

# Digital Economy Inclusiveness Information System Model to Encourage National Economic Recovery: Recover Together, Recover Stronger

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## ABSTRACT

In the last decade, the Digital Economy has experienced significant development and has the opportunity to become the main driver of the economy in Indonesia. The Covid-19 Pandemic has a strong influence on economic instability especially has a significant effect on MSMEs. The Indonesian government has accelerated efforts to recover the national economy using the digital economy through MSME innovation in implementing the digitalization program. The digital economy has become paramount for industries, or sectors including MSMEs, trying to adopt better and more effective methods of providing services to their clients and customers daily. Inclusive growth remains one of the barriers to the use of digital technology in Indonesia. There is still a myriad of problems related to the digital divide, such as the dynamic capability of human resources to adapt to digital technology, the lack of financing and access to finance for MSMEs, and the lack of policies and regulations covering the digital economy sector. The COVID-19 pandemic is a disaster, but also momentum for Indonesia to carry out digital economic inclusion, which is all forms of economic activity that utilizes information and communication technology assistance. The purpose of this research is to develop the digital economic inclusiveness information system model to encourage national economic recovery. The involvement of all business entities in the financial ecosystem to recover together has an impact for recovery stronger in national economic recovery. The dominant business processes focussed on this Information System Model are the process of assisting, or mentoring MSMEs, the application of MSME digitalization, and MSME financing in increasing financial inclusion that supports national economic recovery. This Applied Research uses an Action Research method approach. Information system modeling using the Enterprise Knowledge Development-Change Management method. The selection of this information system modeling can involve all entities related to the system together and support the development of financial literacy knowledge and digitalization for change management in the MSME business. While developing system applications, the Agile Software Development with the Scrum Framework had considered very appropriately because this rapid development method has very high productivity. This study reveals the importance of the inclusiveness of the digital economy to recover together and recover stronger, especially during the COVID-19 pandemic. The results show a model information system, includes the mentoring process for MSME actors by MSME partners, Digital platforms developers, and the banking sector. This information system model also supports the MSME digitalization process applied, then the financing process and financial access by MSMEs to the banking sector. The monitoring and evaluation of this digital economy inclusivity model by financial regulators in Indonesia. This Digital Economic Inclusive Information System Model to encourage national economic recovery with an emphasis on recovery together, recover stronger will contribute significantly strengthening the economic recovery policy strategy in guarding the post-covid-19 new-normal era.

**Keywords:** *Digital Economy, Inclusiveness, Information System Model, National Economic Recovery.*

## 1. INTRODUCTION

The Covid-19 Pandemic has a strong influence on economic instability especially has a significant effect on MSMEs. Bank Indonesia [1] informed that many as 87.5% of Indonesian MSMEs were affected by the Covid-19 pandemic. Moreover, this amount, around 93.2% of them were negatively affected in terms of sales. The Indonesian government has accelerated efforts to recover the national economy. The emphasis refers to the theme from the Indonesian government for the G20 Presidency in 2022, namely "recover together – recover stronger"[2], by involving all relevant entities in the financial ecosystem.

National Economic Recovery (PEN, abbreviated in Indonesian) Program aims to protect, maintain and improve the ability of business actors in running their business during the Covid-19 pandemic [3]. According to [4], the funds allocated for the scheme amounted to 123.46 trillion rupiahs, but the realization was 91.84 trillion rupiahs or around 74.39%. The phenomenon of increasing financial inclusion is one way to encourage the performance of MSMEs in the recovery of the national economy.

Financial inclusion is a strategy for assuring easy access to financial services while also allowing the general people to participate in long-term economic growth. Financial Inclusion is one of the influential external factors in realizing digitalization in the business world, especially for MSMEs. In Indonesia, according to OJK[5], the financial inclusion index has increased, from 67.8% in 2016 to 76.3% in 2019. And this is expected to continue to increase in the following years.

The digital economy plays a central role during the COVID-19 Pandemic, especially in economic activities. The transformation of the digital economy is an important thing to be done immediately. A survey from McKinsey[6], stated that if Indonesia can take advantage of digitalization, it is predicted to realize around USD 150 billion by 2025, with GDP growth of 10 percent per year.

MSMEs are the most important pillars of the Indonesian economy. Based on sources from the Coordinating Ministry for Economic Affairs in the Republic of Indonesia, the number of MSMEs currently reaches 64.2 million with a contribution to GDP of 61.07% or worth 8,573.89 Trillion rupiahs[7]. The inclusiveness of the digital economy plays a role in encouraging national economic recovery, specifically involving the MSME and banking sectors. Efforts to implement the digitization of SMEs are certainly not an

easy step to realize. The dynamic capabilities of MSMEs must overcome many obstacles in the current Covid-19 pandemic.

Currently, in Indonesia, there are 9.4 million SMEs that "Go Digital". This number obtained based on data from the Ministry of Communication and Informatics Republic of Indonesia, which has increased from 2019 to 1.4 million SMEs [8]. According to a press release from the Coordinating Ministry for Economic Affairs, the Republic of Indonesia stated that the Government encourages the FinTech industry to increase financial inclusion and digital transformation [9]. Indonesia's digital economy had predicted to grow eight times by 2030. The Indonesian Ministry of Finance stated that digital economic growth will grow eight times from 632 trillion rupiahs to 4,531 trillion rupiahs [4].

Economic recovery together by involving all entities in the financial ecosystem is very much needed. Thus, the economy to be recovering stronger until the post-covid-19 pandemic. The inclusiveness of the digital economy encourages the need for an information system model. By emphasizing the spirit to recover together-recovery stronger, Enterprise Knowledge Development

Change Management Method was chosen as the method in modeling information systems. This method involves many system users later to develop knowledge of digitalization and finance and make changes to MSME management for the better. While developing system applications, the Agile Software Development with the Scrum Framework had considered very appropriately because this rapid development method has very high productivity.

The relationship between the previous research and the current research forms a clear road map for this study. Legowo et al. [10] in previous research discussed the resilience of MSMEs in Indonesia during the covid-19 Pandemic through the digitalization program. The research refers to previous research from Legowo et al. [11] related to the Digitalization of MSMEs for Business Model innovation. The modeling of information systems by Legowo et al. [12] has also been done previously by making a model of quality assurance information systems in Higher. Previous research related to the implementation of information system applications with Agile Software Methodology with Scrum Framework [13]. This study, focusing on this Digital Economic Inclusiveness Information System Model in increasing financial inclusion that supports national economic recovery.

The purpose of this research is to develop the digital economic inclusiveness information system model to encourage national economic recovery. The involvement of all business entities in the financial ecosystem to recover together has an impact for recovery stronger in national economic recovery. The development of a digital economic inclusiveness information system model expects to make a real contribution in encouraging national economic recovery.

**2. MATERIALS AND METHODS**

The Covid-19 Pandemic has a strong influence on economic instability [14], especially has a significant effect on MSMEs.. MSMEs have been the subject of a growing discourse within Indonesia’s digital economy [15].

**2.1. National Economic Recovery**

According to [3], in his study, stated that the National Economic Recovery Program (PEN, abbreviated in Indonesia) aims to protect, maintain and improve the ability of business actors to run their businesses during the Covid-19 pandemic. The recovery of the National Economy was indicated by an increase in the productivity of the output of goods or services, per capita output income, an increase in gross domestic product or Gross National Product.

**2.2. Financial Inclusion**

Financial Inclusion is one of the influential external factors in realizing digitalization in the business world, especially for MSMEs. Financial inclusion is defined as equitable access for all individuals and enterprises to formal financial products and services (transactions’ payments, savings, financing, and insurance) to be used according to their needs and resources, to promote economic and social inclusion while preserving their rights and dignity[16], According to the Indonesian Financial Services Authority[17], states that financial inclusion is the availability of access to various products, financial services, and institutions.

**2.3. Digital Economy**

The digital economy plays a role in increasing productivity and support economic development of a country [18]. The digital economy plays a central role during the COVID-19 Pandemic, especially in economic activities [19]. The digital economy provides hope in adversity in current conditions and has strong resilience

during the recession or covid-19 pandemic, especially for MSMEs.

**2.4. Conceptual Framework**

The main thing that drives the conceptual development of this framework had based on previous research [11] related to the digitization of MSMEs, which is the basic foundation in designing the conceptual framework in this study. In this conceptual framework, the involvement of all business entities in the financial ecosystem (Finacial regulator, Banking sectors, FinTech compny and MSMEs partnership) to recover together has an impact for recovery stronger in national economic recovery. Based on this, a conceptual framework had developed, shown in Figure 1.

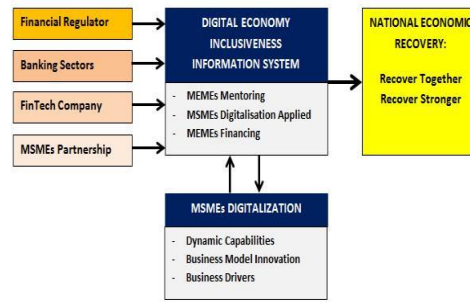


Figure 1. Conceptual Framework

The concept of developing a digital economic inclusiveness information system model has the following business processes: (1) to assist MSMEs, (2). Training in the application of digitalization to MSMEs, and (3) MSME financing by the banking sector. This Applied Research is a research model directed at creating innovations to develop an application model for the digital economy inclusiveness information system. This Applied Research uses an Action Research method approach. As shown in Figure 2.

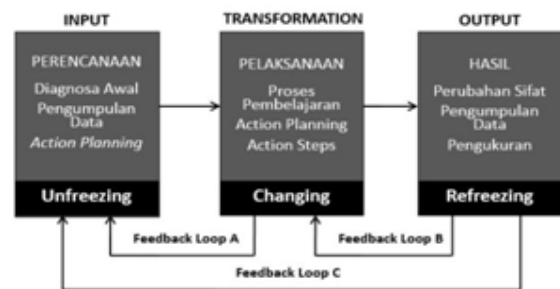


Figure 2. Action Research Method

Information system modeling using the Enterprise Knowledge Development-Change Management method [20]. This information systems modeling method aims to document the company, its objectives, business processes, and support systems, helping organizations develop schemes for implementing change. The selection of this information system modeling can involve all entities related to the system together and support the development of financial literacy knowledge and digitalization for change management in the MSME business. In developing the Financial Inclusion Information System into a system application, it is used by applying the Agile Software Development method [21]. Approach with the Scrum framework is one of the popular methods of Agile Software Development where in this way productivity is very high [13].

### 3. RESULTS AND DISCUSSION

#### 3.1. Information System Modeling Results

Digital Economic Inclusiveness Information System (DEI-IS) Model developed, including: Process Modeling, Data Modeling, Modeling of IS Architecture and Modeling of IS Application which is the result of this research. Figure 3. shows the information system modeling framework using the EKD-CM method.



**Figure 3.** IS Modeling using EKD-CM Method Business Goal Modeling

In this information system modeling begins with determining the enterprise business goal (Business Goal Model).

Main Goal of (DEI-IS) Model: Improving MSMEs will support the implementation of MSME digitalization and provide MSME financial financing through monitoring and evaluation from the Financial Services Authority. This digital economic inclusiveness model involves all entities related to the digital economic inclusiveness in the financial ecosystem.

Business Goal -1: Conducting MSME development to improve financial literacy and digitalization involving the banking sector, MSME partners, FinTech companies.

Business Goal-2: Conducting training in the application of digitization by MSME partners or FinTech companies, involving MSME partners, FinTech companies, or digital platform developers

Business Goal-3: Providing convenience in the MSME financing process by the banking sector.

#### 3.2. Business Process Modeling

The second step, in this model, makes the details of enterprise processes as a Business Process Model. Process Modeling is presented in the Process Decomposition Diagram, shown in Figure 4.

The system modeling will be decomposed into several business processes:

1. Registration process (Sign-Up) is a process where the entities involved in the system provide information about their profile using again, enter the system by entering a username and password. (Log In / Sign In).



**Figure 4.** Process Modeling

2. MSME Assistance Process, this business process includes:

- implementation of MSME assistance on the dynamic capabilities of MSME Partners,
- Financial literacy assistance can be provided by banks or MSME partners,
- Assistance in digitizing and innovating business models by MSME Partners
- Assistance in implementing digital programs by FinTech companies

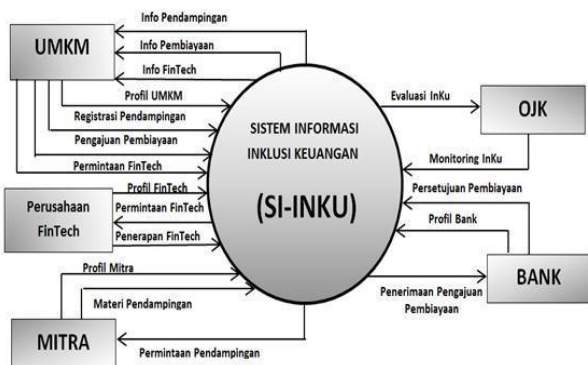
3. The Technology Application Process, including information on what digital technology needs had needed by MSMEs, then submitting requests for assistance in implementing it and business collaboration between MSMEs and FinTech companies.
4. MSME Financing Process, this business process is the main goal of SI-INKU, where MSMEs apply for financing assistance, the Bank accepts applications and assesses them, and processes bank financing information for MSMEs.

### 3.3. Information System Modeling

Modeling of information system developed, including: Process Modeling, Data Modeling, Modeling of Information System Architecture and Modeling of information system. Information System Modeling in this study is designing Process modeling (Context Diagram) and Data Modeling (ER\_Diagram).

#### 3.3.1. Process Modeling

Modeling the process by using Data Flow Diagram to show the flow of data in the system. Figure 5 shows a Data Flow Diagram illustrating the scope of the system (the circle notation) the entities associated with the system (the square notation).



**Figure 5.** Process Modeling using Data Flow Diagram Data Modeling

The Digital Economy Inclusiveness Information System Architecture (DEI-IS) «IS Block» is implemented through two «IT Blocks» (one for data and another for logic and user interface), supported on «IT

Platforms» and mainframe computers. An accurate description of the information architecture can be shown according to survey results and an agreement with the Indonesian Financial Services Authority as the regulator in the financial ecosystem.

### 3.4. System Application Development Results

Some of the information presented in this Digital economy inclusiveness information system (DEI-IS), among other: (1) Registration of system users, (2) MSME assistance, (3) Technology application, (4) MSME financing, and (4) Monitoring and Evaluation.

Furthermore, the eight stages of implementation of the Scrum Framework are as follows:

- 1) Stage Determining of Features in Scrum
- 2) Sprint Planning Meeting
- 3) Sprint Backlog.
- 4) Daily Scrum
- 5) Scrum Review
- 6) Retrospection in Scrum Activity
- 7) Story Board Display
- 8) Release Burn Down Charts

Scrum implementation in the development of DEI-IS in this study is to do a system modelling first. The coding and all data and processes fully defined in the coding and all data and processes fully defined in the previous system model. The Sprint Backlog in this feature requires a relatively long time estimate when compared to other features. Sprint Backlog in the development of this DEI-IS application is 30 days. Based on this fact, it concluded that the scrum is the right method to increase the speed of time in software development.

This information system modeling had realized in the form of a website system that can be accessed using an android-based application. The description of the main menu displayed in the MSME Digitalization-Based Financial Inclusion Information System Model (link with <http://www.ojk.go.id>). Planned to be a sub-domain of the OJK website Figure 7 shows the main menu of DEI-IS.





**Figure 7.** Main Menu Display of DEI-IS

Hopefully, through this digital economic inclusiveness information system, the level of financial inclusion will increase [17]. This model is related to the resilience of SMEs during the covid-19 pandemic [10]. Likewise, in driving business model innovation and the influence of external business drivers [11]. This model is one way to encourage national economic recovery, emphasizes the spirit of "Recover Together - Recover Stronger."

Furthermore, in presenting the information system model used in this research is the Enterprise Knowledge Development - Change Management Method [20]. There were many alternative Agile Methodologies available. Because Scrum focuses on managerial and development processes, it has become increasingly popular in the previous decade [21].

This finding has implications, both from theoretical and practical aspects, especially practitioners in the banking sector in Indonesia and players in the FinTech industry, that collaboration between the banking sector and the FinTech industry is a must.

**4. CONCLUSION**

The research's results show that the information system model to increase the financial inclusivity level in Indonesia includes the assistance process for MSME actors by MSME partners, digital platform developers, and the banking sector.

The digital economy inclusiveness information system supports the process of digitalizing MSMEs, the process of financing and accessing MSME finance from

the banking sector, and monitoring and evaluation by financial regulators in Indonesia.

This Digital Economic Inclusiveness Information System Model to encourage national economic recovery with an emphasis on recovery together, recover stronger can contribute significantly strengthening the economic recovery policy strategy in guarding the post-covid-19 new-normal era.

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