

# The Importance of Information Technology Implementation in Facing Industrial Revolution 4.0: Case Study of Banking Industry

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## ABSTRACT

Technology has taken a big role in all aspects of human life. From the way we work, to the way we spend time to having fun, technology has changed everything including the way humans to run banking activities. The existence of a bank has a large function around human life. Previously, banks were only known to those who wanted to save some of their money, now the functions and activities of bank operations are increasingly diverse. The bank is now accommodating the various needs of the community for financial services. Starting from transferring funds in real time between accounts, payment and receipt of salaries, payments for goods and services, to make financial investments can be done through this institution. Indonesian banks are demanded to develop in line with Industry 4.0, where everything has been done using IT. Banks must also improve their quality through the advancement of existing fintech. The thing that is really considered by consumers is the speed and ease in conducting transactions wherever the customer is.

**KEYWORDS:** *Information Technology Implementation, Industrial Revolution 4.0, Banking Industry*

## INTRODUCTION

Industrial Revolution 4.0. can be said as a revolution, because the changes that occur have a major effect on the world's ecosystems and the way of life. The 4.0 industrial revolution is even believed to be able to significantly improve the economy and quality of life. Industrial Revolution 4.0 applies the concept of automation carried out by machines without the need for human labor in its application. Where it is a vital thing needed by industry players for the sake of time, labor and cost efficiency. The application of the Industrial Revolution 4.0 in factories today is also known as Smart Factory. Not only that, at this time data retrieval or exchange can also be done on time when needed, through the internet network. So that the production and bookkeeping process that runs in the factory can be authorized by interested parties anytime and anywhere as long as it is connected to the internet (detiknews.com, 2019).

The 4.0 industrial revolution influenced various patterns of life of the world community, including the banking industry. Using technology, everything becomes easy, practical and fast. This requires banks to continue to innovate in line with developments so as not to be left behind. Currently several banks have implemented a mobile banking system, money cardless, can create new accounts without having to go to the bank, and many new innovative features. However, not all elements of society are aware of the logical consequences or

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impacts of the changes they cause. There are still a few examples of the impact of Industrial Era 4.0 adaptation, for example, due to e-banking factors and the rapid development of payment systems, the number of job posts at each bank is predicted to disappear in the coming years. So it is true that termination of employment (layoffs) in the banking sector was inevitable. The enactment of e-money provisions to pay tolls also has an impact on workers who have been serving cash payments at all toll road doors.

## Impact of Information Technology in the Banking Industry

The more advanced technology in the world, banking transactions began to use computer-based technology to facilitate transactions with customers. Banks that used to serve customers by having to meet / come to bank branches provided by banks where customers save are easier because banks have begun to use computer-based technology and are now able to access via the internet even with mobile "Mobile" with SMS. applied by banks (medandaily, 2019). In the banking world, the development of information technology in Indonesia is strongly influenced by the ability of human resources to understand the components of information technology, such as computer hardware and software; network systems in the form of LAN (Local Area Network) or WAN (Wide Area Network) and telecommunications systems that will be used to transfer data.

The need for information technology-based personnel continues to increase, this can be seen with the many types of jobs that require capabilities in information technology in various fields as well as the number of capable Human Resources in information technology is still small, when compared to the population of Indonesia. This requires a national information technology framework that will realize the Indonesian people are ready to face the ASEAN Free Trade Area (AFTA) which can provide universal access to information to the wider community fairly and equally, improve coordination and optimal utilization of information, increase efficiency and productivity, increase the quality and quantity of human resources, increasing the utilization of information technology infrastructure, including the application of laws and regulations that support it, encouraging economic growth by utilizing and developing information technology.

This is one of the realities of globalization of the real world economy. Integration of the national economy with regional / global economies such as AFTA, APEC, WTO / GATT is inevitable. At present there are many economic actors, especially in big cities that no longer use cash in payment transactions, but have utilized modern banking services. Modern banking services that only exist in big cities are understandable because of the current economic growth that is still concentrated in big cities, which causes the velocity of money is also concentrated in big cities. So that the banking sector was rather slow in its expansion into regions.

This is more or less due to the present condition of infrastructure in addition to the unique and broad geographical aspects of Indonesia. online information technology, for example, a customer can withdraw money wherever he is as long as there is an ATM (Automatic Teller Machine) service from the bank, or a customer can check the balance and transfer the money to another account in just minutes, all transaction can be done. In addition, another role of Information Technology in the banking world is the application of banking transactions via the internet or known as Internet Banking. Some transactions that can be done through Internet Banking include money transfers, checking balances, transferring books, paying bills, and account information (Cermati.com 2015). A number of banks in Indonesia are currently utilizing Information Technology to improve services to their customers. For example, customers can take money from ATM machines that are available 24 hours a day. In fact, several banks have established partnerships that allow customers to take money through ATMs of other banks that have a shared ATM logo.

### **The Bank Functions and the Operational Activities**

A financial institution called a bank is no longer a strange thing nowadays. The existence of a bank has a large function around human life. If in the past banks were only known to those who wanted to save some of their money, now the functions and activities of bank operations are increasingly diverse (OJK, 2018). Simply put, banks are now accommodating a variety of public needs for financial services. Starting from transferring funds in real time between accounts, payment and receipt of salaries, payments for goods and services, to make financial investments can be done through this institution.

Not only owned by the government, the private parties are now also building banking services. Banks owned by the

government are usually in the form of State-Owned Enterprises. In Indonesia, such banks include Bank Rakyat Indonesia (BRI), Bank Nasional Indonesia (BNI), and Bank Mandiri. Meanwhile, private banks were presented by domestic and foreign business actors. Many banks provide a variety of choices for parties who want to save or do other financial activities. The bank was chosen because this institution is considered safe and credible in maintaining and managing the money that has been deposited by its customers.

Some people make banks as a place to save money. Saving money in a bank is considered safe because it can prevent it from theft or excessive use of yourself. On the other hand, many people expect to get interest from saving activities in the bank. A few others have begun to realize that the function of banks is more than just saving money. They began to look at banks to conduct various financial transactions. From this small portion, several parties realize that banks can be used as a means to make investments. Forms of investment in banks can be done through deposit products that provide greater interest than ordinary savings.

There are also some other people who use banking services to do credit. The Bank does provide a variety of loan products that offer convenience to the public, ranging from unsecured loans (KTA), Home Ownership Loans (KPR), to Vehicle Ownership Loans. These loan products are presented with competitive interest so that people often find it helpful because with loans from banks, they can have the goods they need and want. The various facilities provided by this bank are inseparable from the objectives of the banking institutions listed in Act Number 10 of 1998 concerning Banking. The regulation states that the purpose of national banking is to support the implementation of national development in order to improve equity, economic growth and national stability towards improving people's welfare.

The important objective of the bank is to make this financial institution function properly. If anyone thinks that a bank is just an institution that looks for profit alone, surely that assumption is wrong. Because from the elaboration of the Banking Law, there are three main functions that must be carried out by each bank to support national development.

### **According to the banking law banking functions include:**

**First Collecting Community Funds:** The activity to raise public funds is carried out by banks by opening various savings products. It is expected that with these products, people are more aware of how to save money properly and more safely. Not only ordinary savings, the bank also presents a choice of products in the form of deposits which are considered to be able to accommodate the wishes of the public who want to save their money as well as invest it. This product offers a higher interest rate, but with a higher deposit than ordinary savings products. Second is **Distributing Funds to the Community.** Funds raised from the public by banks certainly are not just left to settle. If only left unmanaged, of course there is no such thing as interest to customers. The aim of helping the implementation of national development and equitable development also cannot be realized. To meet these objectives, banks also function as a channel of funds to the public who need financial services from these institutions. Fund distribution by banks is done by providing various credit facilities. By

utilizing these facilities, the community is expected to improve their lives and produce efforts to support national development. Third is **Providing Bank Services**. Realizing that it is not only credit that can be an effort to realize equitable national development, banks have also finally functioned to provide various services that make it easier for the public to conduct financial transactions. Initially, banks provided transfer services to facilitate sending money from one area to another to overseas. But over time, bank services are now increasingly diverse. Bank services can now be enjoyed by people from various classes. With these services, the public is facilitated to make various payment and purchase transactions. For example, banks now provide electricity, telephone, and transportation ticket purchases. With these services, payment flow and also become more clear and secure. The three functions of the bank are carried out in a variety of supporting operational activities. To carry out its functional activities, there are two types of banks that need to be known, namely commercial banks and rural banks (BPR). Following are various operational activities carried out by banks according to the two types of financial institutions.

### Commercial Bank Activities

The focus of the discussion in this article is regarding the implementation of technology in commercial banks. This type of bank is a bank that carries out activities to raise funds and provide financial services to the public. Commercial banks also carry out various activities that can support payment traffic, ranging from telephone, electricity, to insurance. Economically and simply, there are five operational activities that can be carried out by commercial banks. The following are commercial bank activities carried out to carry out its main banking functions.

1. **Fund Raising:** the main function of commercial banks is collecting funds from the public. Efforts to carry out this function are carried out by issuing various financial products to save funds, ranging from savings, current accounts, to deposits.
2. **Lending:** now commercial banks can distribute credit to the public. Credit or financing is given in a variety of products, ranging from loans for home purchases to loans without collateral.
3. **Fund Transfer:** This one operational activity is carried out to provide services for equitable national development. Transfer made by the bank is done for the benefit of the institution itself and for the benefit of the customer. Examples of products from this operational activity include transfers between regions or sending money abroad.
4. **Storage of Goods and Securities:** Activities of commercial banks to carry out the function of services are also presented with the provision of storage places for goods and securities that are safer than those kept at home or those that are difficult to hold to account. An example is a bank providing safety boxes aimed at people who want to secure their property in the bank.
5. **Placement of Funds:** Commercial banks also place customer funds to other customers in the form of securities. Unlike stocks or mutual funds, securities issued by banks are not listed on the stock exchange.

### Developing Banking Technology in Facing Industry 4.0.

Technology has taken a big role in all aspects of human life. From the way we work, to the way we spend time having fun, technology has changed everything, including the way humans do their banking. With the help of banking technology, bank customers now no longer need to meet with tellers to deposit money, check balances, or make transfers between banks. Almost all banking activities they can do in the palm of their hands with smartphones. In fact, day by day, the types of banking activities are becoming increasingly complex, which requires the banking world to continue to grow. It is not impossible in the future that the number of physical banks will be reduced or completely lost, because all transactions can be done via the internet or electronically.

**ATM** (Automated Teller Machine) is one of the biggest findings ever in banking history. ATM revolutionized banking, which initially required customers to come and meet with tellers to withdraw money faster and easier with the help of machines. Initially, ATM used a special microcontroller with its own architecture that secures the processed data. Now, with increasingly cheap hardware, ATMs have begun to adopt the hardware architecture of PCs (Personal Computers) and switch from microcontroller technology. In Indonesia, ATMs can generally be used to make cash withdrawals, cash deposits, bill payments, purchase credit, and cash transfers (fellow or interbank). While some special ATMs can print bankbooks, replenish electronic wallet balances, to withdraw money with the help of cellphones. In fact, to make it easier for customers, ATM machines are now placed in locations with easy access.

**Mobile Banking and Internet Banking:** Smartphone users until 2017 have reached 2.3 billion users, and it is estimated that by 2020 this figure will continue to increase to 2.9 billion users. This means that more than thirty percent of the world's population uses smartphones in their daily lives. By bringing banking technology closer to customers through mobile banking technology, customers will get easy transactions. In addition, mobile banking also takes a role in expanding the banking network. Now customers no longer need to bother looking for an ATM for transfer purposes. All their needs are now in the grip. The presence of cellular telephones also inspired banks to conduct services called mobile banking or M-banking. By using SMS, customers can already check balances or make other transactions such as paying for landlines and transferring money to other people's accounts.

In addition to transaction requirements, mobile banking will also make it easier for customers to check balances, send money, and even get information about banking products offered to them. Another banking technology is online banking (internet banking), where all existing transactions are carried out through the internet with a more up-to-date security system - albeit with more security holes as well. Unfortunately, not all regions in Indonesia can enjoy internet banking services due to uneven internet connectivity, especially in remote areas. This is where mobile banking takes a role with banking applications that can be accessed via SMS or applications in the SIM toolkit (STK) that are included. Another service is internet banking. By using an internet connection, customers can conduct banking activities through an internet connected computer. Internet

banking transactions that can be done in the form of checking balances, transferring money, making deposits, see the history of transactions. There are even banks that already provide online bank account opening services without you having to queue at the bank. Despite all its shortcomings, both mobile banking and online banking is a technology that is crucial for banks to be able to develop their networks throughout the country.

**Multi-factor authentication in banking technology:** In the past, just using your username and password was enough to authenticate. But now, with the rise of crime in the digital realm, an authentication method is needed that will secure customers' banking activities, both traditionally and mobile or online. Multi-factor authentication uses several methods to convince the system that the customer has the right to access. As written in the book *Cryptography and Network Security* by William Stallings, several factors that are usually used by the system to verify users include (Manuwu, 2017): (1). Something You Know: This authentication makes use of something that the user knows. The simplest example is a password or PIN. (2). Something You Have: This authentication will utilize an object or item owned by the user. These objects can be in the form of magnetic cards, NFC stickers, or other objects that have unique information in them. (3). Something You Are: This authentication method will involve the uniqueness of the user as one of the factors. One example is the biometric scanner. The device scans the user's biological factors, such as fingerprints or retina of the eye. (4). Something You Do: This authentication factor will ask the user to perform a series of instructions to ensure that the user is not a bot or computer code.

Some of the factors above can be used either or used together, depending on system requirements. The more factors that are used, the safer a system is. However, what is applied on the customer side is mostly just two-factor authentication, which can be between a magnetic card with a PIN such as an ATM, or a PIN with an OTP (One-Time Password) token such as mobile banking / online banking.

**Electronic Wallet (e-wallet):** Although this technology was not initiated by the banking industry, e-wallet is usually associated with banking activities when using accounts to top up. One of the most famous examples of e-wallet is PayPal, which is still the most trusted solution by its users to transact online. In Indonesia, e-wallets are quite commonly used by some people. The use of e-wallet is common in Indonesia, among others, as one of the payment methods in physical and online stores, as payment for train and bus tickets and toll gates. In addition to making each user transaction more practical, e-wallet security is also somewhat safer compared to debit cards and credit cards. If lost, the nominal value of the lost money is limited to what you have deposited. Unlike a credit card, which if dropped in the wrong hands can be drained until the card limit runs out. Debit cards are also vulnerable to skimming, where illegal magnetic tape scanners can store customer data from a debit card (TribunBatam., 2019).

Debit card with chip. Lately skimming crime is quite common in Indonesia. The potential for skimming is everywhere, from the actions of "naughty" business owners, to irresponsible individuals who install a scanner on an ATM machine. This makes Bank Indonesia as the highest banking

authority to issue Bank Indonesia Regulation No.16 / 1/2014 concerning Consumer Protection for Payment System Services. One effort that can be done to protect consumer identity is to replace old magnetic tape technology with more sophisticated chips.

As a bank that cares about the safety and comfort of their customers in making transactions, PermataBank is one of the few banks that will convert their conventional debit cards into debit cards with chips. Their latest debit card, PermataDebit PLUS, is expected to be a transactional solution that will allow customers to make transactions anywhere and anytime without worrying about the security of their data.

Permata Debit PLUS, which is based on VISA, allows transactions at all merchants that receive VISA payments, not only offline, but also online transactions. For security support in online transactions, customers will get an OTP code that is used as the final verification of online transactions at all merchants with the logo "Verified by VISA". This allows PermataDebit PLUS users to transact in e-commerce, application stores such as AppStore and Google Play, as well as other online services such as Uber and Grab. This will make it easier for customers to carry out any transaction they want safely and comfortably. The development of banking technology does not stop here. There are still many other developments that are definitely interesting to see. It is not impossible that there will be official banks that will only handle cryptocurrency like bitcoin in their business. The way banks use technology to bring innovations that make it easier for customers to transact is what might pull back generation Y and millennial interest that was saturated with conventional banking. We just consider the next banking transformation with the presence of other new technologies.

### Technology Implementation of Several Banks in Indonesia

The banking world in Indonesia has been said to be ready and implement IT in its operations (Tribunbatam, 2019) One of them can be seen at BCA Bank. It's been a long time since Teller has begun to be replaced by a machine, using digital Customer Service so that customers can change cards without going to customer service. And in the future you will open an account. BCA has an BCA E-Branch so that customers can make a deposit slip without writing it, so when using a transaction at the Teller directly use the code. So it has started paperless and customers don't need to queue for long because there is a queue in particular. The application of BCA M-banking supports customers to open accounts without having to come to customer service and the availability of BCA machines that provide convenience for printing savings books. The services at BCA all make it easier for customers so now if the customer does not bring a book, it can still be helped. The most important thing is there is a card and PIN ATM, also has recorded data and the data is already online (Kompas, 2019). Further examples of the application of IT can also be seen in the system used by Bank Danamon. Bank Danamon further strengthens digital banking services with D-Bank Registration (Danamon.co.id, 2019). At present the D-Bank Registration application is to complete D-Bank, a comprehensive solution for Bank Danamon's digital banking services. With the tagline "Banking Your Way," this application is expected to provide

convenience for customers in conducting end-to-end banking activities digitally, anytime and anywhere. With D-Bank Registration, in addition to coming to the branch, prospective customers can also open an account online with the verification process via video call in one integrated application. Introductory activities to the public are also carried out in five major cities, namely Jakarta, Surabaya, Medan, Makassar and Bandung. Bank Danamon sends Debit / ATM cards to your domicile address while activating them in the D-Bank Registration application, or pick them up directly at the nearest Danamon **Bank branch. D-Bank Registration functions to open an account at Bank Danamon Online.** Bank Danamon also provides placement services Online Deposit, Cash Without Card withdrawal and opening other savings products from the D-Bank application. In addition, customers can open accounts through D-Bank can also be served and enjoy various products, services and features at any Bank Danamon branch.

The Bank Mandiri system is also not behind its digital financial services. Many features and benefits about Mandiri Online, which have a complete display, one access, security using user ID and password, pay and buy transactions, history check. Registration (Register) Mandiri can use e-Cash services as well as deposit and cash withdrawal services (Cash In and Out).

### Conclusion

Thus it can be concluded that Indonesian banking must indeed develop with the flow of Industry 4.0 where everything has been done using IT. Banking must also improve its quality through the advancement of existing fintech, if not then maybe the customers will start leaving the bank, this is based on the attitude of consumers who are constantly changing. However the bank must also prioritize consumer privacy in order to stay awake, even though consumers do not pay much attention to it. The thing that is really considered by consumers is the speed and ease in conducting transactions wherever he is. So, banking must keep abreast of the times, and this has been supported by the government. The banks must provide greater benefits from outside fintechs who can distribute them. If they fail to provide more benefits, customers may turn to foreign fintech. Of course, banks must also provide guarantees of customer privacy security on the progress that will be made by banks through IT. Indonesian banking has indeed had to enter the development of industry 4.0, because inevitably

the public always feels dissatisfied and always wants something new and more positive for the future.

### REFERENCE

- [1] OJK, 2018, Booklet Perbankan Indonesia, <https://www.ojk.go.id/id/kanal/perbankan/data-dan-statistik/booklet-perbankan-indonesia/Documents/Pages/Booklet-Perbankan-Indonesia-2018/Booklet%20Perbankan%20Indonesia%202018.pdf>
- [2] Manuwu, JP 2017, Deretan Teknologi yang Mengubah Cara Perbankan Bekerja, <https://id.techinasia.com/revolusi-teknologi-perbankan>
- [3] Cermati.com, 2015, Fungsi Bank dan Mengenal Kegiatan Operasionalnya, <https://www.cermati.com/artikel/fungsi-bank-dan-mengenal-kegiatan-operasionalnya>
- [4] Danamon.co. id, 2019, Danamon Perkuat Layanan Perbankan Digital Dengan D-Bank Registration, <https://www.danamon.co.id/id/Tentang-Danamon/BeritaDanamon/Berita/2019/01/30/03/41/Danamon-Perkuat-Layanan-Perbankan-Digital-Dengan-D-Bank-Registration>
- [5] Kompas.com., 2019, <https://money.kompas.com/read/2019/11/23/190900326/dirut-bca--perbankan-bakal-mulai-adopsi-teknologi-blockchain>
- [6] TribunBatam.id, 2019, Mandiri Perkuat Digital Banking Berupa Layanan Mandiri Online, <https://batam.tribunnews.com/2019/04/16/bank-mandiri-perkuat-digital-banking-berupa-layanan-mandiri-online?page=2>
- [7] Detiknews.com, 2019, Generasi Milenial Dan Era Industri 4.0, <https://news.detik.com/kolom/d-3981811/generasi-milenial-dan-era-industri-40>
- [8] Medanbisnisdaily.com, 2019, Pengaruh Industri 4.0 Terhadap Perbankan Dan Perdagangan, [http://www.medanbisnisdaily.com/news/read/2019/02/28/368559/pengaruh\\_industri\\_4\\_0\\_terhadap\\_perbankan\\_dan\\_perdagangan](http://www.medanbisnisdaily.com/news/read/2019/02/28/368559/pengaruh_industri_4_0_terhadap_perbankan_dan_perdagangan)