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# The Role of Technology in Improving Financial Inclusivity of Banking Institution: Literature Research with Indonesian Case

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**Abstract**---This article was written to see how technology plays a role in improving the financial inclusiveness of banking institutions and the role of government and regulator as well. Technology that has grown rapidly in recent decades has been able to make rapid progress in the industry and change people's behavior. Technology is becoming an inevitability that encourages progress in the economy. Banking as one of the supporting sectors of the financial institution industry needs to do efforts continue to develop through innovation in fulfilling the needs of financial services, to improve performance with the application of technology. Using the approach of literature review and former empirical study, the author tries to perform qualitative description analysis of technological role in increasing financial inclusiveness of banking institution and role of the government and regulator as well. The results show that technology has an important role in boosting strategy to increase financial inclusiveness through improving financial performance. Regardless of the role of government and regulator to create conduciveness of such technological role.

**Keywords**---banking, financial inclusion, technology.

## Introduction

Entering the industrial era 4.0 technology and digitization will revolutionize everything. Technological innovation will fuel crucial changes around the world and dimensions of life (Schwab, 2016). One of them is a dimension in the life of the business world. The growing use of digital-based technology has disrupted the industry at this time, including in the financial services industry, especially banking institutions. The development of financial services with the use of technology has greatly disrupted banking services. For example, the provision of credit by banks is disrupted by the existence of peer-to-peer lending companies, which are financial products of Fintech companies (financial technology). Non-cash payments via bank transfers have been disrupted by payment systems such as go pay, e-money, links, and others.

In increasing financial inclusion, it cannot be separated from the increased performance of the banking industry itself. With the increase in banking performance, it will be in line with or correlate with financial inclusion. This is due to the function of the bank as a collector and channel of funds collected from the public and to carry out its intermediation function optimally. Improving banking performance cannot be separated from the use of technology in the current era of technological progress.

Valahzaghard (2013) further states that technological advances have contributed significantly to the banking industry. People no longer go to branches as long as they can access banking transactions using convenient technology (Valahzaghard & Sharkourloo, 2013). Rapid technological developments affect all sectors of the economy including financial institutions such as banking. Banking must keep abreast of developments in technological advances to survive and compete in the industry. Various studies conducted prove that there is a significant relationship between spending on technology and increased profitability (Lata, 2016). Research that was

conducted in India on 737 banks from 1993 to 2000, [Rajput & Gupta \(2011\)](#) found that all commercial banks showed a trend of significant performance improvements with the adoption of technology. In line with this, technology is the key enabling factor to increase financial inclusion ([Ranganat & Rao, 2012](#)).

I see furthermore, in particular, efforts to increase the financial inclusion of banking institutions cannot be separated from the efforts of financial institutions to make it easier for the public to get access to banking services quickly, easily, cheaply, and services that are following their needs. This access aims to increase the use of banking services more and more widely (financial deepening). Thus the function of intermediation will be more optimal so that distribution will increase in line with the pillars of the National Strategy for Financial Inclusion which has become government policy. For this reason, the role of technology cannot be ignored in this case. The use of technology is also a recommendation from the results of the 2016 G20 meeting in China in increasing financial inclusion. Various research results on the use of technology in banking that can increase financial inclusion, among others, can be seen in Table 1.

Table 1  
Use of Technology in the Banking Sector

Technology-Based Initiatives	Description	Target
<i>Branchless Banking</i>	Banking services using individual business agents	Speed up access without having to go to bank offices, savings products that you want, easy account requirements.
<i>Digital Banking</i>	Special services by opening bank branches or kiosks with digital facilities	Self-service with existing facilities at the branch during and outside of working hours.
<i>E-Banking</i>	Electronic banking services are carried out independently by customers, with the provision of service infrastructure by banks	Facilitate and accelerate bank services without having to go to branches during or outside of working hours with limited transactions such as ATMs, internet banking, etc.
<i>On-Line Banking or Mobile Baking</i>	Banking services using applications on Android phones	Access to transactions and banking information for 7 days, 24 hours via mobile
Use core banking system	Bank operational activities are carried out using an integrated system, including front office services (teller & Customer Service, transaction bookkeeping, reporting, customer database, etc.)	Efficiency in operational processes; reduce errors; increase accuracy; improve internal control; data analysis for decision making; service development etc.
Use stand-alone application software	<i>Software</i> applications outside the core banking (separate) for customized needs.	Risk management, speed, accuracy, product & service development, etc.

Source: Compiled from various journals, 2020

It can be seen that almost all banking activities have used technology in creating innovations that have an impact on increasing various areas of the banking service business. The impact of the use of technology increases performance in various areas of banking activity. This increase will automatically improve its financial inclusion performance, in line with the increase in the number of customers, funds raised and channeled, and other transaction services.

Technology itself has been known since the classical economic era where technology is still considered as the capital as capital in the form of physical assets such as machinery, buildings, and other tangible things. With the development of the internet in the 1990s, banks have started to recognize internet-based banking services such as ATMs, internet banking, e-mail, facsimile, and others. Since the last decade entering the digital era, it has had an impact on the financial services industry such as banking. The emergence of innovations using digital-based

technology has improved micro and macroeconomic performance. The increased performance of micro banking has had an impact on macro performance, such as increasing national financial inclusion. The use of technology in reducing poverty levels through financial inclusion programs is in line with the National Strategy for Financial Inclusion through the banking sector by referring to one of the supporting pillars, namely the intermediation and distribution function. This was confirmed by [Sawant \(2011\)](#) which states that macroeconomic performance in the form of economic growth is supported by the introduction of information technology-based on the explanation above, this study aims to analyze the role of technology use in increasing the financial inclusiveness of banks and the roles of government and regulators in encouraging the use of this technology.

## **Research Methodology**

The method used in this study uses a library research approach, namely a review of theories, research results (empirical), government regulations, and regulations relevant to the topic of writing. Library research is a series of activities relating to methods of collecting library data, reading and taking notes, and processing research materials ([Zed, 2014](#)). Library research is a method of scientific work that is classified as a type of qualitative research ([Hamzah, 2020](#)). Data and information obtained from library sources and research results will then be analyzed descriptively. The descriptive analysis, emphasizes the discussion and explanation of the information in the form of words and images, not numbers ([Sugiyono, 2016](#)). Discussions will be carried out starting from the underlying grand theory, such as the theory of inclusive development and the theory of financial intermediation, and then lowered into a more specific and relevant discussion on the topic of this study.

## **Theoretical and Empirical Review**

### *Inclusive Growth*

Economic development has been oriented towards growth. Therefore, such an orientation has resulted in social exclusion and three major crises in the form of social inequality, poverty, and environmental damage, so a new development paradigm that is more inclusive is needed. The definition of inclusive economic development established by the Ministry of National Development Planning is economic growth that creates broad access and opportunities for all levels of society in an equitable manner, increases welfare, and reduces disparities between groups and regions. The existence of economic growth is an important condition for the creation of inclusive growth. What is meant by inclusive growth is growth that spreads between sectors or is labor-intensive ([Hapsari et al., 2013](#); [Daniyan-Bagudu et al., 2017](#)). It is further explained that inclusive growth can be a growth that involves the participation of all parties without discrimination and can involve all sectors of the economy. Inclusive growth is growth that is not discriminatory and can guarantee equitable access to growth as well as the growth that can reduce groups that do not benefit from growth. Inclusive growth reflects fast economic growth followed by an increase in the quality of human resources and a decent standard of living so that it can encourage development planners to formulate appropriate and useful policies ([Kristyanto & Kaluge, 2018](#)) Inclusive growth is growth that is not discriminatory and can guarantee equitable access to growth as well as the growth that can reduce groups that do not benefit from growth.

Besides that, inclusive growth is economic growth whose results can be enjoyed by all levels of society and does not become a monopoly of the middle and upper-class groups. Involvement in the development process that creates inclusive growth must involve all groups and groups of society. Welfare, which is the ultimate goal of development goals, is not only normative but can be realized. High economic growth does not guarantee that all people receive the same benefits. A measure capable of explaining economic growth and social problems, several international institutions such as the Asian Development Bank (ADB), World Economic Forum (WEF), and United Nation Development Program (UNDP) created a set of variables and formulas for measuring alternative economic growth emphasizing equal access to economic opportunities for all levels of society. This measure is known as inclusive economic growth.

[Sitorus & Arsani \(2018\)](#), stated several reasons for the need for inclusive growth, namely: 1) consideration of equality and justice, growth should be distributed and inclusive in all levels of society and regions; 2) growth with persistent inequality can endanger social conditions, such as poverty, unemployment that can create crime, women are more vulnerable to prostitution, and unwanted child labor and; 3) inequality in sustainable yields and access can disrupt political stability and social structures, thereby reducing the potential for sustainable growth. Inclusive growth according to the World Economic Forum (WEF) is economic growth measured using an approach consisting

of 7 main pillars, namely: 1) education and skills development; 2) public services and infrastructure; 3) corruption; 4) financial intermediation; 5) asset ownership and entrepreneurship; 6) employment and; 7) social protection. In enhancing inclusive growth, Indonesia has established 3 pillars of support, namely Pillar 1: high economic growth; pillar 2: equitable income and poverty reduction, and pillar 3: expanding access and opportunities. One of the sub pillars 3 is inclusive finance. Expansion of access and opportunities. One of the sub-pillars of pillar 3 is inclusive finance. expansion of access and opportunities. one of the sub-pillars of pillar 3 is inclusive finance.

Based on the above discussion, it can be concluded that sustainable economic development requires inclusive growth. Economic development that only emphasizes growth without involving all levels of society through the inclusiveness of growth will lead to inequalities stemming from low welfare attainment. Therefore, inclusive development must be encouraged through action both at the policy level and real action on the ground.

### **Financial Intermediation and Inclusion**

Intermediation means liaison or mediation (KBBI, 2020). The use of the term intermediation in another context has the same basic meaning as financial intermediation (financial intermediation). Financial intermediation is an activity that occurs between borrowers and lenders intending to affect resource allocation in a market economy (Hester, 1994). A financial intermediary is an industry of similar companies that make and regulate financial contracts in an imperfect world. Financial intermediaries act as brokers who carry out risk transformation in the economy. Bongomin (2017) suggests that financial intermediation is a process that involves surplus units storing their funds in financial institutions such as banks which then lend the funds to units that are in deficit. Banks get information that is not available in the market from surplus and deficit units, which will then directly transact both through the bank intermediary. Expansion of financial infrastructure by opening bank branches with the provision of banking products can increase financial intermediation (Mishkin, 2008). The impact on financial intermediation can be measured from 2 proxies, namely the provision of money and provision of credit and real GDP growth as a measure that represents economic growth (Oluwagoso, 2017).

According to Thorat (2006), financial inclusion is the provision of financial services by the formal financial system for those who tend to be outside the system. These financial services are affordable for them, such as for payment needs, remittances, savings, loans, insurance, and others. According to the World Bank, there are 4 types of basic financial services for the community, namely savings, credit, payment systems, and insurance including pension funds. Financial intermediation is significantly related to financial inclusion according to research previously conducted in Uganda (Bongomin, 2017). The existence of a banking structure such as bank branch offices and support personnel has resulted in increased access to finance in developing economies. This was confirmed by CGAP (Consultative Group to Assist the Poor), which is a cooperative body of 34 global organizations to help advance financial inclusion). It is argued that the occurrence of financial inclusion cannot be separated from government interference through a supportive regulatory framework. Financial inclusion with regulatory support affects the inclusion of the poor into the formal financial system.

Efforts to increase financial intermediation will automatically address how to enter people who are still not financially inclusive into the formal financial system. Increasing public financial inclusiveness will affect the effectiveness of the intermediary role of these financial institutions. The main objective of financial inclusion, among others, relates to the provision of savings and credit products as a measure of the effectiveness of financial intermediation by banking institutions. Therefore, if banking institutions are to improve their intermediation function, banks should carry out activities that touch those who have not been financially inclusive into the formal banking system.

With the enactment of the National Strategy for Financial Inclusion, banking institutions have become one of the supports for the government in increasing financial inclusion by enhancing its intermediation and distribution functions. The growth of MSMEs (Micro, Small and Medium Enterprises) and the rapid development of technology are opportunities for banks to increase intermediation through financial inclusion. With the contribution of technology, banks can make innovations in increasing public financial inclusion, as has happened in many countries including Indonesia. Innovations in products, efficiency, business processes, and expansion of access or transaction channels are proof that they have been able to improve performance as well as become strong competitiveness (Chaarani & Zouhour, 2018).

The conclusion that can be drawn from the explanation above is that financial intermediation and financial inclusion are related to one another. Financial intermediation can reflect the level of financial inclusion. The fluctuations that occur in financial intermediation can affect the financial inclusiveness of banking institutions.

## Technology Reinforce Strategy

The development of technology presents opportunities and challenges for organizations/companies. The key to this challenge is how the organization effectively uses technology and incorporates it into corporate strategy. Thus, it will make technology maximally useful in its capacity to boost organizational performance. [Sibanda & Ramathan \(2017\)](#) in their research on the influence of technology on organizational strategy suggest that in the current era of technology, technology must be conceptualized in an organization's overall strategy to accelerate growth. There are 3 interaction models between strategy and technology ([Hagawa & Numagamu, 1992](#)). The model referred to is 1) the effect of current technology on the company's current strategy; 2) current strategy for future technology and; 3) the influence of current technology on future strategies. From the three models, it is clear that technology influences strategy, especially the most important thing is how current technology will affect future corporate strategies.

The simple and traditional application of technology to the strategy of a company is how companies improve functions within the company area, to increase efficiency and accelerate business processes ([Bakos & Treacy, 1986](#)). Strategies with technology strengthening can improve the company's competitive position and improve performance ([Rockart & Morton, 1984](#)). Strategies to increase financial inclusion cannot be separated from the presence of technology. The strategy of increasing financial inclusion for both individuals and micro, small and medium enterprises (MSMEs) involves the use of technology that can provide services at affordable costs. Thus, it means that the financial inclusion strategy must be strengthened by the use of technology.

Studies in various countries show strategies to increase financial inclusion involve the use of technology. Technology is a technology used to process data so that data can be converted into information. Information technology is more widely used with computers, especially computers to store, analyze, and distribute any information, including words, numbers, and images ([Kusmayadi, 2019](#)). Various countries, especially developing countries, are implementing technology-based strategies in developing products, increasing access, and improving services. Several studies on the use of technology in financial inclusion strategies include: 1) [Reeshma & Dunstan \(2017\)](#) technology helps banks achieve better competition; 2) [Aditya \(2017\)](#) financial technology has a good level of effectiveness to improve the quality of banking services in Indonesia; 3) [McKendrick \(1992\)](#) the use of information technology in a number of back-office jobs in Indonesia after Pakto 88, was able to produce higher productivity; 4) [Santoso & Meera \(2017\)](#) the use of technology makes it possible to develop financial inclusion programs; 5) [Saxena & Anand \(2017\)](#) the use of technology in services has a positive effect on financial inclusion, technology-based services have a positive effect on convenience and the use of technology has a positive effect on the frequency of service use; 6) [Bhuvana & Vasantha \(2016\)](#) the use of technology affects rural communities that are not yet financially inclusive and increases the distribution of financial services through technology-based distribution channels.

## Banking Technology and Performance

Research that has been conducted in many countries, including Indonesia, shows how technology can improve business performance, including the banking sector. In general, we can convey the results of the research as follows.

- 1) Banks with the use of technology can reduce costs, reduce risk and increase profits ([Gulla & Gupta, 2012](#)).
- 2) Integrated banking services through technology can increase market share and customer decision making ([Mermod, 2011](#))
- 3) Technology helps banks achieve a better competitive position. The banking sector with technology can create public awareness about e-banking, mobile banking, credit card facilities, business credit, and home credit ([Reeshma & Dunstan, 2017](#)).
- 4) Operating costs increased after adopting Internet Banking, then decreased slowly over time and decreased significantly after three years ([Hermendo & Nieto, 2007](#)).
- 5) Internet Banking has a positive effect on non-interest income and increases the profitability of commercial banks. However, this influence takes 3 years ([Dinh & Le, 2015](#))

Technological change is an important force that affects the performance and position of company competitiveness ([Udayana, 2017](#)). Technology can provide space for product innovation, other services, and processes that can improve performance. Technology is an external factor that the industry must respond to with its rapid progress and development ([Assauri, 2011](#)). Increased banking performance due to technological factors can also be seen in the condition of domestic banking in Indonesia. The increased performance is also related to the acceptance of technology (user acceptance) in banking services by the industry.

The results of research on the use of technology in the banking sector can improve performance and user acceptance, including the following.

- 1) Financial technology has a good level of effectiveness to improve the quality of banking services in Indonesia (Aditya, 2017).
- 2) Internet banking has a significant positive effect on sense of security; trust and; not significant to customer loyalty. Security has a significant positive effect on customer loyalty. Customer trust has no significant positive effect on customer loyalty and customer loyalty has a positive and insignificant effect on customer balances and customer loyalty has a positive and insignificant effect on customer balances (Permanasari & Darma, 2013).
- 3) Not all financial performance indicators show significant results between before using SMS Banking and during use. Only fee-based income and ROA (Return On Assets) have a significant effect (Sentosa, 2016).
- 4) There is a significant positive effect of benefits, security, and feature availability on re-interest in bank customers using internet banking. Ease does not have a significant effect on re-interest in using internet banking (Sentosa, 2016).
- 5) The growth of *Fintech* has a negative effect on bank performance in Indonesia (Phan, 2019).
- 6) The use of information technology in some back-office jobs for banks in Indonesia after Pakto 88 has been able to produce higher productivity with the encouragement of information technology compared to banks that are still manual (McKendrik, 1992).

What has been described above, it can be concluded that the massive application of technology can improve performance. This is evidenced by the results of various empirical studies in various countries. The use of technology is leverage in creating competitiveness. Therefore, technology should be a banking concern to always be followed by future developments.

### **Increasing Financial Inclusion through the Application of Technology**

The theory of financial intermediation states that financial intermediation is an intermediary institution for people experiencing financial surpluses and those experiencing financial deficits. Meanwhile, financial inclusion is the coverage of formal financial services for the community, through the availability of access and availability of other financial products and services as needed. If we look deeper at this understanding, the increased financial inclusiveness will improve the function and effectiveness of financial intermediation. Indicators in measuring the financial inclusion index are measured using 3 dimensions respectively: 1) bank penetration with an indicator of the number of bank savings accounts per 1,000 adults; 2) service availability, with an indicator of the number of bank branches and ATMs per 100,000 adults and; 3) usage with an indicator of the number of loans and savings divided by GDP (Sarma & Pais, 2012). The third component of the dimension is the achievement of the number of accounts; the number of bank branches and ATMs and; the amount of savings and loans is a performance, especially non-financial performance that can be achieved through the use of technology, as has been discussed previously. Thus it can be said that the use of technology can indirectly affect the increase in financial inclusion so that it can be said that technology plays a role in increasing financial inclusion. The amount of savings and loans is a performance, especially non-financial performance that can be achieved through the use of technology, as has been discussed previously. Thus it can be said that the use of technology can indirectly affect the increase in financial inclusion so that it can be said that technology plays a role in increasing financial inclusion. The amount of savings and loans is a performance, especially non-financial performance that can be achieved through the use of technology, as has been discussed previously. Thus it can be said that the use of technology can indirectly affect the increase in financial inclusion so that it can be said that technology plays a role in increasing financial inclusion.

In addition to the many research results discussed above that show the role of technology in improving bank performance as well as having an impact on financial inclusion, several other studies include showing how technology plays an important role in increasing the financial inclusion of banking institutions. In increasing financial inclusion, information technology is designed by providers how access can be improved, innovative products and services that are easy, cheap, and fast as needed, can be created using information technology. The results of the study in question can be seen as follows.

- 1) Sundaram & Sriram (2016) in a study conducted in Vellore district, Tamil Nadu, India, argued that branchless banking technology (bank without offices) improves access and use of financial services. The type of branchless banking technology used is internet banking, ATM, point of sales system, and mobile banking. Research conducted on account holders who have become customers of financial inclusion programs. The results showed that the use of banking services with branchless banking technology by customers is influenced by age, education level, and customer income. In particular, revenue has a significant effect on the use of the technology in question.

- 2) [Santoso & Meera \(2017\)](#), in their research on Strategy Financial Inclusion Development in Indonesia, stated that the use of technology makes it possible to develop financial inclusion programs because of information and communication technology (ICT). This is because ICT has now developed into a Digital Collaborative Networking (DCN) platform and is expected to be able to produce economic and social welfare, especially innovations that facilitate marginalized communities. Barriers to accessing financial services to increase financial inclusion can be overcome by involving ICT infrastructure. Financial inclusion programs involving ICT provide opportunities for banks to provide special financial service products for most people. Empirical studies conducted in 14 countries, the use of ICT is one of the strategic points in increasing financial inclusion. Technology-based product and service innovations such as M-Banking, Prepaid Card, Electronic Kiosk, to name a few. The use of ICT is one of the pillars in the strategy to increase financial inclusion in addition to literacy, microfinance, public/government sector support, political will, community, and private sector involvement.
- 3) ICT in the form of fintech (financial technology) innovation which has developed rapidly in recent years has been able to encourage increased financial inclusion in Indonesia. Fintech has a significant contributing role in increasing financial inclusion in Indonesia. With fintech people who previously did not have accounts at formal financial institutions such as banks, fintech now has accounts in various technology-based financial services ([Laut & Hutajulu, 2019](#)). A significant effect is shown in the increase in the number of borrowers in peer-to-peer lending fintech companies. This increase in the number of borrowers indicates increased financial inclusion. Data in Table 3.1 below shows how the development of loans channeled through fintech lending. It is clear how technological developments through the application of fintech lending have been able to increase the number and value of loans very rapidly. The use of technology is very easy, technically, the process and financing approval only needs to be done through the mobile application. Likewise, credit quality can be reduced to a better level through the use of technology in analyzing applicant data.
- 4) Regarding fintech, the results of research by the Infobank Research Bureau on the performance of fintech lending show a very rapid development from 2016 to 2019 in 5 indicators that can reflect the increasing financial inclusiveness of fintech financial institutions. This development can be seen in Table 2.

Table 2  
Development of Indonesian Fintech Lending 2016 to 2019

Component	2016	2017	2018	2019
Number of loans (people)	18,000	259,635	2,300,007	5,104,000
Loan value (IDR Trillion)	0.247	2.56	13.83	25.89
Growth (%)	-	936.43	440.23	85.03
Current loan ratio (%)	-	-	-	96.73
Non-performing loan ratio (%)	-	-	-	3.27
The number of fintech registered with the OJK	-	-	-	99

Source: Research Bureau Bank Information, 2019

*Fintech* is a term to refer to innovations in the financial services sector that use technology that makes financial services more efficient ([Syafri, 2019](#)). With this understanding, fintech covers a wide range of financial services, including m-banking, crowd funding, m-payment, e-money, and agent banking. Fintech is revolutionizing the financial services industry through the availability of access that is more efficient/cheap, easy, fast, and from anywhere and anytime by the community ([Popescu, 2019](#)). The increase in the national financial inclusion index from 67.80 percent in 2016 to 76.19 percent in 2019 cannot be separated from the role of technology, including fintech.

A study conducted by [Ferrata \(2019\)](#) emphasizes the digital financial system is the key to supporting financial inclusion. Based on the results of research conducted, increasing financial inclusion through the use of digital technology can be shown as follows.

- a. The mobile money system (electronic money in cellphones) can reduce extreme poverty, especially in low-income countries, improve gender equality and help families more effectively manage financial risk. Reduces the cost of holding cash and increases accumulated savings. Increase payment speed, reduce payment-related costs. The use of digital finance by the government in distributing assistance to the community can increase the opening of new accounts by 13 percent to receive payments by the government.

- b. The digital financial system can manage unexpected financial needs through digital savings and insurance products. Mobile health services (health service applications via cellphones) in Kenya, can increase financial inclusion through payment products for health costs, savings, and credit of 150,000 users.
  - c. With the use of a digital financial system (digital finance), financial service providers such as banks are better able to find out what customers need and better assess the creditworthiness of their customers. With a digital financial system, it can assess the ability to pay credit by looking at the notes in bill payments.
- 5) A study on the driving factors of financial inclusion was carried out by [Bhuvana & Vasantha \(2016\)](#), which stated that technology was needed by banks in diversifying services to customers and reducing the use of human labor to increase protection for customers security in conducting transactions. To be a bank, it can use banking products related to internet banking, electronic payments, investment in securities, and exchange of information. In increasing financial inclusion through the use of information technology (ICT), banks face challenges in customer security using the system by anticipating crime prevention, virus attacks, and others against the technology systems used.

The explanation above emphasizes that the massive use by banks of information technology in increasing financial inclusion has made information technology providers drivers for the transformation of banking institutions. Anything a bank can do and have is if banks form partnerships with information technology providers and create long-term strategies ([Helen, 2016](#)). Increasing financial inclusion by implementing information technology will change the face of banking itself. The banking model with technology no longer relies heavily on the physical presence of a bank (brick and portal).

The issue of how to increase financial inclusion has become a global issue and has become the concern of developing countries because of the low level of financial inclusion of these countries, such as countries in South Asia, Southeast Asia, Latin America, and Africa. The use of technology in increasing the financial inclusion of financial institutions has been a concern in the meeting of the countries that are members of the G20 World Economic Forum since 2010 to increase financial inclusion through the use of technology. Various empirical studies on the use of technology in increasing financial inclusion as described above are case studies in many countries in the region, have reaped success, and are still relevant as a reference for learning and application in Indonesia.

The use of technology in increasing financial inclusion is not only a concern of financial service industry players, especially banking but also the need to involve the role of government and regulatory bodies such as Bank Indonesia and the Financial Services Authority. The financial industry, especially banking, is an industry that has a high level of business risk, and regulations from regulators tend to be rigid. Its important role from the government's perspective cannot be taken lightly and is indispensable. The government has an interest in high financial inclusion because studies in many developing and developing countries contribute to reducing poverty and increasing welfare. From a financial system perspective, Higher financial inclusiveness will create good and strong financial system stability ([Aduda & Kalunda, 2012](#)). Therefore, efforts to increase financial inclusion by involving the role of technology must be supported by the government through the role of encouraging the creation of a technology ecosystem and other necessary arrangements.

Increasing financial inclusion requires the presence of the government. Financial service providers such as banks operate within the framework of government policies and regulations that promote this. The agreement reached the meeting of the leaders of countries included in the G20 group is intended to promote financial inclusion. The detailed agenda, especially concerning financial inclusion, is following the results of the meeting of the forum of leaders of countries who are members of the G20 in China in 2016, emphasizing providing full and equal access to formal financial services and remittance activities. Increasing financial inclusion for both individuals and micro, small and medium enterprises (MSMEs), including the use of technology that can provide affordable services.

Indonesia as a member of the G20 has established the 2012 National Strategy for Financial Inclusion (SNKI) with one of the supporting pillars of the 5 existing pillars, namely the Intermediation and Distribution Function ([Kusumaningtuti, 2018](#)). The achievement of the 2019 financial inclusion index of 76, 19 as the targets in the SNKI above has been achieved. Through Presidential Regulation (Perpres) No. 114 of 2020 SNKI has been renewed by setting a target achievement of 90 percent in 2024. One of the supporting pillars in achieving the Presidential Decree, namely the Product Pillar, Intermediation and Distribution is an important factor in achieving inquisitive financial targets. Therefore, this pillar is intended to simplify and expand the reach of services to meet the various needs of community groups through the use of technology and digitalization more broadly and intently.

In line with this policy, the OJK (Indonesian Financial Services Authority) as an institution that supervises and regulates the banking, has issued regulations- provisions related to efforts to encourage financial inclusion by utilizing information and communication technology (ICT) facilities based on technology. This regulation is contained in SEOJK No. 6/SEOJK.03/2015 concerning Officeless Financial Services for Inclusive Finance by

Banks. This provision regulates the Laku Pandai program (Officeless Financial Services for Financial Inclusion). The Laku Pandai Program is a financial inclusion strategy through setting up officeless bank service initiatives that banks can do, known as Branchless Banking. The Laku Pandai Program as a financial inclusion strategy can be implemented by commercial banks and rural banks with the conditions specified in the Circular Letter.

Technology implementation of *Branchless Banking* in the Laku Pandai program, being able to improve the financial inclusion performance of program implementing banks is very significant. Table 3 shows the success of the program by looking at the development of several indicators. Since its implementation in 2015, all indicators have shown rapid progress, such as program participant banks, number of agents, program areas, number of accounts, and balances. The performance achievement of bank agents with the branchless banking technology used can be said to be successful and the role of technology is the key in increasing financial inclusion. The increase in Indonesia's financial inclusion index from 67.80 percent in 2016 to 76.19 percent in 2019, cannot be separated from the contribution of the Laku Pandai program based on the Branchless Banking technology used by banks as program providers and implementers. From the table data, it is clear that the financial inclusion indicator, in the form of the number of savings accounts, has increased approximately 25 times over the last 5 years with a total balance of IDR. 2,218 billion.

Table 3  
Development of Smart Practice Program Indicators 2015-2019 (September)

Indicator	2015	2016	2017	2018	2019 (Sept)
Total. Agent (Unit)	60,805	275,911	740,121	1,004,547	1,146,187
Number of Accounts. Tab.	1,216,952	3,700,215	13,645,396	22,833,627	25,777,824
Total Tab balance. (IDR. Billion)	67	216.5	1,030	1,570	2,218
Agent Location (Regency / City)	21	507	512	509	511

Source: OJK website, 2019

The use of technology in banking has been shown to play a role in improving the intermediation function, performance, and financial inclusion, as shown by the results of the empirical study above. The success of this program clearly shows the role of the OJK as the regulator of the financial services industry. Technology that continues to develop must get the attention of the banking industry. Banking institutions must be responsive and adaptive to external changes, especially technology to be able to continue to play a role in increasing the financial inclusion of banking institutions. A detailed regulatory framework is required and implemented by OJK as the role it plays in encouraging the use of financial services and protecting users. Some of them are relaxed in the account opening requirements, especially regarding the due diligent data of potential users.

In the current era of technological development, especially digital technology, OJK has taken proactive steps through regulatory initiatives to smooth the path for the financial services industry to enter the era of digitalization and fintech in financial services. Some of the arrangements for a more optimal role include the following: 1) Bank Indonesia Circular Letter No. 18/22/DKSP regarding the Implementation of Digital Financial Services; 2) Bank Indonesia Regulation No. 18/40/PBI/2016 concerning the Implementation of Payment Transaction Processing; 3) Bank Indonesia Regulation No. 18/17/PBI/2016 concerning Electronic Money; 4) OJK Regulation No. 13/POJK.02/2018 concerning Digital Financial Innovation in the Financial Services Sector and; 5) Bank Indonesia Regulation No. 19/12/PBI/2017 concerning the Implementation of Financial Technology.

In connection with the aforementioned matters, it can be said that the role of technology is very important in increasing the financial inclusion of banking institutions. The government and regulators play an important role in encouraging and creating an industrial environment that is conducive to realizing the role of banks in carrying out their financial intermediation function more efficiently and effectively through technology. In this way, financial inclusion can be realized that will create inclusive economic development through a bigger and wider role of banking.

## Conclusion

The application of technology to improve performance which has an impact on the financial inclusiveness of banking institutions is a must, as shown by the results of empirical studies in various countries. The importance of technology in increasing the financial inclusiveness of financial institutions is in line with the establishment of the National Strategy for Financial Inclusion by involving the role of technology. Using technology is a strengthening of banking strategy in achieving the goal of better performance as well as an effort to increase banking financial inclusiveness. Increased financial inclusion will improve the function and effectiveness of banks as intermediary institutions. Various empirical studies in many countries have found how information technology plays an important and broad role in banking. In almost all areas of the banking business sector, no one is untouched by technology. Therefore the use of technology is a necessity in enhancing the intermediation function which has an impact on financial inclusiveness. Also, the role of the government and regulators cannot be ignored in encouraging financial institutions, especially banking, through regulations that create a conducive climate for the banking industry.

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