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ANALYSIS OF OUTER FACTORS AFFECTING FINANCIAL STABILITY IN G20 MEMBER COUNTRIES

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Abstract

The financial system is a cornerstone of the economy, playing a crucial role in its overall structure by effectively channeling resources from those with surpluses to those facing deficits. This process is essential for driving economic growth and development. The establishment and progression of the G20 are intricately linked to its objective of managing global financial crises and improving international governance. Originating to prevent the recurrence and spread of crises like the 1997 Asian financial crisis, the G20 has evolved into a key platform for international economic collaboration and policy coordination. This research focuses on G20 countries due to their significant influence on the global economy. The study utilized purposive sampling to select 13 G20 member nations based on specific criteria, including G-20 membership and the adoption of policies related to digital finance, financial inclusion, financial regulations, shadow banking, and financial system stability from 2011 to 2021. The findings offer a detailed overview of financial metrics within G-20 countries, highlighting differences in banking, financial stability, and financial inclusion, and providing valuable insights into the condition of their financial systems.

Keywords: Digital Finance, Financial Inclusion, Financial Stability.

1. INTRODUCTION

The financial system plays a vital role in the economy by channeling resources from entities with surpluses to those facing deficits. When the financial system is unstable or inefficient, the allocation of funds can be disrupted, impeding economic growth. Historical evidence shows that financial instability, especially leading to crises, incurs substantial rescue costs (OJK, 2017). Globalization in the financial sector, propelled by technological advancements, has facilitated seamless integration of financial systems across borders. Financial products are becoming increasingly dynamic and complex, which not only heightens the variety and complexity of instability triggers but also makes managing such instability more challenging.

Recent data indicates weak performance in the second quarter, and global growth projections for 2022 and 2023 are expected to decline further, as reported in the World Economic Outlook Update. Economic prospects remain uncertain, with potential disruptions in natural gas supply to Europe posing a risk of recession and a global energy crisis, which could exacerbate the current situation. The year 2022 is anticipated to be challenging, with 2023 expected to be even more difficult due to rising recession risks (Georgieva, 2022).

Since the global financial crisis, financial stability has been a top priority for policymakers. They aim to identify factors that contribute to a stable financial system to prevent crises. Efforts to enhance financial inclusion are particularly beneficial for vulnerable communities, including

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the poor, as a means to stabilize the situation and mitigate losses (Pransuamitra, 2022).

The G20's essential role in linking financial regulation and stability has been highlighted by (Cicci, 2018). The G20's inception and evolution are intricately connected to addressing financial crises through global governance regulation. Initially, meetings of G20 Finance Ministers and Central Bank Governors were established to prevent crises like the 1997 Asian financial crisis from recurring and spreading. In response to the subprime mortgage crisis in the United States, French President Nicolas Sarkozy and British Prime Minister Gordon Brown proposed elevating these meetings to the Leaders' Summit in 2008, a suggestion approved by U.S. President George W. Bush, leading to the first summit (Cicci, 2018).

The 2009 London Summit underscored the G20's commitment to creating a robust, globally consistent framework for financial sector supervision and regulation. This initiative aimed to strengthen financial oversight and transform the regulatory system, enabling authorities to identify and manage macroprudential risks. The framework extended regulations and supervision to all financial institutions, instruments, and markets with systemic impacts, including hedge funds. It also involved establishing the Financial Stability Board (FSB) with a stronger mandate, including issuing early warnings about macroeconomic and financial risks and taking necessary actions to mitigate these risks (Goodman et al., 2017). At the 2010 Toronto Summit, a regulatory reform plan with four pillars was proposed, covering capital and liquidity, stricter supervision, handling financial institutions, addressing systemically important financial institutions, financial sector responsibilities, financial market infrastructure, regulatory scope, and accounting standards.

In the UK, the consumer price index rose by 10.4 percent in February 2023 compared to the same period in 2022, marking the highest inflation in 45 years. In response, the Bank of England raised the interest rate to 5.25 percent, the highest level since October 2008. China's economic growth projection for 2022 was 2.8 percent, a significant drop from the earlier estimate of 5.0 percent, as the economy weakened during 2020-2021 due to lockdown policies. In December 2022, the manufacturing purchasing managers' index (PMI) fell to 47 from 48 the previous month, indicating contraction. Since the third quarter of 2021, following the Evergrande case, the proportion of people planning to buy property decreased to 19.2%, and further declined to 17.1% by the third quarter of 2022. In early July 2022, South Korean shares dropped as investors were concerned that raising the benchmark interest rate to tackle inflation might lead to an economic slowdown. India's economic growth is relatively strong compared to other G20 countries, with expectations of 6.8% growth in 2022 and 6.1% in 2023, reflecting stable and healthy macroeconomic conditions. Similarly, Indonesia's growth is estimated by the IMF to be 5.3% in 2022 and 5% in 2023. Emerging economies like Mexico are in a relatively favorable economic position despite the global recession threat, with an expected growth of 1.8% in 2023. Brazil's Ministry of Economy predicts a 2.1% growth in 2023, revised down from the previous forecast of 2.5%.

Elsherif (2019) uses two key parameters to assess financial system stability, with data sourced from GFDD (Morgan & Pontines, 2018); (Čihák et al., 2016); (Sahay et al., 2015); (Kasman & Kasman, 2015). The first parameter is the ratio of non-performing loans (NPL) to gross

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loans, which measures credit risk exposure by considering past performance and potential losses. A higher NPL ratio indicates greater instability. The second parameter is the bank deposit to credit ratio, which reflects the financial resources provided by domestic commercial banks to the private sector relative to total deposits (Elsherif, 2019). A higher ratio suggests that banks are extending more loans than they receive in deposits, indicating higher liquidity risk and lower financial stability.

According to the World Bank, the stability of the financial system can be gauged by its efficiency in resource allocation, risk assessment and management, maintaining employment levels near the natural economic interest rate, and avoiding significant price fluctuations of real or financial assets that could affect monetary stability or employment rates (World Bank, 2022). The financial system encompasses financial institutions, markets, infrastructure, non-financial corporations, and households that interact in funding and financing to support economic growth (BI, 2022). The connection between digital finance and financial system stability is related to financial infrastructure, where the global business environment and internet development have prompted the World Bank to adopt innovative approaches (Redda et al., 2017).

Financial inclusion is essential for financial sector development ((Emara & El Said, 2021); (Musau et al., 2018); (Zulkhibri, 2016)). It plays a vital role in reducing poverty and inequality by providing easy and secure access to financial products and services, such as savings, credit, insurance, and payments (Huang & Zhang, 2020); (Jungo et al., 2021). When used wisely, financial inclusion significantly enhances household welfare (Owen & Pereira, 2018); (Zins & Weill, 2016). Authorities' commitment to financial inclusion aims to reduce poverty and foster inclusive economic growth by ensuring all societal segments have access to financing.

Recognizing the substantial benefits of financial inclusion for households and financial development, the World Bank and the G20 have led initiatives to expand financial inclusion in developing countries. Moreover, financial inclusion is one of the four pillars of development support outlined by the United Nations, which include: (1) formulating employment-oriented growth strategies, (2) strengthening financial inclusion, (3) investing in human development priorities, and (4) delivering high-impact multidimensional interventions (Vo et al., 2021).

Research by Jungo et al (2022) indicates that increased financial inclusion enhances banks' financial stability, while high competitiveness reduces stability. Financial regulations help mitigate the negative impact of competitiveness on financial stability. The research also reveals that standard measures of financial inclusion do not yield accurate results in assessing financial stability in Sub-Saharan African countries. However, these measures show a positive and significant impact on financial stability in Latin American and Caribbean countries (Jungo et al., 2022).

Regarding applications in the modern banking industry, (Danisman & Tarazi, 2020), studied how financial inclusion affects financial stability in the financial systems of European Union countries and the results show that the progress of financial inclusion through digital accounts produces a stabilizing effect on the banking system. A study on the effect of financial inclusion on bank stability applied on the African continent by Kouki et al (2020) and Musau et al (2018)

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also confirm the positive impact of financial inclusion on financial stability (Kouki et al., 2020) (Musau et al., 2018).

According to Srivastava (2014) explains that the shift from traditional financial transaction models to digital finance helps reduce financial service transaction costs and increases the growth of the financial sector in developing countries such as India and China (Srivastava, 2014). Likewise, the development of digital financial technology also has a positive impact on the banking sector, and increases financial liberalization in developing countries. (Scott et al., 2017). Over the last few years, excessive investment in developing countries has led to a considerable increase in the innovation of low-cost technologies. These low-cost technological innovations have increased the market for mobile phones and internet services. The availability of mobile phones and other digital gadgets has given rise to digital payments in developing countries. (Ramli, 2020).This digital transformation has helped in increasing lending. However, in several developing countries, there are still parts of the population who are still outside the reach of this digital transformation, and still rely on the informal economy for their financial needs. To avoid tax burdens and avoid the documentation and disclosure process of financial services, people who have not utilized digital finance rely on the informal economy, which is also known as shadow finance (Arvin et al., 2021).

1.1 Research Questions

1.1.1 What are the indicators of the digital finance variable that affect financial stability?

1.1.2 What are the indicators of the financial inclusion variable that affect financial stability?

1.2 Research Objective

1.2.1 To identify and analyze the indicators of the digital finance variable that influence financial stability.

1.2.2 To identify and analyze the indicators of the financial inclusion variable that influence financial stability.

2. LITERATURE REVIEW

2.1 International Monetary System

Company The international monetary system is also known as the international payment system, which is carried out for international economic activities between residents of one country and residents of another country. The international monetary system focuses more on the monetary side of international economic activities, namely international financial transactions between residents of countries that carry out international economic transactions (Rostiana, 2020). The international monetary system consists of official policies and arrangements related to arrangements for exchange rates, current international payments and international capital flows, international reserves, including a set of institutions, rules, standards and conventions that govern its operations (Gourinchas et al., 2019). Many developed countries with flexible exchange rates have reduced their reserve holdings as a percentage of GDP during the post-Bretton Woods era.

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In contrast, an important feature of the international monetary system over the last decades has been the rapid accumulation of their international reserves in developing countries in line with increasing current account imbalances (Gourinchas et al., 2019). Unbalanced international payments between countries are anticipated by carrying out financing, changing domestic policies related to trade and investment by implementing foreign exchange controls or by controlling currency exchange rates against foreign currencies, in order to adjust to international payment imbalances (Gourinchas et al., 2019).

The current international monetary system has facilitated a massive expansion of global growth, increased global trade, international financial integration, a rapid increase in annual global GDP growth, and an increase in foreign assets. Globalization, especially in the form of trade and foreign direct investment, has enabled various countries globally to benefit from access to international markets, technology transfer and increased specialization, realizing their comparative advantage in producing superior products (Gourinchas et al., 2019); (Lane & Milesi-Ferretti, 2018); (Pratiwi et al., 2022)

The international monetary system is overseen by a complex and evolving set of institutions that seek to establish and promote compliance with a variety of rules, standards and conventions in both macroeconomic and financial sector policies. The overarching goal of financial architecture. This global goal is to maintain global financial and monetary stability. Various key institutions that monitor and supervise the international monetary system such as the International Monetary System (IMF), Bank for International Settlements (BIS), Financial Stability Board (FSB) and G-20 (Gourinchas et al., 2019); (Gallagher & Ocampo, 2013); (Pratiwi et al., 2022).

2.2 Financial Stability

Growth is expressed as total asset growth where past asset growth will reflect future profitability and future growth (Puspitasari & Wiagustini, 2019). Companies that are able to manage the company well and have high profitability are considered to have high growth. The growth ratio is a ratio that aims to measure a company's ability to maintain its position in economic and industrial growth.

Asset growth is the total growth of current assets plus the growth of non-current assets. Current Assets are cash and assets that are expected to be liquidated or exchanged for cash, sold or consumed within a certain period of time (maximum one year in the company's average activity turnover) (Wahyuni & Gani, 2022).

Since the global financial crisis, policymakers have increasingly prioritized financial stability. Efforts have focused on identifying factors that contribute to a stable financial system in order to prevent potential crises. Within this framework, financial inclusion is recognized as playing a critical role in enhancing stability and minimizing losses, particularly because economically disadvantaged communities are most vulnerable to crisis impacts. However, empirical research supporting the link between financial inclusion and financial stability remains limited, as noted by (Cull et al., 2012).

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The proliferation of excessive credit has been shown to significantly impair economic growth. Advanced economies like France, Germany, and the United Kingdom have maintained financial stability, whereas developing nations such as India and China have sustained high growth rates amidst crises. While various definitions of financial stability exist, most share commonalities. (Berger & Kißmer, 2013) define financial stability as a state where the financial system, including intermediaries, markets, and infrastructure, can withstand shocks. Financial stability helps mitigate disruptions in financial intermediation processes that can severely impact the financial system.

Ahmad (2018) asserts that a stable financial system efficiently allocates resources, manages financial risks, and prevents destabilizing movements in asset prices, which can affect monetary resilience. A stable financial system also addresses financial imbalances arising both internally and from unforeseen events. In response to shocks, it employs self-correcting mechanisms to absorb impacts, thus averting detrimental effects on the real economy and overall financial system (Ahmad, 2018). Therefore, achieving sustainable economic growth necessitates financial stability as a pivotal policy component, given the substantial role of the financial system in economic transactions.

Babar & Ali (2019) identify several key indicators for assessing financial stability in the banking sector. Profitability, measured by the return on assets (ROA) ratio, is a critical indicator, with a low ROA suggesting poor performance and potential financial instability (Babar & Ali, 2019).

The ratio of liquid liabilities to liquid assets helps detect banking crises by reflecting banks' liquidity health, where a sharp decline in deposits indicates a loss of depositor confidence and possible bank runs. The non-performing loan (NPL) portfolio ratio signals credit risk, with high NPLs indicating instability, necessitating provisions for loan losses to maintain stability. The uncovered liabilities ratio measures the gap between redeemable and liquid liabilities, where a negative ratio suggests lower liquidity risk.

The interest spread ratio, the difference between average loan interest rates and deposit rates, reflects financial institution profitability, with a higher spread indicating better stability. Lastly, the ratio of interbank funds to liquid assets measures the extent of interbank lending, signaling liquidity shortages when banks rely on borrowing to cover short-term liabilities. Collectively, these indicators provide a comprehensive view of financial stability, enabling the detection of potential risks and the management of banking sector health (Babar & Ali, 2019).

2.3 Digital Finance

As society has evolved, traditional trade has transformed into e-commerce, with an increasing number of individuals preferring to shop through online platforms rather than visiting physical stores (Gaspareniene & Remeikiene, 2016). Factors such as globalization and digitalization consistently change the way people work and communicate, bringing changes even in purchasing decisions, as technology has become a part of everyday life (Coca & Nistor, 2021).

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Some academics and practitioners, in various countries, still have varying definitions of "digital finance." Monetary authorities also provide different descriptions related to digital finance, including the categorization of payment data, where some of them continue to be included in electronic transactions (PBI, 2018); (Ramli, 2020). The term "digital finance" refers to financial services provided through mobile banking, e-wallets, mobile wallets, the internet, personal computers, mobile phones, and debit and credit cards (Manyika et al., 2016); (Durai & Stella, 2017). Digital financial services can be interpreted as financial services that are accessible and delivered through digital methods, including payments, money transfers, and credit, or through modern devices (such as debit and credit cards), primarily provided by banking institutions (Pazarbasioglu et al., 2020).

Based on the concept of digital finance, the researcher synthesized various digital financial variables, which encompass the use of financial services through online platforms such as mobile banking, e-wallets, internet banking, personal computers, smartphones, and debit and credit cards.

Digital finance is assessed along two primary dimensions: access and usage. The access dimension includes indicators like the density of ATMs per 100,000 population and the number of registered mobile money accounts per 1,000 population. Meanwhile, the usage dimension comprises indicators such as the volume of mobile money transactions per 1,000 population, the percentage of individuals over 15 using credit cards, and the number of debit card users per 1,000 adult population. These dimensions provide a comprehensive framework for evaluating the penetration and utilization of digital financial services within a population, highlighting their role in modern financial ecosystems.

2.4 Financial Inclusion

The definition of financial inclusion varies depending on its objectives and the criteria used for measurement. García & José (2016) describe financial inclusion as encompassing initiatives aimed at integrating individuals without bank accounts into the formal financial system, granting them access to a range of services like credit, savings, payments, and insurance. Measurement of financial inclusion spans several dimensions: access (the ability to obtain and utilize financial services from formal institutions), quality (the adequacy and effectiveness of available services, including customer understanding and satisfaction), usage (the extent and frequency of service utilization within the financial system), and impact (the efficiency of services in enhancing consumers' quality of life) (World Bank, 2022); (Park & Mercado, 2021).

Elsherif (2019) defines financial inclusion as the facilitation of easy access, availability, and use of formal financial services for all members of an economy. Various indicators gauge financial inclusion across dimensions such as access, availability, usage, affordability, and timeliness. According to the literature, enhancing financial inclusion significantly contributes to the development of the financial sector. In less developed economies, exclusion from financial services is seen as a significant barrier to well-being among vulnerable segments of society, encompassing not just financial but also social exclusion factors (Elsherif, 2019).

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Omar & Inaba (2020) developed a Composite Financial Inclusion Indicator (CFII) to comprehensively evaluate financial inclusion across developing economies. Their framework encompasses three essential dimensions.

Firstly, the Penetration Dimension measures the extent of individuals entering the formal financial system, using indicators such as the number of deposit accounts and depositors per 1000 adults. Secondly, the Availability Dimension assesses the geographic and demographic coverage of financial services, indicated by the number of financial institution branches and ATMs per 100,000 adults.

Challenges in data consistency arise with the shift towards electronic services like internet and mobile banking. Lastly, the Usage Dimension evaluates the effectiveness of financial service utilization through indicators like the number of loan accounts and borrowers per 1000 adults, reflecting the depth of engagement beyond access. Omar and Inaba's CFII framework serves as a standardized tool for monitoring financial inclusion progress, facilitating cross-country comparisons and guiding policymakers in enhancing financial access and usage across diverse economic landscapes (Omar & Inaba, 2020).

2.5 The impact of digital finance and financial inclusion on financial stability

Globalization in the financial sector due to technological advances not only has a positive impact on the development and economic growth of the financial sector, but also has negative consequences. The evolution of integrated financial services without border restrictions has created financial sector instability (Syed et al., 2021).

Globalization and interconnectivity help transfer financial sector instability from one country to another. On the one hand, digital finance which helps in driving the development of the financial sector also creates opportunities for systematic risks. Various factors cause systematic or business risks such as institutional linkages, financial market connectivity, macroeconomic conditions, and the size of the financial sector (Hodula & Pfeifer, 2018).

(Ozili, 2018) concluded that, although digital finance helps in accelerating the process of financial inclusion, it also carries some risks. For example, easy availability of credit helps increase non-performing loans, and excessive use of fintech technology increases digital risks such as data theft and disruptions in payment systems (Vives, 2019). The influence of digital finance and financial stability can be studied through the influence of digital finance on banking as the main financial institution in the financial system.

There are not many studies on this topic and the findings are mixed and some still use a qualitative approach due to limited quantitative data sources. Several findings show negative results that digital finance, especially fintech and peer-to-peer lending, disrupts banking performance & financial stability, such as the empirical findings of (Nugroho et al., 2020), (Tang, 2019), (Buchak et al., 2018), (Romānova & Kudinska, 2016).

Studies on the possible impact of financial inclusion on financial stability are still relatively new and have not been widely conducted. Some of the literature on the relationship between these two provides conflicting aspects of how these concepts are related theoretically.

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According to Khan (Pham & Doan, 2020), there are several basic ways that illustrate the positive influence of financial inclusion on financial stability. First, financial inclusion encourages broad savings intermediation and facilitates compositional changes in the financial system that allow more opportunities for financial institutions to operate in newly created businesses or expanded markets.

When the balance sheet of all sectors improves with greater diversity and participation of economic agents, this will contribute to the potential for higher economic resilience. Second, financial inclusion provides a stronger retail funding base for financial institutions, especially for banks.

The World Bank in its Global Financial Development Report also provides evidence for the negative relationship of financial inclusion and financial stability. Using financial access survey data, this research shows a better correlation between the two concepts in low-income as well as middle-income countries where financial inclusion problems are more severe.

There, financial access is proxied by the number of loan accounts at commercial banks per 1000 adults, and financial stability is proxied by bank NPLs along with the risk premium on loans ratio. The results show a statistically negative correlation between financial inclusion measures and financial stability. Also, with bank capital/assets, there is a similar negative result: higher loan penetration is associated with lower bank capitalization.

This suggests that high-income countries with higher levels of financial access face related factors that impose higher volatility, such as lower capital requirements or higher moral incentives for risk management. Moreover, data from the study also reveal that countries with more competitive banking sectors achieve greater deposit penetration and higher financial stability.

3. RESEARCH METHODS

The research employs a quantitative approach to examine the causal relationship between digital finance, financial inclusion, and financial stability, with financial regulations and shadow banking as moderating variables. Conducted among G-20 member countries, the study's population includes nations that implemented policies related to these variables from 2011 to 2021.

The sample criteria focus on ensuring representation across these policies within the G-20 context. Statistical analysis is conducted using the Structural Equation Model (SEM) method, specifically utilizing Partial Least Squares (PLS) as the analytical tool.

This method allows researchers to model complex relationships and interactions between variables, offering insights into how digital finance and financial inclusion impact financial stability under varying regulatory and shadow banking environments across the studied timeframe.

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Table 3.1: Operational definition and measurement

Variable Type	Variable	Indicator	Data source
Dependent	Financial Stability	Non-Performing Loan Ratio (NPL) The ratio of bank credit to deposits (Bank Deposit Credit *Ratio*/BDCR)	World Development Indicators
Independent	Financial Inclusion	Penetration dimensions Number of savings accounts per 1,000 population Availability dimensions Number of bank branches per 100,000 population Usability dimensions Number of loan accounts per 1,000 residents	Independent
Independent	Digital Finance	Access dimensions: Number of ATMs per 100,000 population Number of mobile money accounts per 1,000 population Usage dimensions: Number of mobile money transactions per 100,000 population Percentage of total credit card users (population over 15 years) Number of debit cards per 1,000 residents	Financial Access Survey

4. ANALYSIS AND RESULTS

4.1 Result

4.1.1 Convergent Validity

Table 4.1: First Run Loading factor value

Variabel	Indicator	*Outer Loading*
Digital Finance (X1)	X11	0,735
	X12	**0,109**
	X13	0,733
	X14	0,710
	X15	**0,034**
Financial Inclusion (X2)	X21	0,666
	X22	0,661
	X23	0,932
Financial Stability (Z)	Z11	0,817
	Z12	0,683

Source: SmartPLS Output

Based on table 4.1, of those research indicators, there are 2 indicators that have a loading factor value of less than 0.6, namely in the digital finance variable there are 2 indicators, namely indicators X12 and X15. This shows that variable indicators that have a loading factor value greater than 0.60 have a high level of validity, so they meet convergent validity. Meanwhile, variable indicators that have a loading factor value of less than 0.60 have a low level of validity so that these variable indicators need to be eliminated or removed from the model. The loading factor value after the variable indicators that have a loading factor smaller than 0.60 are eliminated can be shown in Table 4.2

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Table 4.2 : Second Run Loading factor value

Variable	Indicator	*Outer Loading*
Digital Finance (X1)	X11	0.753
	X13	0.722
	X14	0.698
Financial Inclusion (X2)	X21	0.670
	X22	0.662
	X23	0.930
Financial Stability (Z)	Z11	0.780
	Z12	0.632

Source: SmartPLS Output

From the results of data processing with Smart PLS shown in Table 4.2, after eliminating indicators, all indicators for each variable in this study have a loading factor value greater than 0.60 and are said to be valid.

4.1.2 Discriminant Validity

Discriminant Validity from the measurement model with reflexive indicators assessed based on the cross loading of the measurement with the construct. The cross loading value shows the magnitude of the correlation between each construct and its indicators and the indicators of the other block constructs. A measurement model has good discriminant validity if the correlation between the construct and its indicators is higher than the correlation with indicators from other block constructs.

Table 4.3 : Cross Loading Results

Variables	Digital Finance	Financial Inclusion	Financialstability
Digital Finance	0.724		
Financial Inclusion	0.383	0.764	
Financial Stability	-0.485	0.406	0.710

Source: SmartPLS Output

The cross loading results in Table 4.3 show that the correlation value of the construct with its indicators is greater than the correlation value with other constructs. Thus, all constructs have good discriminant validity. The next step is to compare the AVE root value with the correlation between constructs. A good AVE value is required to have a value greater than 0.50. In this research, the AVE value and square root of AVE for each construct can be shown in Table 4.7

Table 4.7: AVE and Square Root Values AVE

Variable	AVE
Digital Finance	0.525
Financial Inclusion	0.584
Financial Stability	0.504

Source: SmartPLS Output

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Based on Table 5.17, all constructs show an AVE value greater than 0.50, with the smallest value being 0.504 for the financial stability variable and the largest being 0.584 for the financial inclusion. This value meets the requirements in accordance with the specified minimum AVE value limit, namely 0.50.

4.1.3 Composite Reliability

By looking at the reliability of the construct or latent variable which is measured by the composite reliability value. A construct is declared reliable if the composite reliability has a value > 0.7 then the construct is declared reliable. SmartPLS output results for assessing Composite Reliability can be shown in Table 4.8

Table 4.8: Composite Reliability

Variable	Reliability
Digital Finance	0.768
Financial Inclusion	0.713
Financial Stability	0.722

Source: SmartPLS Output

From the SmartPLS output results in Table 4.8, the Composite Reliability value for all constructs is above 0.70. With the resulting values, all constructs have good reliability in accordance with the required minimum value limits.

4.2 Analysis

Based on the research findings, the primary contributor among digital finance indicators to enhancing financial stability in G-20 countries is the availability of ATMs per 100,000 adult population. This highlights that higher ATM availability per capita correlates with increased financial stability in these nations. Conversely, lower availability of ATMs per 100,000 adults reduces financial stability. Another significant digital finance indicator impacting financial stability is the number of mobile money transactions per 1,000 adult population. A higher volume of mobile money transactions per capita enhances financial stability in G-20 countries, while a lower volume decreases it. These results align with Mortinsen et al.'s research as cited in (Syed et al., 2021), which underscores that technological advances driving globalization in the financial sector bring both positive economic impacts and potential risks. While digital finance facilitates financial sector development, it also introduces systemic risks such as institutional interdependencies, financial market interconnectedness, macroeconomic conditions, and the scale of the financial sector (Hodula & Pfeifer, 2018)s.

Another research conducted by Ozili (2018) concluded that, although digital finance helps in speeding up the financial inclusion process, it also contains several risks. For example, easy availability of credit helps increase non-performing loans, and excessive use of fintech technology increases digital risks such as data theft and disruptions in payment systems (Vives, 2019). The influence of digital finance, in this case digital payments, on financial stability has a positive impact on banking performance which helps banks in distributing credit, expanding the reach of financing, helping people switch from cash to non-cash payments which ultimately affects stability.

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Based on the research findings, the financial inclusion indicator that significantly enhances financial stability in G-20 countries is the number of loan accounts per 1,000 adult population. This indicates that increasing the number of loan accounts per 1,000 adults in a G-20 country can boost financial stability. Conversely, a decrease in the number of loan accounts per 1,000 adults can reduce financial stability in these countries. The second key indicator of financial inclusion contributing to financial stability is the number of savings accounts per 1,000 adult population. A higher number of savings accounts per capita enhances financial stability in G-20 countries, whereas a lower number of savings accounts per 1,000 adults diminishes it.

These findings align with the research conducted by Khan, as cited in (Pham & Doan, 2020), which outlines several fundamental ways financial inclusion positively influences financial stability. Firstly, financial inclusion promotes broad savings intermediation and facilitates changes in the financial system's composition, creating more opportunities for financial institutions to operate in new or expanded markets. This diversity and increased participation of economic agents across all sectors can lead to higher economic resilience. Secondly, financial inclusion provides a stronger retail funding base for financial institutions, particularly banks.

Research on the impact of financial inclusion on financial stability is still relatively new and not widely conducted. Some literature on the relationship between these concepts presents conflicting theoretical aspects. While various studies analyze the effect of financial inclusion on key economic variables, few focus on its impact on stability and financial system efficiency. The importance of financial inclusion has been increasingly emphasized by global governments, especially following the recent global financial crisis. Some literature suggests that higher levels of financial inclusion can have either positive or negative effects on the stability of the financial system.

5. CONCLUSION

In this analysis, we found that all indicators met the criteria for high convergent validity, with loading factors greater than 0.6. Additionally, the constructs demonstrated high discriminant validity, indicating that they were not influenced by other indicators. Furthermore, the construct reliability was high, with values exceeding 0.7. Therefore, the analysis confirms that the model used possesses high validity, discriminant validity, and reliability, making it suitable for further research and application.

Analysis of Indicator Variables:

a) Digital Finance

Indicator X11 as Number of ATMs per 100,000 population Number of mobile: Has a loading factor of 0.735, meeting the criteria for high validity.

Indicator X13 as Number of mobile money transactions per 100,000 population: Has a loading factor of 0.733, meeting the criteria for high validity.

Indicator X14 Percentage of total credit card users (population over 15 years) Number of debit

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cards per 1,000 residents: Has a loading factor of 0.710, meeting the criteria for high validity.

Indicators X11, X13, and X14 have loading factors greater than 0.6, meeting the criteria for high validity.

b) Financial Inclusion

Indicator X21 as Number of savings accounts per 1,000 population : Has a loading factor of 0.666, meeting the criteria for high validity.

Indicator X22 as Availability dimensions Number of bank branches per 100,000 population: Has a loading factor of 0.661, meeting the criteria for high validity.

Indicator X23 as Number of loan accounts per 1,000 residents: Has a loading factor of 0.932, meeting the criteria for high validity.

All indicators have loading factors greater than 0.6, meeting the criteria for high validity.

c) Financial Stability

Indicator Z11 as NPL: Has a loading factor of 0.817, meeting the criteria for high validity.

Indicator Z12 as BDCR: Has a loading factor of 0.683, meeting the criteria for high validity.

All indicators have loading factors greater than 0.6, meeting the criteria for high validity.

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