**EFFECTS OF LIQUIDITY ON FINANCIAL PERFOMANCE OF MICROFINANCE INSTITUTIONS IN MOMBASA TOWN, KENYA**

# ABSTRACT

*Microfinance institutions have encountered with the difficulty of how to determine the optimum point or the level at which they can maintain its liquidity in order to optimize its profitability. The difficulty becomes more distinct as good numbers of institutions especially microfinance institutions are occupied with profit maximization and as such they incline to disregard the importance of liquidity management. Towards this end, the study tried to establish the effect of liquidity on the financial performance of microfinance institutions in Mombasa town, Kenya. The study embraced descriptive research design. A regression model was used to determine the relationship between the financial performance and independent variables which included debtors, creditors and cash flow. The results indicated that the relationship between liquidity and financial performance is strong with an adjusted R2 of 54%. The study concluded that liquidity management is a major contributor of the microfinance financial performance. Nevertheless, it is significant for a firm to understand the effect of liquidity components on the microfinances financial performance and also commence deliberate measures to augment its liquidity level. The study also recommends a further study on the role of liquidity on a microfinance financial performance by incorporating more liquidity variables.*

*Introduction*

**Background of Study**

Liquidity management of the microfinance is negatively related to the financial performance of financial institutions that was evidenced during the global COVID-19 that hit the economy including microfinance institutions (Ware, E. O. 2015). The study also found out that COVID effect was very severe on the stock market as stocks shed prices affecting many economies facing huge financial blows resulting to foreclosures, auctioning of houses and severe unemployment.

According to Choo, P. S. (2018) when a micro finance has destitute liquidity management, it possesses a major liquidity limit which negatively affects their profitability. Therefore, if liquidity management is not managed orderly it may lead to poor liquidity costs in microfinance institutions. Hereafter, microfinance face the dilemma on how to categorize the level which it can maintain its assets in order to maximize profitability needs of investors because every liquidity has a diverse impact on the growth level. The encounter is there when microfinance tend to quintessence on profit maximization ignoring liquidity management however liquidity can lead to insolvency (Talaso, P. L. 2018).

The COVID19 brought financial crisis in microfinance since 2020 emphasized the role of liquidity management to microfinance institutions in that very liquid assets have low risk they impose holding opportunity cost to microfinance and low returns thus microfinance managers should trade off risk and return on liquidity (Sheikhdon, A. A., & Kavale, S. 2016). In situations where there is no regulations microfinance are expected to hold liquid assets to that extend that they help to exploiting the microfinances financial performance. Business leaders thus have an choice to require holding of liquid assets in large amounts to progress the stability of overall financial systems (Musembi, D. M. 2018)

**Statement of the Problem**

Liquidity management is significant as it reviews the capability of a firm to be able to change its assets to cash easily making the organization to have ready cash flow to facilitate its operations and its going concern. Microfinance institutions sustained the minimum statutory liquidity requirements of 20% by having a general liquidity ratio of 38.30% as at the end of 2019 despite the fact that some microfinance institutions had a pretax profit of 28.482 million as the best performer and while others has a loss of 2.889 million as the worst performance.

Thus, the study examined the effect of liquidity and financial performance of microfinance institutions in Mombasa town, Kenya, as demonstrated from CBK (Bank supervision Annual Report 2021 -2024) where there is a decline of the proportion of profitability from 3% in 2021 and 202022 to 2% in 2023 and 1% in 202024 which depicts that the microfinances institutions are not efficient in utilizing their resources. Hence, the current study intended to establish why there is a declining performance of microfinance institutions.

At the end of the financial year 2021, out of thirteen microfinance institutions, five made profits after tax and eight made losses which are more than a half. Microfinance institutions offer credit facilities to its clients from deposits made by clients and most financial operations are carried out through the deposits thus in situations where majority of depositors make massive withdrawals the bank will face liquidity management trap that may lead to borrowing among microfinance institutions which has higher costs. Due to these problems microfinance institutions tend to maintain more cash that incur high holding costs in maintaining statutory reserves not less than statutory minimum (Musyoka, B. K. 2017). Additional research have been done in respect to liquidity management on financial performance in microfinance institutions. Mucheru, E., & Shukla, J. (2017) studied on result of liquidity on the financial performance of Kenyan microfinance institutions. The study adopted a sample design limitations as secondary data of only 38 microfinance institutions was available and the quality of results depends upon the available data. The current study used primary data to provide detailed narrative on the independent variables and secondary data on dependent variable of microfinance institutions. Bwoma, G. N., Muturi, W. M., & Mogwambo, V. A. (2017) studied the outcome of liquidity management on financial performance among Kenyan microfinance institutions in Kenya. The study used cross sectional design which is prone to confounding bias and the study suffered from sample design limitations as it was undertaken on microfinance institutions within five best performing counties. In addition, regulation of microfinance institutions is different from regulation of the commercial banks. No study has been done comprehensively in respect to microfinance institutions pertaining to liquidity management on declining financial performance in Kenya despite their constant high liquidity ratio more than the minimum statutory requirement of 20% as Kenya Women Microfinance Bank had a liquidity ratio of 28% with a net profit after tax of 224 million whereas Rafiki Microfinance institutions had a liquidity ratio of 12% with a net loss of 298 million which highlights that microfinance institutions have a problem with liquidity management.

**General objectives of the Study**

The main objective of this research was to find out how liquidity affects the financial performance of microfinance institutions.

**Specific objectives**

1. To determine the effects of debtors on financial performance of microfinance institutions.
2. To determine the effects of creditors on financial performance of microfinance institutions.
3. To determine the effects cash flow on financial performance of microfinance institutions.

**Research Hypotheses**

1. H01: There is no effect of debtors on the financial performance of microfinance institutions?
2. H02: There is no effect of the creditors on the financial performance of microfinance institutions?
3. H03: There is no effect of cash flow on the financial performance of microfinance institutions?

## Fig 1 : The Conceptual Framework

**Independent Variable Dependent Variable**

* Debtors

Financial Performance - Profitability

* Creditors
* Cash flows

**Theoretical Review**

**Pecking Order Theory**

According to Ramamoorti, S., Epstein, B. J., Dorrell, D. D., &Varadarajan, V. (2017) pecking order theory can be related with Myers (1994) whom said that businesses often finance their desires in a systematic way by first exploiting available cash internally and then source of outside cash and finally owner’s capital. The model goal to avoid the risks that may occur when profitable investment developments do not attracts cash internally. The prototypical assumes that when the returns are not enough, business will rather seek debt rather than finance through owner’s capital as debt providers who already have claims on the organization’s returns and assets that may be less risks those equity investors in errors in the firm’s assessment. Henceforth, in this model, managers will only opt for owner’s capital as a last option. According to Ghafoor, A., Zainudin, R., & Mahdzan, N. S. (2019) the pecking order theory established by Myers (1994) hypothesized that liquidity practices involve the opportunity and that managers will make economic conclusions that are intended to accomplish the deterioration in the ineffectiveness in the firm as an outcome less data and information. Myers further stated that in the course of explaining the valuation of corporate behavior, a firm will face trials of information irregularity in addition to poor performance. Therefore, administrators of a firm will consider owners capital of finance to financing externally with preferred borrowing financing than financing through common shares. According to Koech, P. (2018) Myers (1994) suggested that some organizations have a model to define the available finance and this grants the anxiety of dilution and interruption of power in a firm and may contribute to a selection of a source.

**Buffer Theory of Capital Adequacy**

According to Okumu, A. N. (2019) the buffer theory of capital adequacy by Sifuna, M. A. (2018) assumes that an institution attainment for a supervisory minimum capital ratio can have a reason for enhancing capital and sinking risks so as to avoid regulatory costs brought about by the breach of capital requirements. The theory is based on how tantalizing of investment adequacy ratio, fidelity and consistency of long term planning to pivot against extended undercapitalization and avoid authorizations and possible closure by a regulatory body as a breach of capital requirements is a significant violation of banks’ legislation that may lead to closure of the microfinance institution. According to Onsongo, S. K., Muathe, S., & Mwangi, L. (2019) the capital shield theory states that microfinance that have small capital safeguards often attempt to restructure an adequate capital shield by amassing the capital and institutions with higher levels of capital buffers attempt to retain their capital buffers. When microfinance institutions have extra capital it tends to absorb unfavorable shocks and as a result it reduces the possibility of failure. Microfinance institutions will raise their capital at the time they experience increased portfolio risks in order to maintain their capital buffer which will relate to microfinance performance. According to Maniagi, G. M. (2018) microfinance institutions can select to hold a cushion of surplus capital to reduce the likelihood of falling under the capital requirements authorized with an unstable capital adequacy ratio. Any breach of the minimum statutory capital requirements by a financial institution is viewed as a main infringement of legislations governing the banking sector and is not tolerated by the regulator as banks with prolonged undercapitalization are shut down. This theory supports the capital adequacy variable of the study.

**Literature Review**

The act of deteriorating to meet financial obligations is an important issue that should be sidestepped. In most cases, the act of nonpayment on payments can be credited to temporary circumstances, such as the debtor experiencing a loss of employment, encountering an unforeseen and temporary increase in expenditures that deplete their available funds, or enduring an extended period of illness that leads to financial difficulties or an extended hospital stay. In some instances, customers may fail on their obligations due to the occurrence of permanent failure or the sudden demise of an uninsured individual who lacked sufficient financial means to support their family. Temporary descriptions can be effectively addressed by the execution of rigorous oversight and the systematic valuation of projects funded by the loan (AlAli, M. S. 2020).

Defaulting on recompense is a genuine misdemeanor that should be attentively avoided completely. Avoidance on portions is typically a temporary occurrence that can be credited to numerous factors, such as the loss of employment by clients, a temporary increase in expenses that leaves them with inadequate funds to make the repayment. In exceedingly rare occurrences, individuals may experience default due to the perpetual disappointment. Detailed forecasting by a credit applicant is vital prior to making a loan repayment. In developed countries such as Germany, credit defaults are not solely attributable to the mechanisms employed for managing and supervising loan defaults. The company provides credit management advice to its customers, who have diverse loans from various financial institutions. They deliver help, training, and analysis to debtors in order to ensure their adherence to the repayment plan. Real controlling of defaults requires a well-designed plan (Hayes, 2022).

Dahiyat, A. A., Weshah, S. R., & Aldahiyat, M. (2021) examined liquidity for microfinance institutions in Mozambique found that risk management is a vital process that could ideally be developed during normal times. It requires careful preparation and assurance on part of all investors. It is inspiring to note that it is possible to minimize risks through diligent management of portfolio and cash-flow.

Chasha, F., Kavele, M., & Guandaru, C. K. (2022), in their study on creditors management strategies of some microfinance in Malaysia the majority of microfinance and banks losses stem from absolute default due to incapacity of customers to meet obligations in relation to lending, trading, settlement and other financial transactions. Credit risk emanates from a bank’s dealing with individuals, corporate, financial institutions or sovereign entities. A bad portfolio may attract liquidity as well as credit risk.

Githira, C., Muturi, W., & Nasieku, T. (2019), in their scholarship work on account payable management policies of microfinance institutions in Malaysia most of creditors were found to be outright defaulters due their inability to meet obligations in relation to loans. Account payable emanates from a bank’s dealing with individuals, corporate and financial institutions. A bad portfolio may invite liquidity as well as account payable management.

Hacini, I., Abir, B., & Dahou, K. (2021) examined the relationship between cash flow and returns of listed firms in Nairobi Securities exchange (NSE), Kenya. Using a multiple regression model, the study discovered a positive connection between cash flow and profitability of listed firms in Kenya. Kariuki, D. W. K., Muturi, W., & Njeru, A. (2021) scrutinized the association of cash flow measure and firm profitability. The study found that even with having a high cash flow has, a positive bond with profitability exists.

## Research Design

This study used descriptive survey as it described the existence of current state of affairs. It also ascertained the charts, tables, graphs, means and other statistical data which helped the researcher to decide the trends and information about the population (Saunders, M. L., Lewis, P &Thornhill, A.2009).

**Research Philosophy**

Specific researcher’s approach to the research guarantees reliable, obligatory results that address their objective. It comprises what data they are going to collect and where from, as well as how it's being self-possessed and examined.

A framework that guides research methodology based on conceptions of reality and the nature of information is known as a research philosophy (Gadzo, S. G., Kportorgbi, H. K., & Gatsi, J. G. 2019)).

**Target population**

The target population was 38 respondents selected purposively from the Managers as they have information about the study variables from all 38 registered microfinance institutions in Kenya and 38 target respondent consisting managers. The researcher adopted purposive sampling technique to choose 38 respondents as they had complete information on the variables of the study in all the 38 licensed microfinance in Kenya. The researcher employed the whole sample of all the elements in the population to generate consistent and detailed information Cooper & Schindler, (2007).

## Data Collection Instrument

Primary data was collected using a structured questionnaire from the selected respondents and secondary data from audited statements in all the 38 microfinance institutions in Kenya. The study used questionnaires because they are manageable in terms of resources, time and have no interviewer’s bias and audited statements to measure profitability. The validity of the structured questionnaires was established by through coverage of the study area under examination with respect to the expert advice view that is used to ensure the content and format of the research instrument to make judgments on the validity of the content by ascertaining the construct validity that will facilitate clear definition of the variables to be considered (Yin, R. 2018)).

**Validity and Reliability of the study**

The validity of the structured questionnaires was recognized through coverage of the study area under examination with respect to the expert advice view that is used to ensure the content and format of the research instrument to make judgments on the validity of the content by ascertaining the construct validity that will facilitate clear description of the variables to be considered (Mugenda & Mugenda, 2003). Reliability is the degree at which a research instrument is able to yield regular outcomes when it is verified in a number of times with the same researcher or by a different researcher (Mugenda and Mugenda, 2003). Consistency on questionnaires was achieved by the use of control questions which emphasized the consistency on the answers as per the goals of the study (Kothari, 2004). The researcher calculated the Cronbach Alpha to test variables reliability.

### Models used to study data analysis

### 3.9.1 Models used to study data analysis

The multiple regression equation will take the form below.

Y =BO+B1X1 +B2X2+B3X3 + Ɛ.

Where;

 Y= Financial performance

BO= coefficient of intercept

 X1 = debtors management

 X2= Creditors management

 X3= cash flow

B1= Sensitivity of Financial performanceto the independent variable

Ɛ= Error term.

**Ethical Considerations**

Recognized approaches were used in gathering of data from respondents. The researcher assured confidentiality and secrecy.

# Limitations of the study

Some respondents were unenthusiastic to answer questions due to sensitivity of the segment and their situation in the company.

**Findings**

The first objective determined how debtors affect financial performance of microfinance institution operating in Mombasa, Kenya. Descriptive output showed that the mean of debtors is 0.123832. Trend line showed that debtors declined in 2023/2024 but later rose. A debtor entails the assessment of institution’s assets with aiming of understanding the risks each asset possesses. Correlation results indicated that coefficient of debtors and microfinance institution financial performance has a negative and significant association. Model results established that coefficient of debtors negatively and significantly affect microfinance institution financial performance. Null hypothesis (Ho1) was rejected and conclusion made that debtor significantly impacts microfinance institution performance. This finding is in agreement with Megeid, N. S. A. (2017) who found that financial performance is directly proportional to debtor’s management of microfinance banks in Kenya.

Second objective was opined to determine how creditors influence microfinance institutions profitability. It was established that average creditors using total was £500 million. Line graph showed that microfinance in terms of asset growth has been increasing constantly from 2017 to 2024. Correlation output indicated that coefficient of creditors and microfinance financial performances are positively and significantly associated. Coefficient of creditors has a positive significant effect on microfinance financial performance in Kenya. Null hypothesis (Ho2) was rejected and conclusion made that creditor significantly impacts microfinance performance. The verdict is in same with Young, C. & Holsteen, K. (2020) who establishes that financial performance is directly proportional to creditor’s management of microfinance banks in Kenya.

The third objective was to define how cash flow affects microfinance financial performance in Mombasa, Kenya. Normal cash flow is 0.23 during the measurement period. Line graph above shows that cash sustainability declined in 2021/2022, rose in the period 2022/2023 and later declining in the approach to 2024. Coefficient of cash flow has a positive and significant association with microfinance financial performance using profitability. Coefficient of cash flow positively though insignificant influence microfinance financial performance. The null hypothesis (Ho3) was rejected and conclusion made that cash flow does have an impact microfinance performance. The finding is in pact with Awin, E. (2018) who establish that financial performance is directly proportional to cash flow management of microfinance banks in Kenya.

**Conclusion**

The findings indicate that liquidity affects financial performance of microfinance institutions in Mombasa town, Kenya. The liaison between profitability and liquidity is positive implying that a rise in liquidity will lead to an rise in financial performance of financial microfinance institutions in Mombasa town, Kenya.

For sustainability, microfinance institutions in Mombasa town, Kenya should not compromise efficiency of liquidity management. They should maintain ideal liquidity level in order to satisfy their financial obligations to maximize profitability to the shareholders. Furthermore, we can conclude that illiquidity is financial diseases that can easily erode the performance of microfinance institution. The search of high profitability without consideration to the liquidity level can cause great distress to microfinance institutions. Therefore, any microfinance institution that has the aim of maximizing its financial performance level must adopt effective liquidity management.

It is imperative for the microfinance institution’s management to be aware of its liquidity position in different segments in order to enhance competitiveness in the market

**Recommendations**

The study established that debtor indicator as liquidity measures significantly affect the financial performance of financial microfinance institutions in Mombasa town, Kenya. The study recommended that the management of the microfinance institutions in Mombasa town, Kenya should endeavor to maintain an ideal liquidity position that holds adequate cash resources for operational needs while the excess liquid resources are invested in existing viable investment prospects in the businesses to enhance the growth and financial performance. In addition, management of microfinance should identify and address other factors that may be affecting their financial performance other than liquidity.

In addition, microfinance institutions in Mombasa town, Kenya diversify their investment in other lines of business so as to expand the income earned. Diversification to of business products may result to expanded income hence more profits for the microfinance. Secondly, the microfinance institutions in Mombasa town, Kenya need to prudently allocate and utilize their resources in line with business needs and objectives.

The creditors positively impacts microfinance institutions financial performance and therefore the institutions need to undertake critical assessment of borrowers on their ability to repay loans before awarding so as to minimize cases of high nonperforming loans. The credit policies defined and implemented by the microfinance institutions need to be aligned to business objectives, level of profits expected.

The cash flow positively affects financial performance of microfinance institutions. Microfinance institutions management therefore needs to set policies and procedures that encourage and promote a high level of operational efficiency. The microfinance institutions can invest on financial technologies to improve operational efficiency. Therefore, these results imply that microfinance institutions management should focus and monitor their operational efficiency and ensure higher operational efficiency. The regulator should ensure that regulatory prudential guidelines on operational efficiency are adhered to in order to protect the interest of the investors.

The study recommends holding sufficient liquidity since it is an enhancer of firm profitability. There should be liquidity efficiency in the microfinance institutions to strengthen confidence of depositors. Liquidity adequacy act as a safety net of protecting depositors in case the microfinance institutions collapse. Credit functioning system of the microfinance institutions need to be periodically looked into to ensure that it correlates with the changing business environment poised by the rise of financial technologies. Further, the study recommends that that the microfinance institutions management should make investment in more assets to ensure that their institutions grow in terms of assets since large microfinance institutions enjoy the economies of scale. The study also recommends a further study by future researchers on the role of liquidity on a firm’s financial performance by incorporating more liquidity variables.

**References**

AlAli, M. S. (2020*). Liquidity management and banks financial performance in Kuwait.* Financial Markets, Institutions and Risks, 4(3), 102-108.

Awin, E. (2018). *'Liquidity Risk and Its Determinants': A Study on Oil and Gas Industry in Tatneft*. Available at SSRN 3181622.

Bwoma, G. N., Muturi, W. M., & Mogwambo, V. A. (2017*). Effects of Loan Management Practices on the Financial Performance of Deposit Taking SACCOs in Kisii County*. International Journal of Recent Research in Commerce, Economics and Management, 4 (1), 126-139.

Chasha, F., Kavele, M., & Guandaru, C. K. (2022*). Working capital management, liquidity and financial performance:* Context of Kenyan SMEs. Retrieved from https://papers.ssrn.com

Choo, P. S. (2018). *'Determinants of Internal Factors and External Factors towards Profitability*': A Study on the Campbell Soup Company in United States. Available at SSRN 3300471.

Dahiyat, A. A., Weshah, S. R., & Aldahiyat, M. (2021). *Liquidity and solvency management and its impact on financial performance: Empirical evidence from Jordan*. The Journal of Asian Finance, Economics and Business, 8(5), 135-141.

Gadzo, S. G., Kportorgbi, H. K., & Gatsi, J. G. (2019). *Credit risk and operational risk on financial performance of universal banks in Ghana: A partial least squared structural equation model (PLS SEM) approach.* Cogent Economics & Finance, 7(1), 1589406.

Ghafoor, A., Zainudin, R., & Mahdzan, N. S. (2019). *Factors eliciting corporate fraud in emerging markets: Case of firms subject to enforcement actions in Malaysia*. Journal of Business Ethics, 160(2), 587-608. <https://link.springer.com/article/10.1007/s10551-018-3877-3>

Githira, C., Muturi, W., & Nasieku, T. (2019*). Influence of firm financial characteristics on stock return of non-financial listed companies in East Africa securities exchanges*. American Based Research Journal, 8(3), 100-109.

Hacini, I., Abir, B., & Dahou, K. (2021*). The impact of liquidity risk management on the financial performance of Saudi Arabian banks.* Emerging Markets Journal, 11(1), 67-75.

Hayes, A. (2022). *Event of Default*: Definition, Examples, Vs. Default. Investopedia. https://www.investopedia.com/terms/e/event-of-default.asp

Kariuki, D. W. K., Muturi, W., & Njeru, A. (2021*). Influence of liquidity on financial performance of insurance companies in Kenya.* Journal of Agriculture Science and Technology, 20(3), 94-101.

Koech, P. (2018*). Determinants of Effectiveness of Corporate Governance in State Corporations in Kenya.* [Doctoral dissertation, JKUAT-COHRED]. erepository.uonbi.ac.ke/handle/11295/93313

Maniagi, G. M. (2018). Influence of financial risk on financial performance of commercial banks in Kenya (Doctoral dissertation, JKUAT).

Mucheru, E., & Shukla, J. (2017*). Effect of Liquidity Management on Financial Performance of Commercial Banks in Rwanda.* A Study of Selected Banks in Rwanda. European Journal of Business and Social Sciences , 6 (7), 1-11.

Musembi, D. M. (2018*). Effect of Liquidity Risk Determinants on Financial Performance of Commercial Banks Listed at Nairobi Securities Exchange, Kenya*. Doctoral dissertation, Technical University of Mombasa.

Musyoka, B. K. (2017). *The Effect of Capital Adequacy on the Financial Performance of Commercial Banks in Kenya*. Nairobi: Unpublished Project University of Nairobi.

Myers, N., & Simon, J. L. (1994*). Scarcity or Abundance: A Debate on the Environment*. New York: W.W. Norton.

Okumu, A. N. (2019). Impact of microstructure changes on market efficiency at the Nairobi Securities Exchange. Unpublished MBA Project, Kenyatta University.

Onsongo, S. K., Muathe, S., & Mwangi, L. (2019). *Firm Size, Operational Risk and Performance: Evidence from Commercial and Services Companies Listed in Nairobi Securities Exchange*. International Journal of Current Aspects, 3(VI), 372-379.

Ramamoorti, S., Epstein, B. J., Dorrell, D. D., &Varadarajan, V. (2017). *The Proof of Cash Should be King among Forensic Auditing Techniques.* Journal of Forensic & Investigative Accounting, 9(2). [https://www.coursehero.com/file/77439493/JFIA 2017-No2-7pdf/](https://www.coursehero.com/file/77439493/JFIA%202017-No2-7pdf/)

Saunders, M. L., Lewis, P &Thornhill, A.(2009*). Research methods for business students*, (4th ed). Harlow: FT. Prentice Hall.

Sheikhdon, A. A., & Kavale, S. (2016*). Effect of Liquidity Management on Financial Performance of Commercial Banks in Mogadishu, Somalia*. International Journal for Research in Business, Management and Accounting, 101-123.

Sifuna, M. A. (2018). Day of the week effect on stock returns at the Nairobi Securities Exchange. Unpublished

Talaso, P. L. (2018). *The Effect of Micro and Macro Economic variables on the Financial Performance of Deposit Taking Microfinance Banks in Kenya*. Nairobi: Unpublished Project University of Nairobi.

Ware, E. O. (2015). *Liquidity Management and its Effect on Profitability in a Tough Economy ( A Case of Companies Listed in Ghana Stock Exchange)*. International Journal of Research in Business Studies and Management, 2 (11), 34-66.

Yin, R. (2018). *Case Study Research and Applications: Design and Methods*. London: SAGE Publications, Inc.

Young, C. & Holsteen, K. (2020*). Model uncertainty and robustness: A computational framework for multi-model analysis.* Sociological Methods & Research, 46(2), 3–40.