acharya & Bhaktapur, 2010).

Data Processing and analysis : Data gathered was inputted, analysed and processed using Statistical Package for Social Sciences (SPSS). This program for data entry and statistical analysis was used because it is capable of performing all the analysis covered in this quantitative data research (Ayynar & Nagaiah, 2016). Charts, graphs and tables were used to represent the gathered information. This research used descriptive statistical analysis on raw data to summarise it in a more meaningful way and inference statistical analysis on research hypothesis test data, reach conclusion on a sample about the relationships between variables and apply the entire data findings (Brooks, 2020).

Reliability research findings : The reliability of research refers to measure that supplies results that are consistent, stable, and repeatable under identical conditions but different circumstances (Taherdoost, 2016). This research study conducted a reliability test to indicate the research tool extent that is bias or error free. Reliability analysis was conducted using the SPSS for 40 research questions used in the questionnaire giving the Cronbach scale of 0.791.

CORRELATION BETWEEN TWO VARIABLES : This study sort to find out correlation between variables which tests the relation between these variables (Bhandari, 2022). According to Garth & Hallam (2008), Spearman correlation is used for nonparametric data such as scores, Likert scales etc. Correlation coefficient has a value +1 through to 0 to -1. The value greater than 0 indicates a positive correlation whereas if one value increases and the other decreased and is less than 0 indicates a negative correlation (Thebmj, 2022). Table below shows each variable has a correlation coefficient less than +1 which indicates that the strong link among the variables is showing strong correlation which proves that COVID-19 affected the outcome of mobile money agents' business. This is empirically proven. A significance level observed for variable with a value less than 0.05 is considered significant. The model has a statistical significance in forecasting how regulations affected mobile money agents' business during COVID-19 (Garth & Hallam, 2008).

Correlation between two variables

			COVID29 pandemic caused an increase in sales revenue income	(i) Regulations has a positive impact on business performance overall	(ii) Regulations caused an increase on business performance	(iii) Regulations caused an increase in sales revenue	(iv) Lack of float resulted in business operation closure	(v) Lack of float did not affect business operations as mobile money agents could borrow from other agents to continue operating
Spearman's rho	COVID29 pandemic caused an increase in sales revenue income	Correlation Coefficient	1.000	.169	.381**	.366**	.148	-.067
		Sig. (2-tailed)		.082	.000	.000	.127	.494
		N	107	107	107	107	107	107

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Chi-Square Test : According to South Hampton University (2022), the Chi-Square test is used for comparison between observed and expected results to determine if there is a difference between this data due to chance or association between two definite variables.

Chi-Square Test / Independent and Dependent Variables

Independent Variable	Dependent Variable
COVID-19 Pandemic	Mobile money agents' business performance
Questions related to variables	
COVID-19 pandemic caused an increase in sales revenue (income)	Regulations has a positive impact on business performance overall

Table below shows p-value (Asymptotic Significance) is equal to .029. $p < 0.05$, we can state that the relationship is significant between the two variables (South Hampton University, 2022). This means that the connection between regulation had a positive impact on the results of business overall during the COVID-19 pandemic.

Chi-Square Tests significant relation between two variables

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.314[a]	16	.029
Likelihood Ratio	28.365	16	.029
Linear-by-Linear Association	4.106	1	.043
N of Valid Cases	107		

Summary of Findings : The objectives of this research were to measure Bank of Zambia mitigation measures and examine COVID-19 impact on mobile money agents, and investigate agent float and its impact on Customers on Cairo Road. Studies were conducted through a digital survey distributed to the agents. A sample size of 107 out of 148 targeted agent population was used. This sample included males and females, aged between 16 and 55+ years, and earning a monthly revenue between ZMW0 and ZMW20,000+. Data gathered was analysed in SPSS and presented in Tables, Graphs and Charts. It was deduced from the findings that there was a negative impact of the regulations on mobile money agents' business during COVID-19 pandemic. COVID-19 epidemic negatively impacted operations as agents expressed that business was better before the pandemic hit. Agents stated that there was no real effect on availability of float and effect on customers, and customers savings increased and spending decreased during the pandemic.

RO1 Measure the impact of the Bank of Zambia (BOZ) mitigation measures on mobile money agents on Cairo Road : According Bazarbash et al. (2020), global survey reported that mobile money agents were not affected by the pandemic. From the findings, the study determined that agents 50.5% admitted that they were aware of the regulations by Bank of Zambia. Agents 8.4% strongly disagreed and 31.8% disagreed that regulations had a positive impact on business operations overall and agents 11.2% strongly disagreed and 29% disagreed that regulation caused an increase on business performance during COVID-19 pandemic.

RO2 Investigate agent float and its impact on Customers on Cairo Road : The most reported challenge was float and liquidity issues where agents did not have enough cash to perform transactions or ran out of cash and could not operate (GSMA Intelligence, 2021). From the findings in this research study, it was determined that agents 32.7% agreed and 6.5% strongly agreed that there was an impact of COVID-19 on float whereas agents.

Agents 40.2% approved that the float availability resulted in extending trading hours however agents 54.2% disagreed that lack of float resulted in business operation closure. Instead, majority of agents 38.3% strongly agreed and 44.9% agreed that lack of float did not affect operations as mobile money agents could borrow from other agents to continue operating. Most agents 42.1% remained neutral about the availability of float caused an increase in customers.

RO3 Examine to what extent the COVID-19 impacted mobile money agents on Cairo Road : During COVID-19 outbreak Bank of Zambia reported mobile money transactional volumes 16% that had soared since Zambia announced the first case of COVID-19 on 18th March 2020 (Phiri, 2020). According to Bank of Zambia figures, the number of active mobile money agents increased by 10%, and mobile money accounts increased by 30% (FSDZambia, 2021). From the findings in this study, the agents 44.9% disagreed that COVID-19 caused an increase in sales revenue. Agents 35.5% disagree and 12.2% strongly disagree that the sales revenue during COVID-19 outbreak was the same as before the pandemic. Majority of agents 39.3% agree and 15% strongly agree that customer spending decreased during COVID-19 outbreak and agents 34.6% agree and 28% strongly agree that customers save more through mobile money during the COVID-19 pandemic.

VI.   CONCLUSION

The COVID-19 outbreak had a negative impact on mobile money agents' business operations on Cairo Road where business was better before the pandemic hit. There is a need for Mobile Network Operators to revisit the agents to develop measures aimed at assisting in increasing the business operations and performance. The decrease in business performance is attributed to the reduction on fees which also reduced the sales revenue which sustains business operations. It was also observed that there are mushrooming agents' booths which are placed in close proximity to each other that increased competition. The availability of float did not increase customer base as customer transactions depended on the availability of cash as well. Some customers would prefer to wait for the agent to find float by borrowing from another agent whereas others would go to transact with another agent. There was more savings than spending done due to the uncertainties during the pandemic.

REFERENCES

1.   Abiodun-Oyebanji, O. J., 2017. *Research Variables: Types, Uses and Definition of Terms.* Ibaden: His Lineage Publishing House.
2.   Acharya, B. & Bhaktapur, S., 2010. *Questionnaire Design.* [Online] Available at: http://www.saciwaters.org/CB/IFRM/IFRM/IV.%20Literature/Module%206_Qualitative%20Research%20Methods/6.4%20Questionnaire%20Design_Acharya%20Bidhan.pdf [Accessed 15 02 2022].
3.   Ayynar, K. & Nagaiah, M., 2016. *Software for Data Analysis in SPSS On over view.* [Online] Available at: https://www.researchgate.net/publication/348740813_ Software_for_ Data_Analysis_in_SPSS_On_over_view#:~:text=SPSS%20is%20a%20Windows%20based,the%20text%20and%20much%20more.[Accessed 20 02 2022].
4.   Bank of Zambia, 2020. *Measures to Mitigate the impact of the COVID-19 Pandemic.* [Online] Available at: https://www.boz.zm/Press_statement_measures_covid19.pdf [Accessed 23 02 2022].
5.   Bank Of Zambia, 2020. *Press Statement: Measures to mitigate the impact of COVID-19 pandemic.* [Online] Available at: https://www.boz.zm/Pressstatement_measures_in_response_ to_ deteriorating_macroecomic_environment.pdf [Accessed 10 10 2021].
6.   Bazarbash, M. et al., 2020. *Mobile Money in the COVID-19 Pandemic.* [Online] Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/03/GSMA_Assessing-mobile-money-consumer-trends-in-the-wake-of-the-COVID-19-pandemic-2.pdf [Accessed 07 10 2021].
7.   Bhandari, P., 2022. *Independent vs. Dependent Variables | Definition & Examples.* [Online] Available at: https://www.scribbr.com/methodology/independent-and-dependent-variables/ [Accessed 14 03 2022].
8.   Biallas, M., Fook, A. & Oulai, R. A., 2016. *IFC Mobile Money Scoping.* [Online] Available at: https://www.ifc.org/wps/wcm/connect/5de08dad-f26a-4cd6-a208-cc8b0b7066d2/Zambia+Market+Scoping+Report.pdf?MOD=AJPERES&CVID=mCsTdKl [Accessed 22 02 2022].
9.   Biallas, M., Fook, A. & Oulai, R. A., 2016. *IFC Mobile Money Scoping.* [Online] Available at: https://www.ifc.org/wps/wcm/connect/5de08dad-f26a-4cd6-a208-cc8b0b7066d2/Zambia+Market+Scoping+Report.pdf?MOD=AJPERES&CVID=mCsTdKl [Accessed 18 02 2022].

10. Bosu, T., 2018. *Rsearch adnd design methodology.* [Online] Available at: https://www.researchgate.net/publication/329715052_CHAPTER_FIVE_RESEARCH_DESIGN_AND_METHODOLOGY_51_Introduction_Citation_Lelissa_TB_2018_Research_Methodology_University_of_South_Africa_PHD_Thesis [Accessed 22 02 2022].

11. Brooks, C., 2020. *What Is Statistical Analysis?.* [Online] Available at: https://www.businessnewsdaily.com/6000-statistical-analysis.html [Accessed 20 02 2022].

12. Carrigan, C. & Coglianese, C., 2016. Capturing Regulatory Reality: Stigler's The Theory of Economic Regulation. *U of Penn, Inst for Law & Econ Research Paper,* 04 07.16(15).

13. Carrigan, C. & Coglianese, C., 2016. George J. Stigler, "The Theory of Economic Regulation". *The*

14. Chikumbi, C. L., 2019. *The unheard cry of a female mobile money agent in Zambia.* [Online] Available at: https://www.fsdzambia.org/the-unheard-cry-of-a-female-mobile-money-agent-in-zambia/ [Accessed 22 02 2022].

15. Chipa, N. & Mwanza, G., 2021. Factors Impeding Mobile Money Expansion in Zambia. *International Journal of Engineering and Management Research,* 02.11(1).

16. Dalati, S., 2018. Measurement and Measurement Scales. *ResearchGate,* 03.pp. 79-96.

17. Davison, R. M., 2018-2022. *Chapter Three: Research Methodology.* [Online] Available at: http://www.is.cityu.edu.hk/staff/isrobert/phd/ch3.pdf [Accessed 11 11 2021].

18. FinDev, 2020. *The Resilience of Mobile Money in Sub-Saharan Africa: How industry and regulators together kept mobile money growing despite the COVID-19 pandemic.* [Online] Available at: https://www.findevgateway.org/blog/2021/08/resilience-mobile-money-sub-saharan-africa [Accessed 10 10 2021].

19. fsdzambia, 2021. *The COVID-19 Era – A Tipping Point Enhancer for Mobile Money.* [Online] Available at: https://www.fsdzambia.org/the-covid-19-era-a-tipping-point-enhancer-for-mobile-money/ [Accessed 10 10 2021].

20. Garth, A. & Hallam, S., 2008. *Analysing data using SPSS.* [Online] Available at: https://students.shu.ac.uk /lits/it/documents/pdf/analysing_data_using_spss.pdf [Accessed 01 03 2022].

21. Gelb, A., Mukherjee , . A. & Navis, K., 2020. *Center for Global Development.* [Online] Available at: Citizens and States: How Can Digital ID and Payments Improve State Capacity and Effectiveness? [Accessed 10 10 2021].

22. GSMA Intelligence, 2021. *Intelligence Brief: Can mobile money cash in on the impact of Covid-19?.* [Online] Available at: https://www.mobileworldlive.com/blog/intelligence-brief-can-mobile-money-cash-in-on-the-impact-of-covid-19/ [Accessed 10 10 2021].

23. GSMA, 2010. *Mobile Money for the Unbanked.* [Online] Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/06/mobilemoney definitionsnomarks56.pdf [Accessed 10 10 2021].

24. GSMA, 2021. *State of the Industry Report on Mobile Money.* [Online] Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.gsma.com%2Fmobilefordevelopment%2Fwp-content%2Fuploads%2F2021%2F03%2FGSMA_State-of-the-Industry-Report-on-Mobile-Money-2021_Full-report.pdf&clen=15516079&chunk=true [Accessed 08 02 2022].

25. Hillson, R. et al., 2015. Stratified Sampling of Neighborhood Sections for Population Estimation: A Case Study of Bo City, Sierra Leone. *PLos ONE,* Volume 15, p. 07.

26. Holtz, L., 2021. *Mobile money dominates fintech investment in Africa.* [Online] Available at: https://www.brookings.edu/blog/africa-in-focus/2021/09/30/mobile-money-dominates-fintech-investment-in-africa/ [Accessed 23 01 2022].

27. Joshi, A. & Pal, D. K., 2015. Likert Scale: Explored and Explained. *Current Journal of Applied Science and Technology ,* 7(4), pp. 396-403.

28. Kabala, E. et al., 2018. An Ethnological Analysis of the Influence of Mobile Money on An Ethnological Analysis of the Influence of Mobile Money on Financial Inclusion: The Case of Urban Zambia. *Zambia Social Science Journal,* 7(4), pp. 53-76.

29. Kipkemboi, K., Muthiora, B. & Farooq, S., 2021. *The Impact of COVID-19 Regulatory Measures on Mobile Money Services,* London: GSMA.

30. Lim, J. N. et al., 2021. Assessing the generalisability of a multicentre qualitative dementia research: the experience and challenges faced by the MinD project in Europe [version 2; review: 2 approved]. *Open Research Europe,* 10 11.1(64).

31. Lodge, M., Page, E. C. & Balla, S. J., 2016. *George J. Stigler, "The Theory of Economic Regulation".* [Online] Available at: https://www.oxfordhandbooks.com/view/10.1093

32. Mwansa, R., 2020. *Investigating consumer preference and usage of mobile money services in Zambia.* [Online] Available at: http://155.0.3.194:8080/jspui/bitstream/123456789/611/1/ INVESTIGATING%20CONSUMER%20PREFERENCE%20AND%20USAGE%20OF%20MOBILE% 20MONEY%20SERVICES%20IN%20ZAMBIA.pdf [Accessed 23 02 2022].

33. News, T. G., 2021. *Mobile Money in Africa: Sub-Saharan Africa's Rise.* [Online] Available at: https://www.borgenmagazine.com/mobile-money-in-africa/ [Accessed 23 01 2022].

34. Ojong, N. & Asongu, S., 2021. *COVID-19 Global Pandemic, Financial Development and Financial Inclusion.* [Online] Available at: https://mpra.ub.uni-muenchen.de/111560/1/MPRA _paper_111560.pdf [Accessed 22 02 2022].

35. Parekh, N. & Hare, A., 2020. *The rise of mobile money in sub-Saharan Africa: Has this digital technology lived up to its promises?.* [Online] Available at: https://www.povertyactionlab.org/ blog/10-22-20/rise-mobile-money-sub-saharan-africa-has-digital-technology-lived-its-promises [Accessed 23 01 2022].

36. Parker, J., 2010. *Theories of Consumption and Saving.* [Online] Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.reed.edu%2 Feconomics%2Fparker%2Fs11%2F314%2Fbook%2FCh16.pdf&clen=182487&chunk=true [Accessed 08 02 2022].

37. Peltzman, S., 2021. *Stigler's Theory of Economic Regulation After Fifty Years.* [Online] Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3785342 [Accessed 11 11 2021].

38. Peyton, N., 2020. *Coronavirus seen as trigger for mobile money growth in West Africa.* [Online] Available at: https://news.trust.org/item/20200401103954-g3mju [Accessed 10 10 2021].

39. Phiri, P., 2020. *Mobile Money Shields Some Zambians from Coronavirus, Endangers Others.* [Online] Available at: https://globalpressjournal.com/africa/zambia/mobile-money-offers-coronavirus-protection-endangers-others/ [Accessed 23 02 2022].

40. Posner, R. A., 1974. Theories of Economic Regulation. *The Bell Journal of Economics and Management Science,* 5(2), pp. 335-358.

41. Prochaska, F., 2012. *Quantitative Statistics: Chi-Square.* [Online] Available at: https://www.sjsu.edu/people/fred.prochaska/courses/ScWk242Spring2013/s1/Session-7-Slides---Descriptive-Statistics---Chi-Square.pdf [Accessed 16 03 2022].

42. Project Writers, 2015. *How to determine a reliable sample size for your research work.* [Online] Available at: https://www.projectclue.com/view-blog/how-to-determine-a-reliable-sample-size-for-your-research-work [Accessed 11 11 2021].

43. Shantikumar, S., 2018. *Methods of sampling from a population.* [Online] Available at: https://www.healthknowledge.org.uk/public-health-textbook/research-methods/1a-epidemiology/methods-of-sampling-population [Accessed 20 02 2022].

44. Shapshak, T., 2021. *Mobile Money In Africa Reaches Nearly $500bn During Pandemic.* [Online] Available at: https://www.forbes.com/sites/tobyshapshak/2021/05/19/mobile-money-in-africa-reaches-nearly-500bn-during-pandemic/?sh=6d36a3493c37 [Accessed 23 01 2022].

45. Taherdoost, H., 2016. Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research. *SSRN Electronic Journal,* 5(3), pp. 28-36.

46. Thebmj, 2022. *Correlation and regression.* [Online] Available at: https://www.bmj.com/about-bmj/resources-readers/publications/statistics-square-one/11-correlation-and-regression [Accessed 14 03 2022].

47. World Health Organization, 2020. *Coronavirus disease 2019 (COVID-19) Situation Report – 94,* s.l.: World Health Organization.

48. Zandt, F., 2021. *Where is 'mobile money' being used the most?.* [Online] Available at: https://www.weforum.org/agenda/2021/09/mobile-money-africa-prevalence-economics-technology/#:~:text=The%20sub%2DSaharan%20section%20of,value%20of%20roughly%20%2415%20 billion. [Accessed 23 01 2022].