Information Management and Business Review (ISSN 2220-3796)
Vol. 15, No. 2, pp. 9-16, June 2023 (SI)

Determinants of Financial Inclusion in OIC Countries

Nur Diniey Ezzati Zainorin[1], Syuhada Jalaludin[2], Nor Farradila Abdul Aziz[3]* Balachandran Balasingam[4]
[1]Merison Marketing Sdn Bhd, Bandar Baru Seri Alam, Masai Johor Darul Takzim, Malaysia
[2]Arshad Ayub Graduate Business School, Universiti Teknologi Mara Shah Alam, Selangor Darul Ehsan
[3]Faculty of Business and Management, Universiti Teknologi Mara Puncak Alam, Selangor Darul Ehsan
[4]Department of Economics and Finance, La Trobe Business School, La Trobe University, Australia
dinieyezzati@gmail.com, syuhadajalaludin18@gmail.com, norfa503@uitm.edu.my*,
b.balachandran@latrobe.edu.au

Abstract: The OIC countries have endorsed financial inclusion as part of their initiatives to uphold the interests of the Muslim world. However, they experience the greatest levels of financial system exclusion, as they are found to have a lower percentage of access to formal bank accounts. Therefore, this study aims to investigate the determinants of financial inclusion in OIC nations. Macroeconomic factors (GDP and the money supply) and bank variables (non-performing loans and the number of internet users) covering the year 2011 to 2020 from 40 OIC nations are included in this paper. Using panel data, the results indicate that both bank variables are positively significant in determining financial inclusion for OIC countries. No significant relationship is found between studied macroeconomic factors and financial inclusion.

Keywords: *Financial Inclusion, OIC Countries, GDP, Money Supply, Internet Users, Non-Performing Loans.*

1. Introduction and Background

Financial inclusion is a process to ensure the individuals, households and businesses in a community have adequate access to formal financial services and products such as transactions, credit cards, payments, saving and insurance and that these are delivered in a sustainable way (Singh & Singh Kondan, 2011). Financial inclusion aims to guarantee that all adults in a community have easy access to an affordable investment instrument (David, Oluseyi, Emmanuel, 2018). A well-developed banking industry, especially one that is adequately linked to banking services, is critical for the whole economy because it contributes to the progression of an investment environment by providing credit, encourages even low-income people to save in financial firms for long-term higher income, and contributes to the generation of people's potential by letting them successfully manage their monies for their future (Datta & Singh, 2019).

OIC nations have agreed to include financial inclusion in their efforts to defend the interests of the Muslim world. To improve consumer rights, financial literacy, and access to financial services, the OIC has resolved to establish a joint committee on financial inclusion. The OIC members also support the alignment of financial operations with international regulatory principles and standards, which would enhance the role and impact of economic growth (Securities Commission & The World Bank Group, 2020). However, they did not show a high commitment toward transformation that provides access to financial services to the public. Furthermore, the majority of research (see David et al., 2018; Abel et al., 2018; Evans, 2016) employs a sample from low-income regions like Nigeria, Africa, and Zimbabwe, and there are not many studies about the OIC nations and financial inclusion.

Many individuals in nations with low levels of financial inclusion, on the other hand, are unable to resolve their financial problems owing to the absence of access to finance. In the ten years from 2011 to 2021, account ownership of financial inclusion grew by 50% globally, reaching 76% of the adult population. The average account ownership rate in developing economies climbed by 8 percentage points, from 63 to 71 percent, between 2017 and 2021 (Asli, Leora, Dorethe and Saniya, 2022). Despite this progress, however, over 1.7 billion people worldwide are projected to be unbanked and disallowed access to financial services, implying that over 30% of the worldwide population still face financially disadvantaged and have difficulties in their financial stabilities (Demirgüç-Kunt et al., 2017). As a result, the sample of commercial bank depositors is utilized as a measure of financial inclusion to determine the effect of other independent variables on financial inclusion.

Furthermore, according to Global Findex 2018[1], member of OIC countries is found to have a lower percentage of access to formal bank accounts, which is 46.3%, compared to the other non-OIC developing countries which is 71.55%. Most of the OIC countries appealed to pursue measures that would increase financial inclusion, however, they did not show a high commitment toward transformation that provide access to financial services to the public. OIC member countries are considered to be the countries with the greatest level of financial system exclusion. The problem becomes more difficult by fact that, on average, just 15.66% of individuals in low-income OIC countries have a bank account with a recognized financial institution (Business et al., 2021). The majority of OIC countries lack awareness of the development of financial inclusion. Hence, that could be the reason why OIC is picked as a population, besides as a way to add value to the current findings. Therefore, this paper focuses on examining the determinants which include macroeconomic variables and bank variables factors that might influence financial inclusion in OIC countries within 10 years period.

The remainder of the paper is structured as follows: in Section 2, the literature review on past empirical studies in the area of financial inclusion is presented, followed by Section 3 on the research design, data set and methodology. In Section 4, we present the result and findings and finally, in Section 5, we summarize the main conclusion.

2. Empirical Studies

Relationship between macroeconomic variables and financial inclusions

Mishra (2012) posits that GDP per capita is a metric of a nation's wealth and prosperity per citizen; it serves as a leading indicator of economic growth. Therefore, an increase in the GDP per capita should theoretically constitute a gain in the quality of life for the citizens of the chosen nations, and may therefore be used as a gauge of economic growth. Furthermore, Nizam et al. (2020) argue that one of the main forces behind the economic expansion is the availability and use of financial services.

Asare Vitenu-Sackey & Hongli (2020) show that GDP per capita has a significant effect on alleviating poverty because economic growth plays a vital role in poverty alleviation. The outcome in line with Anarfo et al (2019) implies that financial inclusion is improved by increasing financial sector development and economic growth. Chikalipah (2017) discovers that the amount of income measured by GDP per capita is a major element in determining a country's degree of financial inclusion.

However, few research papers (see Eldomiaty et al., 2020; Oyelami et al., 2019) revealed the negative relationship between GDP and financial inclusion stating that forward-thinking customers expect an increase in their future incomes and save against it. Based on the literature stated above, hence, the following hypothesis is tested:

H_0: GDP is not significant in determining the financial inclusion in OIC countries
H_A: GDP is positively significant in determining the financial inclusion in OIC countries

On the other hand, the money supply is approximately made up of cash and deposits that may be used almost as rapidly as cash. Evans (2016) posits that money supply has a positive impact on financial inclusion. David et al. (2018) argue that the positive correlations between these variables, imply that broad money increases financial inclusion in the country as the quantity of funds in existence continues to grow.

For some reason, money supply could also be negative towards financial inclusion, due to the fact that Nigeria and African countries that are not OIC members were included in the past research. According to Mujahidin (2019), the money supply in an economy is impacted by monetary policy, which in turn affects interest rates and inflation. He posits monetary policy is the action of the government to influence the macro situation implemented through the money market. This is a general definition of monetary policy, more specifically; monetary policy can be interpreted as the macro action of the government where it is referred to the central bank by influencing the process of money creation. Different countries also have different approaches to

[1] https://www.worldbank.org/en/publication/globalfindex

monetary policy, and there is also a viewpoint on differences between monetary policy in conventional and Islamic economics in research (Mujahidin, 2019). Based on the literature stated above, hence, the following hypothesis is tested:

H_0: There is no significant relationship between money supply is not significant and financial inclusion in OIC countries
H_A: There is a positive and significant relationship between money supply is not significant and financial inclusion in OIC countries

Relationship between bank variables and financial inclusions

According to Anarfo et al. (2020), the non-performing loans (NPLs) held by banks are also a major factor in determining the financial inclusion index. An increase in NPLs diminishes financial inclusion because when an institution is in trouble, it becomes more conservative and eliminates some disadvantaged or underprivileged populations (Wang and Guan, 2017).

In contrast to earlier studies, Ahmed and Shehzadi (2022) discovers a positive relationship between NPLs and financial inclusion which is supported by Musau et al. (2018) who find that the rise in the proportion of banked people as a result of financial inclusion may lead to an increase in the number of risky clients in the banking system. These consumers also have a bad record of default payments on their loans, which eventually increases their exposure to credit risk. Based on the literature stated above, hence, the following hypothesis is tested:

H_0: Non-performing loans are significant in determining financial inclusion for OIC countries
H_A: Non-performing Loans are not significant in determining financial inclusion in OIC countries

On the other hand, Sarma and Pais (2008) suggest that physical infrastructure for connectivity and information is also significantly associated with financial including. Evans (2016) discovers the relationship between internet users and financial inclusion where the internet has increased the opportunities for credit disbursement in Africa's isolated places. It has enabled the provision of home banking services to illiterate clients who manage their savings via mobile phones. The significant results supported by Ofosu-Mensah Ababio et al. (2021) demonstrate how mobile phones are becoming increasingly important in boosting financial inclusion in frontier nations. This finding is in line with

Telephone and internet subscriptions have a beneficial influence on financial inclusion (Sarma and Pais, 2008; David et al., 2018). The more individuals use the Internet, the more financial services are given to a wider number of residents in rural regions (David et al., 2018) which will subsequently increase the level of financial inclusion (Evans, 2018). Based on the literature stated above, hence, the following hypothesis is tested:

H_0: The number of internet users is not significant in determining financial inclusion for OIC countries
H_A: The number of internet users is positively significant in determining financial inclusion for OIC countries

3. Research Design

This paper uses secondary data associated with the economic indicators over ten (10) years, from 2011 to 2020. The data is taken from the World Bank Data official website. GDP, money supply, non-performing loans, and number of internet users, in OIC nations are the variables chosen to investigate this study. There are forty (40) OIC countries are chosen in the study: Afghanistan, Albania, Azerbaijan, Bangladesh, Benin, Brunei, Burkina Faso, Cameroon, Chad, Comoros, Djibouti, Egypt, Gabon, Guinea, Guinea-Bissau, Kuwait, Kyrgyzstan, Lebanon, Libya, Malaysia, Maldives, Mali, Mauritania, Niger, Nigeria, Pakistan, Qatar, Saudi Arabia, Senegal,

Sierra Leone, Suriname, Tajikistan, Togo, Tunisia, Turkey, Uganda, the United Arab Emirates, Uzbekistan, West Bank and Yemen.

The data used for this study is explained in the following table:

Table 1: The Variables Information

Types of data	Variables	Proxy	References
Dependent variables	Financial Inclusion	Number of depositors with commercial banks per 1,000 adults	(Agyemang-Badu et al., 2018; Anarfo et al., 2019, 2020; David et al., 2018; Evans, 2016, 2018; Gebregziabher Gebrehiwot & Makina, 2019; Oyelami et al., 2019)
Independent variables	GDP	Growth Annual Percentage (%)	(Anarfo et al., 2019; Asare Vitenu-Sackey & Hongli, 2020; Chikalipah, 2017; David et al., 2018; Eldomiaty et al., 2020; Evans, 2016; Gebregziabher Gebrehiwot & Makina, 2019; Gopalan & Rajan, 2018; Hajilee et al., 2017; Owen & Pereira, 2018; Oyelami et al., 2019; Sarma & Pais, 2008; Senou et al., 2019; Wang & Guan, 2017)
	Money supply	Growth Annual Percentage (%)	(David et al., 2018; Evans, 2016)
	Non-performing loans	Bank Non-Performing Loan to Total Gross Loan (%)	(Anarfo et al., 2020; Sarma & Pais, 2008; Ahmed & Shehzadi, 2022; Musau et al., 2018)
	Number of Internet users	Percentage (%) of the population	(David et al., 2018; Evans, 2016, 2018; Ofosu-Mensah Ababio et al., 2021; Sarma & Pais, 2008; Senou et al., 2019)

Table 3 shows that the dependent variable which is financial inclusion with a proxy of the number of depositors with commercial banks per 1,000 adults and is explained by the total number of resident nonfinancial corporations (public and private) and families with deposit accounts at commercial banks and other resident banks acting as commercial banks. Due to a lack of information on account holders, figures for a number of nations only contain the total number of deposit accounts. Checking, savings, and time deposits make up the three primary types of deposits.

Meanwhile, the first independent variable which is GDP can be explained by the GDP annual percentage growth rate at market prices based on constant local currency and total gross value added by all resident producers in the economy plus any applicable product taxes and less any applicable subsidies not factored into the value of the items. It is estimated without taking into account the deterioration and depletion of natural resources or the depreciation of manufactured assets. The expected coefficient for this variable has a significant effect on financial inclusion in OIC countries.

As for the money supply, the proxy can be explained by the total amount of money held outside of banks, demand deposits other than federal government ones, time, savings, and foreign currency deposits made by non-federal residents, bank and traveller's checks, as well as other securities like Certificates of Deposit and Commercial Paper over a specific time period. This variable is expected to have a significant effect on financial inclusion in OIC countries.

Other than that, the NPL can be measured by the portfolio's entire value divided by the amount of non-performing loans (including nonperforming loans before the deduction of specific loan-loss provisions).

Included in the loan amount from the balance sheet that is designated as a nonperforming loan is the gross value of the loan. The expected coefficient for this variable has an insignificant effect on financial inclusion in OIC countries.

For the last independent variable which is the number of internet users, it can be explained by all users of the

internet during the previous three months (from every location), as well as all types of internet-accessible devices such as computers, mobile phones, personal digital assistants, gaming consoles, and digital TVs. This variable is expected to have a significant effect on financial inclusion in OIC countries.

4. Results

Descriptive Analysis

This paper uses secondary data associated with the economic indicators for ten (10) years, from 2011 to 2020. The data is taken from the World Bank Data official website. GDP, money supply, non-performing loans, and number of internet users, in OIC nations are among the variables chosen to investigate this study. There are forty (40) OIC countries are chosen in the study: Afghanistan, Albania, Azerbaijan, Bangladesh, Benin, Brunei, Burkina Faso, Cameroon, Chad, Comoros, Djibouti, Egypt, Gabon, Guinea, Guinea-Bissau, Kuwait, Kyrgyzstan, Lebanon, Libya, Malaysia, Maldives, Mali, Mauritania, Niger, Nigeria, Pakistan, Qatar, Saudi Arabia, Senegal, Sierra Leone, Suriname, Tajikistan, Togo, Tunisia, Turkey, Uganda, and the United Arab Emirates, Uzbekistan, West Bank and Yemen.

Table 2: Summary of the Descriptive Analysis

Variable	Financial Inclusion (Depositors)	GDP (%)	Money supply (%)	NPL (%)	Number of Internet users (%)
Mean	514.1305	3.2300	11.3391	8.3358	37.3666
Minimum	24.6100	-62.0759	-17.4101	0.7092	0.9000
Median	370.8400	3.9555	10.3930	6.0269	26.7184
Maximum	1901.5000	123.1396	62.0543	47.5959	100.0000
Standard Deviation	429.9833	8.8671	9.3640	7.1966	29.2653
Skewness	0.8116	4.6243	1.1693	1.8350	0.5764
Kurtosis	2.7412	95.2320	6.8650	7.4713	2.0707

In Table 1, financial inclusion has a score that ranges from 24.61 depositors to 1901.5 depositors with a mean of 514.1305 depositors and a median of 370.84 depositors. GDP variables range from -62.0759% to 123.1396%, with a high of 123.1396% and a low of -62.0759. It has a score of 3.23% on average and 3.9555 on the median. On the other hand, money supply variables have a maximum score of 62.0543% and the lowest value of -17.4101%. It has an average of 11.3391% and a median of 10.3930%. The NPL variable has a minimum score of 0.7092% and a maximum value of 47.5959%, with an average of 8.3358% and a median of 6.0269%. The last variable, which is the number of internet users, has a score that ranges from 0.9% to 100%, with a mean of 37.36662% and a median of 26.7184%.

Correlation Analysis

Table 3: Summary of the Correlation Analysis

Variable	Financial inclusion	GDP	Money supply	NPL	Internet
Financial Inclusion	1.0000				
GDP	-0.0596	1.0000			
	(0.2715)				
Money supply	-0.0154	0.0156	1.0000		
	(0.7811)	(0.7632)			
NPL	-0.3322*	-0.0277	0.0398	1.0000	
	(0.0000)	(0.6755)	(0.5578)		
Internet	0.7448*	-0.1574*	-0.2170*	-0.3926*	1.0000
	(0.0000)	(0.0021)	(0.0000)	(0.0000)	

Note: * Significant at 1%

Financial inclusion and NPL have a correlation of -0.3322, showing that negatively affect each other. As NPL increases, financial inclusion will decrease. The relationship is significant at the 1% level, concluding that NPL and financial inclusion have a negative relationship. According to Anarfo et al. (2020), the NPLs have a detrimental effect on financial inclusion because problematic institutions tend to become more conservative.

Next, the correlation between financial inclusion and the internet is 0.7448, indicating a strong positive relationship. Looking at the internet's p-value, 0.0000, it shows a significant relationship between these variables at a 1% level. This finding suggests that as the number of internet users increases, and financial inclusion level in OIC will increase too. These results are supported by David et al. (2018) which indicate as more individuals use the Internet, then more financial services are offered to a wider number of residents.

Empirical Results

Table 4: Regression analysis on determinants of financial inclusions in OIC countries

Regressors	Independent variable: Financial Inclusion
GDP	-0.0042
	(0.5380)
Money Supply	-0.0018
	(0.601)
NPL	0.01818*
	(0.080)
Internet Users	0.0127***
	(0.008)
Number of Observation	164
P-value of F-Test	0.0059
R-squared	0.3578

Note:
P-values are presented in the parentheses
*,**,*** indicates significance at 1%, 5% and 10% respectively.

Financial inclusion i,t = 5.522692 + 0.0041764 *GDP* - 0.0017572 *MS* + 0.0181787 *NPL* + 0.0127394 *Int*

This study is using Fixed Effect Model (FEM) analysis as compared to Pooled Ordinary Least Squares (POLS) and Random Effect Model (REM) as the study utilizes the F-Chow test to analyze whether the research observation is appropriate for POLS or FEM. The result shows that the p-value is significant at a 10% level with a value of 0.0000, providing the FEM is preferable to POLS for this study. There are heteroscedasticity and serial correlation issues in this study. So, it needs to use a remedy of cluster regression. The result in Table 3 shows that the model is significant at a 5% level with an F-statistic value equal to 0.0059. The R-squared is 35.78% which means the chosen independent variables are explained 35.78% variability of financial inclusion in OIC countries. Another 64.22% might be from another factor that is not included in this study.

The coefficient for GDP is negatively correlated, when the GDP increase by 1%, the financial inclusion will decrease by 0.4177%. This result supports the empirical findings by Eldomiaty et al. (2020) where the forward-looking consumers expect an increase in their future income, they might not see the benefit and advantage of conserving money in the current situation because they believe their income will be sufficient to support them in their future.

The relationship between financial inclusion and money supply is negative with a coefficient value of -0.0018, however, this relationship is not significant in determining the level of financial inclusion in OIC countries. In addition, the findings in Table 3 also show a positive and significant relationship between NPL and financial inclusion. In order words, the result suggests that financial inclusion will grow by 0.01818% when NPL increase by 1%. The findings supported by Musau et al. (2018) which the findings show the increasing result of financial inclusion may lead to an increase in the number of risky clients in the banking system. Additionally, these consumers default on their loans, which ultimately increases the exposure to credit risk

(Ahmed & Shehzadi, 2022).

The coefficient for internet users is 0.0127 and positively significant at the 1% level. This indicates that for every 1% increase in internet users, financial inclusion will rise by 0.0127%. A significant positive relationship is revealed by the p-value of 0.008 supported by previous research (David et al., 2018; Evans, 2016, 2018; Ofosu-Mensah Ababio et al., 2021) which stated that the importance of connectivity and knowledge in this activity. Therefore, the results imply that current technology advancements and financial innovations are important in improving the financial inclusion level in the banking industry (Ofosu-Mensah Ababio et al., 2021). It is also important to note that the influence of the internet's capabilities reaches beyond low-income nations to middle- and high-income nations as well. Since our findings showed that the Internet has a significant influence on financial inclusion regardless of the country's income, it follows that the Internet has a strong, significant impact on financial inclusion in OIC countries.

Thus, this study concludes that the NPL and the internet significantly impact financial inclusion while GDP and money supply, have no significant impact on financial inclusion.

5. Conclusion

Based on the findings obtained in this study, we reject the hypothesis for GDP, money supplies and NPL variables. Meanwhile, for the number of internet users, we accept the hypothesis that the internet is significant with financial inclusion in OIC countries. The result shows that bank variable factors which are NPL are significant because when people are involved with financial services, they are exposed to less quality users which will lead to credit risk. Meanwhile, the Internet also has a significant impact on financial inclusion which indicates most of the people in OIC countries use the Internet to get themselves involved with financial inclusion.

References

Abel, S., Mutandwa, L., & Roux, P. L. (2018). A review of determinants of financial inclusion. *International Journal of Economics and Financial Issues*, 8(3), 1–8.

Agyemang-Badu, A. A., Agyei, K., & Kwaku, E. (2018). Financial inclusion, poverty and income inequality: evidence from Africa. *Spiritan International Journal of Poverty Studies,* 2(2), 1–38.

Ahmed, F., & Shehzadi, Y. (2022). Exploring the Impact of Financial Inclusion and Financial Development on Non-Performing Loans : Evidence from Banking Sector of Pakistan. 3(1), 68–89.

Anarfo, E. B., Abor, J. Y., & Osei, K. A. (2020). Financial regulation and financial inclusion in Sub-Saharan Africa: Does financial stability play a moderating role? Research in International Business and Finance, 51.

Anarfo, E. B., Abor, J. Y., Osei, K. A., & Gyeke-Dako, A. (2019). Financial inclusion and financial sector development in Sub-Saharan Africa: a panel VAR approach. *International Journal of Managerial Finance*, 15(4), 444–463.

Asare Vitenu-Sackey, P., & Hongli, J. (2020). Financial Inclusion and Poverty Alleviation: The Contribution of Commercial Banks in West Africa. *International Journal of Business, Economics and Management,* 7(1), 57–70.

Business, O. I. C., Centre, I., & Background, O. (2021). Brief Note on OIC Business Intelligence Center.

Chikalipah, S. (2017). What determines financial inclusion in Sub-Saharan Africa? *African Journal of Economic and Management Studies*, 8(1), 8–18.

Datta, S. K., & Singh, K. (2019). Variation and determinants of financial inclusion and their association with human development: A cross-country analysis. IIMB Management Review, 31(4), 336–349.

David, O. O. K., Oluseyi, A. S., & Emmanuel, A. (2018). Empirical Analysis of the Determinants of Financial Inclusion in Nigeria: 1990-2016. Journal of Finance and Economics, 6(1), 19–25.

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S. 2022. The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/37578 License: CC BY 3.0 IGO.

Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2017). Asli Demirgüç-Kunt the Global Findex Database.

Eldomiaty, T., Hammam, R., & El Bakry, R. (2020). Institutional determinants of financial inclusion: evidence from world economies. International Journal of Development Issues, 19(2), 217–228.

Evans, O. (2016). Determinants of Financial Inclusion in Africa: A Dynamic Panel Data Approach. University of Mauritius Research Journal, 22(September 2017), 310– 336.

Evans, O. (2018). Connecting the poor: the internet, mobile phones and financial inclusion in Africa. Digital Policy, Regulation and Governance, 20(6), 568–581.

Gebregziabher Gebrehiwot, K., & Makina, D. (2019). Macroeconomic Determinants of Financial Inclusion: Evidence Using Dynamic Panel Data Analysis. In Extending Financial Inclusion in Africa. Elsevier Inc.

Gopalan, S., & Rajan, R. S. (2018). Foreign Banks and Financial Inclusion in Emerging and Developing Economies: An Empirical Investigation. Journal of International Development, 30(4), 559–583.

Hajilee, M., Stringer, D. Y., & Metghalchi, M. (2017). Financial market inclusion, shadow economy and economic growth: New evidence from emerging economies. Quarterly Review of Economics and Finance, 66, 149–158.

Mishra, P. K. (2012). Role of Financial Inclusion in the Economic Growth of Odisha. Contemporary Issues in Business and Management, 1(70), 165.

Mujahidin, M. (2019). Monetary Policy in Perspective Conventional Economy and Islamic Economics. Munich Personal RePEc Archive, 94693, 1–18.

Musau, S., Muathe, S., & Mwangi, L. (2018). Financial inclusion, bank competitiveness and credit risk of commercial banks in Kenya. International Journal of Financial Research, 9(1), 203–218.

Nizam, R., Karim, Z. A., Rahman, A. A., & Sarmidi, T. (2020). Financial inclusiveness and economic growth: new evidence using a threshold regression analysis. *Economic Research-Ekonomska Istrazivanja*, 33(1), 1465–1484.

Ofosu-Mensah Ababio, J., Attah-Botchwey, E., Osei-Assibey, E., & Barnor, C. (2021). Financial inclusion and human development in frontier countries. *International Journal of Finance and Economics*, 26(1), 42–59.

Owen, A. L., & Pereira, J. M. (2018). Bank concentration, competition, and financial inclusion. Review of Development Finance, 8(1), 1–17.

Oyelami, L., Saibu, O., & Adekunle, B. (2019). Determinants of financial inclusion in Sub Sahara African Countries. *Asian Economic and Financial Review*, 9(12), 1383–1404.

Sarma, M., & Pais, J. (2008). Financial Inclusion and Development: A Cross Country Analysis. In the Annual Conference of the Human Development and Capability Association, New Delhi, 168(10–13), 1–30.

Securities Commission & the World Bank Group. (2020). Islamic finance: A catalyst for financial inclusion. Securities Commission Malaysia, 3–116.

Senou, M. M., Ouattara, W., & Acclassato Houensou, D. (2019). Financial inclusion dynamics in WAEMU: Was digital technology the missing piece? *Cogent Economics and Finance*, 7(1), 1–16.

Singh, K. & Singh Kondan, A. (2011). 9 Financial inclusions, development and its determinants, empirical evidence of Indian States. *Asian Economic Review*, 53(1), 115.

Wang, X., & Guan, J. (2017). Financial inclusion: measurement, spatial effects and influencing factors. *Applied Economics*, 49(18), 1751–1762.