

Analysis Soft System Methodology of Digital MSME Development in DKI Jakarta

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Abstract

This study employs the Soft System Methodology (SSM) to analyze and develop strategies for the digitalization of Micro, Small, and Medium Enterprises (MSMEs) in DKI Jakarta. Given the significant role of MSMEs in Indonesia's economy, contributing 61% to the Gross Domestic Product and employing 97% of the workforce, their integration into the digital landscape is crucial. The research highlights existing challenges, such as limited digital literacy, constrained access to capital, and inadequate product standardization, and identifies opportunities for enhancing MSME competitiveness through digital tools. By applying SSM, the research constructs a conceptual model to address these challenges, emphasizing stakeholder collaboration among government, academia, and the private sector. The findings offer a strategic framework for effective digital transformation, aiming to improve efficiency and foster sustainable economic growth.

Keywords: MSMEs, Digitalization, Soft System Methodology, Economic Development,

INTRODUCTION

Background

Long before modern society recognized large industries as a form of business venture, Indonesian people were familiar with economic practices in the form of Micro, Small and Medium Enterprises (MSMEs). This can at least be seen from the existence of markets in each region which are places for transactions and economic activities of the community. From these activities, the community's economic activities have moved until now. The existence of MSMEs as an economic support was increasingly undeniable when the economic crisis hit Indonesia in 1998 and due to the Covid-19 pandemic some time ago. As a form of community economic independence, MSME players develop various businesses, including services, culinary, fashion, and so on. Based on data from the Ministry of Cooperatives and SMEs (Kemenkop UKM), the MSME sector contributes 61% to the Gross Domestic Product (GDP), equivalent to Rp9,580 trillion. Based on data from the Ministry of Cooperatives and SMEs, Indonesia has 66 million MSMEs (99%) of all business units (Kemenko Perekonomian, 2023).

Table 1. MSME Data on Growth in 2018-2023

Year	Number of MSMEs (Million Units)	Growth (%)
2018	64.19	1.98
2019	65.47	1.98
2020	64.00	-2.24
2021	65.46	2.28
2022	65.00	-0.70
2023	66.00	1.52

Source: Kadin, 2023

Until Semester I-2021, MSMEs absorbed around 117 million workers (97%) of the total workforce, and collected 60.4% of total investment (Junaedi, 2023).

DKI Jakarta is the center of the economy in Indonesia which can improve the people's economy so that welfare can be achieved. Therefore, it can provide enthusiasm and opportunities for the community to advance their business. The macro economy of DKI Jakarta Province is very good with growth reaching 6.23% and is expected to grow by 6.4%. This is because 88% of business actors in DKI Jakarta are MSMEs or SMEs (Praditya, 2019). BPS Jakarta noted that there are at least 1,100,000 MSMEs in Jakarta, or around 98.78% of the total number of businesses in DKI Jakarta. Meanwhile, data from the Jakarta Provincial Office of Industry, Trade, Cooperatives, Small and Medium Enterprises (PPKUKM) revealed that 377,625 MSMEs in Jakarta have currently become participants in Jakarta *Entrepreneur* (Jakpreneur), an MSME ecosystem built by the DKI Jakarta Provincial Government. The number of IMK in DKI Jakarta in 2023 was 79,992 businesses. This number has increased by 45.01 per cent when compared to 2022 which amounted to 55,163 IMK businesses/enterprises. The following is data on the number of Micro and Small Enterprises (MSEs) in DKI Jakarta in 2023, by region:

Table 2. MSME DKI Jakarta Data by Region

Region	Number of IMK Businesses	Percentage (%)
West Jakarta	19,730	24.66
East Jakarta	17,325	21.66
North Jakarta	16,990	21.23
South Jakarta	15,500	19.38
Central Jakarta	9,280	11.60
Kepulauan Seribu	1,176	1.47
Total	79,992	100.00

Source: Statistics Indonesia (BPS) Jakarta, 2023.

IMK businesses are mostly located in West Jakarta and East Jakarta with 19,730 businesses (24.66 per cent) and 17,325 businesses (21.66 per cent) respectively. Meanwhile, Kepulauan Seribu and Central Jakarta are the 2 (two) regions with the smallest number of IMK businesses, which are only 1176 businesses (1.47 per cent) and 9,280 businesses (19.38 per cent) of the total number of IMK businesses in DKI Jakarta (BPS, 2023).

MSMEs are still categorized as informal businesses with low productivity and technology use. Although they have begun to have the ability to innovate and develop production technology. However, MSMEs are still constrained by a number of classic problems such as access to capital, marketing, raw materials, guidance, training, and partnerships. Improving and strengthening the digital environment is a crucial aspect to implement (Suhayati, 2023). MSMEs with technological knowledge (*digital*) have a higher competitive advantage. The digitalization process is related to aspects of payment, financial management, and product marketing (Nugroho, 2023). In addition, MSME digitalization is the process of using digital technology in various operational and managerial aspects of MSME businesses. This includes the use of the internet, software, hardware, and other digital platforms. Thus, according to (Sulistyo, 2023) MSME digitalization means integrating technology in all business activities, from administration, finance, staffing, production, to marketing and sales. Digitalization of MSMEs makes MSME business actors change their business management from conventional to modern practices. This digitalization process is expected to increase the effectiveness, efficiency of business processes, and operationalization of MSMEs.

The government has an obligation to continue to promote MSME digitization efforts as a form of advancing general welfare, in accordance with the objectives of the Republic of Indonesia. The success of MSME digitization will have a major positive impact on the national economy, given the large contribution of the MSME sector to GDP and the large absorption of labor from this sector. Therefore, the DKI PPKUKM Office also organizes e-Smart training, which is digital literacy training for SMEs assisted by DKI Jakarta Province to take advantage of the potential offered by digital platforms and e-commerce (Allo, 2023). In providing e-Smart training, the PPKUKM Agency synergizes with various related parties, from universities to e-commerce institutions. Until now, the number of Jakarta Entrepreneur SMEs that have been facilitated through e-Smart training is 8,279 participants.

Objective

The purpose of this research is to find out the important aspects that need to be implemented as strategic steps in building the digitalisation process of MSMEs in DKI Jakarta in line with the policy of developing digital-based MSMEs in Indonesia.

LITERATURE REVIEW

MSMEs (Micro, Small, and Medium Enterprises)

Micro, Small and Medium Enterprises are a form of productive economic business carried out by individuals or individual business entities that meet the criteria of Micro, Small and Medium Enterprises (Anggraeni, et al., 2013). According

to the Department of Cooperatives (2008) in economic activities, the role of MSMEs is as:

- (1) the main actors in every Indonesian economic activity,
- (2) providing employment,
- (3) the main actors in developing the regional economy,
- (4) a source of innovation in the market,
- (5) a large contribution to the balance of payments.

MSMEs have three roles of considerable assistance in the lives of underprivileged people, namely as a facility to reduce poverty, as a tool in the process of further equalizing the economic level of underprivileged people and as a source of state revenue (Kadeni & Srijani, 2020).

Soft System Methodology (SSM)

Soft System Methodology (SSM) developed by Checkland and Scholes. The essence of this method is to provide a comparison between the real world and a model that is considered to represent the world itself (Checkland & Puolter, 2006). The conceptual model developed can be used as a medium for brainstorming in addressing the problem situation at hand (Rooyen & Labuschagne, 2016). The assumptions of the SSM approach are that organizational problems are not well defined, there are different interpretations of the organization, making the human factor important and also this approach is a creative and intuitive approach to problem solving (Checkland & Puolter, 2006).

Previous Research

The previous research described is research on how Soft System Methodology (SSM) is used to explore knowledge within the academic world (universities and schools). SSM is proven to work in various fields to map complicated, complex problems. SSM has the ability to produce a framework for understanding the problem at hand, even for complex problems. The application of SSM has been widely applied in various fields by experts and researchers from various disciplines, for example in the field: Webiste System Development (Budianto et al., 2020), Intelligent Supply Chain Model (Nurhasanah, et al., 2020), University Accreditation Knowledge Extraction (Karay et al., 2020), Online Order Management (Goutama et al., 2022), Online Shop Information System (Valencia et al., 2022), Business Process Monitoring (Saputri & Iphov, 2024).

Based on previous research, it can be seen that research using SSM is indeed widely used in various fields, especially related to the development of information systems and technology. However, the use of SSM in the field of digitalisation of MSMEs still does not exist in Indonesia so that this research can add to the repertoire of various SSM research in the academic field in this case Digitalisation of MSMEs.

RESEARCH METHODS

The method that will be used in the development of this system is Soft Systems Methodology or commonly known as SSM. This method was developed by Peter Checkland in 1991. SSM aims to deal with situations where each human has its own perception. The existence of the human element in a system will cause the complexity of the system to increase. SSM is an action research methodology that will be aimed at exploring and learning about each unstructured problem situation so that it can be improved. In general, the use of SSM methodology has seven stages as shown below:

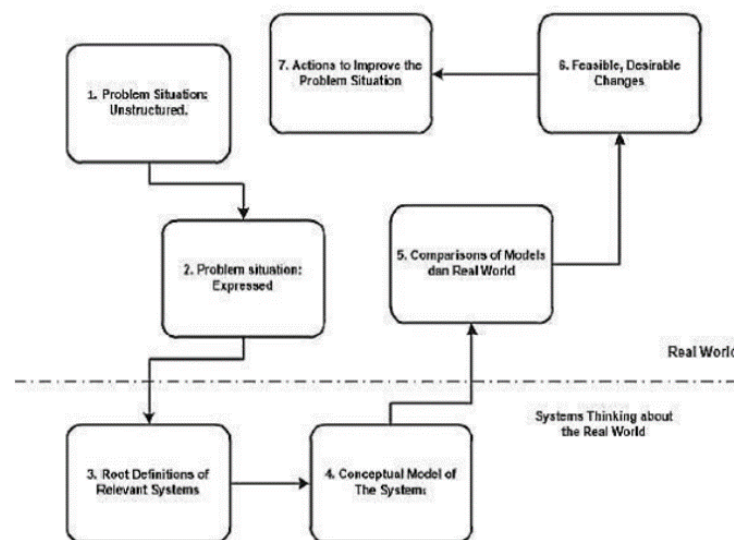


Figure 1. Stages of Soft System Methodology

Source: (Checkland & Puolter, 2006)

Based on Figure 1, it is known that the SSM methodology has seven stages separated into 2 parts, namely, those above the line are the activities of the parties involved in the problem situation (action world), those below the line are the stages of thinking about the problem situation (thinking world).

- Analyzing the existing problem situation is the first stage in the SSM process to briefly describe the situation that exists in the problem in DKI Jakarta MSMEs, namely the problem of the digitization process in MSMEs in the DKI Jakarta area.
- Describing the problem situation, each problem that is already known in the first stage will be described with a Rich Picture, starting from the problem area, the source of conflict, and the role of activities and responsibilities of each party. Rich Picture as a tool to describe the relationship between the problem and its cause.
- Defining each party related to the problem, when the Rich Picture has been well described in the previous stage, it will be necessary to create a Root Definition process to explain the objectives to be achieved. Root Definition can be done with the CATWOE approach.

- d) Building a conceptual model, to be able to carry out the root definition above, it is necessary to develop a conceptual model of the existing problem. The conceptual model explains the input-process-output relationship between various activities.
- e) Comparing the conceptual model with the real situation of the problem, with the conceptual model that has been made, we must compare it with the real situation around that has been described in RichPicture. So that we can find out whether the conceptual model designed is in accordance with reality or not.
- f) Determine the changes that will be made, at this sixth stage we need to arrange the changes that will be made. The changes made are expected to improve the problem situation that has been in Rich Picture. Checkland itself does not limit these changes to modifying existing information systems or developing new information systems.
- g) Taking corrective action, this is the last stage in SSM. Improvements are made mainly to the conceptual model that has been built and is deemed less in accordance with reality.

RESEARCH RESULT

The results and discussion in this study use the SSM method which is carried out at 7 stages. This is because the purpose of this research itself is to find out the problems and how the most suitable startegy to overcome the problem of Digitalisation of MSMEs.

1. Stage one - Situation Considered Problematic (Unstructured Situation)

Determining the framework of the problem situation that is happening in the real world is done by collecting information and exploring views of the situation. Information and exploration of views of the problem situation are collected from various related sources supported by the knowledge and experience of researchers. In this research, the framework of the problem situation of the MSME digitisation development process is collected based on literature studies according to research sources that discuss the dynamics of MSME development in Indonesia, especially the DKI Jakarta area. Thus, to describe the Rich Picture of this study, a number of sources of information were used to be able to provide views from various perspectives. The picture of the problems of MSMEs in the DKI Jakarta area related to the digitisation process can be started from upstream, among others, as follows:

1. Limited skills and digital literacy capabilities of MSME actors.
The existence of limited knowledge and skills in using or accessing digital technology by the community is a challenge for the Provincial Government of the Special Region of Jakarta in implementing digitalisation in MSME players.
2. Difficulty in obtaining capital
The majority of MSMEs are labour-intensive businesses, compared to large businesses that are capital-intensive, so their productivity cannot compete with large businesses.

3. Limitations of MSMEs in meeting product standardisation.

The majority of MSMEs currently have conventional business models, so that all business activities are carried out by themselves, which makes it difficult to innovate.

2. Stage 2-Problem Situation Expressed

In the second step the researcher builds a more detailed description of the problem situation at hand. The aim is to get a rich picture or broader picture of a number of situations where the problem arises. Describing the problem using a rich picture diagram aims to describe the problems obtained from observations (Rasminto et al, 2020). The construction of rich pictures of problem situations is an inspiration for modelling assimilation, relationships and problems that help identify systems that are relevant to the real world. Each situation can be different due to the diversity of potential so there is no standard symbol used by researchers. But at least the reconstruction of the problem situation into a model is considered according to the researcher's schemata internalised from various worldview information that is close to the real situation. Based on the unstructured problematic process of digitalisation development of DKI Jakarta MSMEs, the following problem structure is obtained

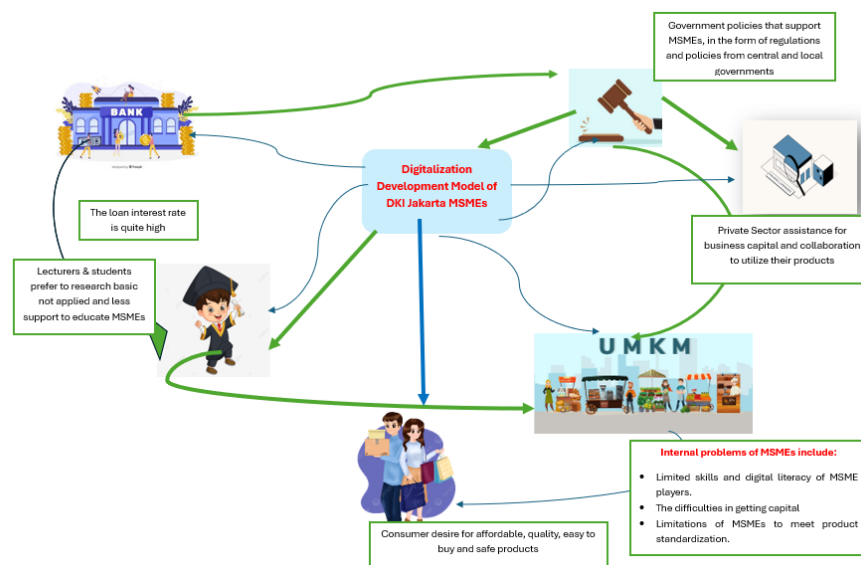


Figure 2. Rich Picture Digital MSMEs in DKI Jakarta
Source : Prepared by researchers

Stage 3-Root Definitions of Relevant Systems

In this stage, Root Definitions are created based on the Rich Picture in stage two. Root definitions are important because they are used to infer what should be done. By thinking logically, root definitions are guided by the fulfilment of the function of the CATWOE element as a control on the relevant system to take the

correct transformation steps The Root Definition of this study can be described as follows:

Root Definition (XYZ), where X: Getting a comprehensive picture of the Digital MSME development process in DKI Jakarta with Y: Using an integrated system model for Z: Integrated planning between various sectors

Table 3. CATWOE Analysis

Items	Description	Result
C	Those who receive the most benefits from the transformation carried out	Consumer
A	The stakeholders who can perform the transformation when the system is implemented into actual real-world action.	MSME actors, government, banking, academia, private sector
T	Activities that aim to turn inputs into outputs	Sectoral planning that is synergistic with various stakeholders to achieve the digitalisation process of MSMEs
W	Belief in a step that is seen as realistic	Economic growth through populist economy (Availability, Accessibility, Affordability & Acceptability) through the implementation of digitalisation
O	Those who cause the implications of the transformation not to be achieved	MSME actors
E	The main challenge of the whole system definition that is outside of what should happen	Finance, education, industry, trade and research sectors in DKI Jakarta

Next is to find the transformation goal (T), which technically can be done using the pqr formula, which means doing (p) through (q) to achieve (r). If (r) is to increase the progress of MSMEs as a goal, then (q) is the various actions needed to increase progress, while (p) is an indicator of increased progress of MSMEs in Indonesia.

Stage 4-Building Conceptual Model

The conceptual model is a description of the relationship between the activities and roles of each party in an effort to achieve their respective targets. Each role has a complementary relationship and sometimes due to the limitation factor, and the high level of needs will be a source of conflict that must be resolved.

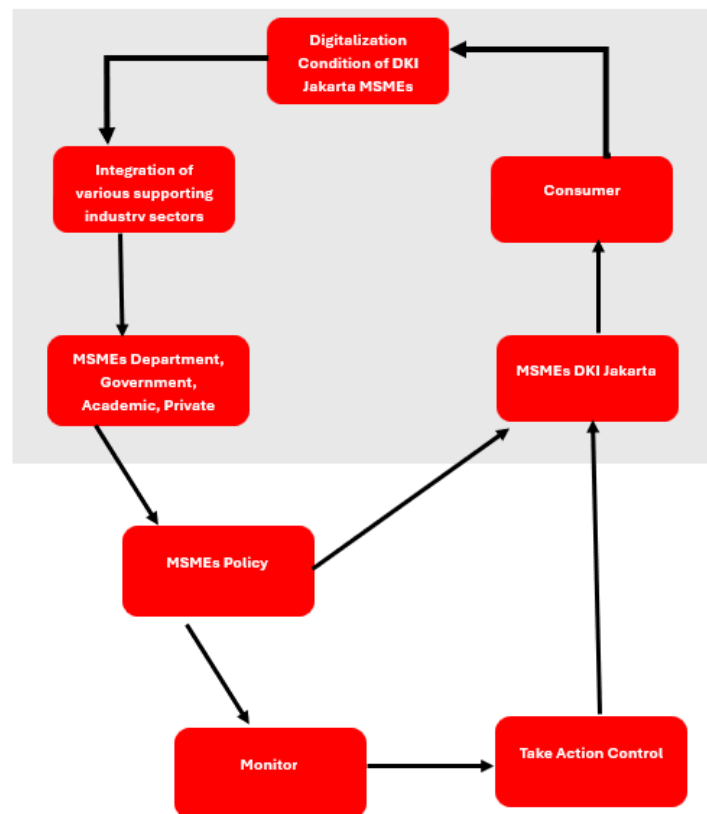


Figure 3. Conceptual Model Digital MSMEs in DKI Jakarta
Source : Prepared by researchers

Hence, building a conceptual model as a thinking construct of the problem situation is "defensible logic" and does not model the real world system but the resources needed to deliver transformation activities in the root definitions of the MSME Digitalisation development process in DKI Jakarta. The conceptual framework is the researcher's logical consideration of the need for resources that meet the expectations of CATWOE and the rational value of efficacy (E1), efficiency (E2), and effectiveness (E3) in the policy of developing digitalisation of MSMEs in DKI Jakarta.

Stage 5-Back in The Real World

After the conceptual model is obtained, the next step is to compare the conceptual model (human activity system) with the real world which results in recommendations on what to maintain, to improve or new things that need to be made. To produce a reality that is closer to the conceptual model it is necessary to define what happens in reality and what can be done logically according to the resource situation. It is the difference between what happens in reality and the logic that then raises questions that ultimately lead to the discussion of new transformation actions that need to be implemented. For ease of understanding the comparison, a comparison table is made as shown in Table 2.

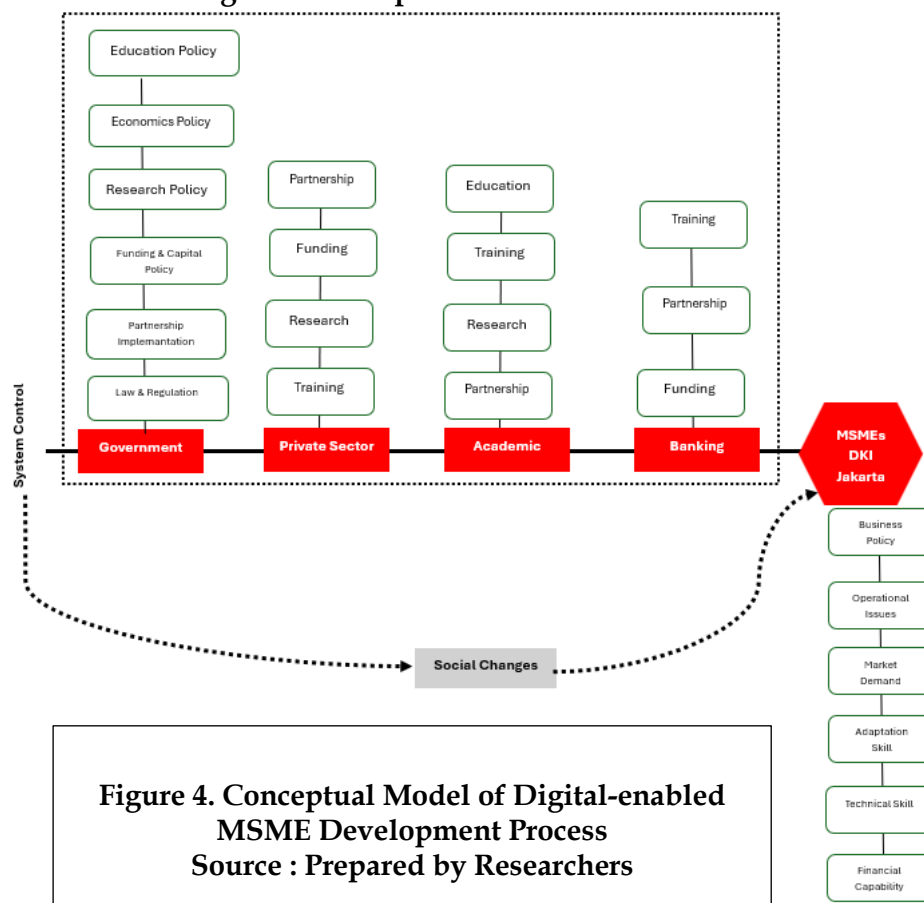
Table 4. Comparison of conceptual model and reality of DKI Jakarta MSMEs

Actor	Model Conceptual	Model World Real
Academics	<ul style="list-style-type: none"> Universities and academic institutions in Jakarta design comprehensive digital training programs for MSME owners. Establish research centers dedicated to studying MSME needs and challenges. Universities set up digital business incubators to support MSMEs. 	<ul style="list-style-type: none"> Low enrollment rates, limited reach to rural MSMEs, and a lack of follow-up to measure the impact of training. Additionally, many MSME owners have difficulty balancing business operations with time-intensive courses. The tridharma process of higher education lacks precision, as community dedication is just an accidental dan does not align with the community's actual needs. Practical collaboration between researchers and MSMEs is limited. Some universities have established business incubators, but access is often limited to startups and MSMEs with high growth potential, leaving out smaller or traditional MSMEs
Banking	<ul style="list-style-type: none"> Streamline the loan approval process, making it faster and more accessible for MSMEs. Reduce the burden of documentation and provide instant loan decisions. Comprehensive set of digital tools offered by banks to help MSMEs manage their finances effectively 	<ul style="list-style-type: none"> Many MSMEs still experience challenges, such as complex forms and stringent requirements. Loan Requirement tend to be difficult and interest rate are relatively high. Some banks provide digital financial management tools, but their adoption among MSMEs remains low. Business owners often lack the time or knowledge to utilize these features fully
Government	<ul style="list-style-type: none"> Develop a government-sponsored digital platform where MSMEs can access all necessary services in one place, such as business registration, licensing, tax filing, funding opportunities, 	<ul style="list-style-type: none"> Many MSME owners report that the platforms are difficult to navigate, and technical issues are common. Additionally, internet access and digital literacy gaps still pose challenges, especially for

	<p>and training resources.</p> <ul style="list-style-type: none"> • Launch a nationwide digital literacy campaign targeted at MSME owners. • Provide subsidies or grants to MSMEs to help them purchase or subscribe to essential digital tools, such as accounting software, e-commerce platforms, and digital marketing services. The government would also establish partnerships with tech companies to offer discounts to MSMEs. 	<p>MSMEs in less urbanized areas.</p> <ul style="list-style-type: none"> • However, these initiatives sometimes fail to reach a wide audience, and many MSME owners find the content too general or not tailored to their specific business needs • Awareness of these programs is often low, and the application processes can be cumbersome. In some cases, the eligibility criteria exclude smaller or more traditional MSMEs that may need the support the most.
Private	<ul style="list-style-type: none"> • Partnership to develop the digital Ecosystems • Streamlined process for accessing loans and managing finances • Comprehensive digital literacy training programs 	<ul style="list-style-type: none"> • However, some MSMEs experience challenges related to high interest rates and complex loan requirements. • Training programs are available but often lack follow-up support. • Less of connection to tap into MSMEs program
MSMEs	<ul style="list-style-type: none"> • MSMEs fully embrace digital tools for all aspects of their business operations, including inventory management, sales tracking, customer relationship management (CRM), and accounting • MSMEs build a strong online presence through professional websites, active social media profiles, and listings on multiple e-commerce platforms • MSMEs use digital financial management tools to monitor cash flow, generate financial reports, and handle payments 	<ul style="list-style-type: none"> • While some MSMEs in Jakarta have adopted digital tools like point-of-sale (POS) systems and simple accounting software, many still rely on manual processes or struggle with integrating multiple digital platform • Many MSMEs have a basic online presence through social media platforms like Instagram or Facebook, but only a minority have invested in professional websites. E-commerce participation is growing, but competition is fierce, and effective digital marketing requires skills and resources that many MSMEs lack. • Some MSMEs use mobile banking and digital payment systems, but the adoption of comprehensive financial management tools is still low.

Consumer

- Create a consumer-driven digital ecosystem where MSMEs can seamlessly list their products on popular e-commerce platforms.
 - Develop a consumer insights dashboard accessible to MSMEs, offering data-driven information about consumer behavior, preferences, and trends.
 - Implement a hyperlocal delivery service in collaboration with MSMEs, using digital platforms to ensure efficient and same-day deliveries
- Consumers also experience issues like inconsistent product quality and long delivery times when ordering from smaller vendors.
 - Detailed consumer insights are either not available or come at a high cost, making them inaccessible for many small businesses. MSMEs often lack the skills to interpret and act on the available data effectively.
 - Hyperlocal delivery services have become more common, with partnerships between MSMEs and delivery companies like Gojek and Grab. However, delivery fees can be high for MSMEs, affecting their profit margins.

Stage 6-Define The Changes To Be Implemented

Pragmatically the selection of the order in which to implement the recommendations is considered according to those who most affect the larger system leading to more opportunities and problems. To assist understanding in finding change actions, a conceptual model of system thinking is needed, including using the openly accessible xmind tool.

Stage 7-Take Action to Improve the Problem Situation

Corrective actions include categorical steps that include actors and resources of concern in the problem situation. An understanding of the actions to improve the problem situation of the digitisation process of MSMEs in DKI Jakarta can be seen in Table 3. which follows the steps in identifying changes that are considered 'feasible' and 'desirable'.

Table 5. Comparison of conceptual model and reality of DKI Jakarta MSMEs Actor

Actor	Action
Academics	<ul style="list-style-type: none"> Organising education, training, research that is oriented towards the mission of digital-based entrepreneurial development. Collaboration by building partnerships with government, industry and the private sector, as well as the community at large that are aligned with state policies and the situation of the industrial and private worlds
Banking	<ul style="list-style-type: none"> Providing light loans specifically for MSMEs both in terms of requirements and interest rates Actively participate in providing CSR programmes that support academic research
Government	<ul style="list-style-type: none"> Issue instructions in the form of regulations to increase the participation of MSME players, academics, industry and the private sector Need to develop a research road map, funding, and encourage the involvement of industry and the private sector in producing research based on business digitalisation, especially MSMEs. Provide assistance and capital on a regular basis with clear and targeted criteria and involve industry and the private sector as stipulated in government regulations.
Private	<ul style="list-style-type: none"> Providing business capital and assistance to MSME players in DKI Jakarta and indirect assistance through the involvement of academics in the form of organising education, training and research. Collaboration to create, process and absorb products produced by MSME players to digitalised marketing processes Collaborate and provide research funding for academics in accordance with the needs of industrial and private organisation goals
MSMEs	<ul style="list-style-type: none"> Have a futuristic way of thinking to participate and be open to all parties in the process of business change towards the digitalisation era.

	<ul style="list-style-type: none"> • Have a desire to continuously adapt to market conditions and changes
Consumer	<ul style="list-style-type: none"> • Create a consumer-driven digital ecosystem where MSMEs can seamlessly list their products on popular e-commerce platforms. • Develop a consumer insights dashboard accessible to MSMEs, offering data-driven information about consumer behavior, preferences, and trends. • Implement a hyperlocal delivery service in collaboration with MSMEs, using digital platforms to ensure efficient and same-day deliveries

CONCLUSIONS

Based on the results of the comparative analysis of the conceptual model with the real-world model, it can be concluded that the main problem faced by MSMEs in DKI Jakarta in terms of implementing the digitalization process is that there is still a large gap between the expected ideal conditions and the real conditions. The strategies that need to be done are:

1. Academics need to direct their research to applied research needed by MSMEs/industry, community service that is incidental needs to be directed into sustainable thematic, besides that it needs to be encouraged towards its function as an educational institution by prioritising the mission of entrepreneurial development through education, training and research by establishing partnerships with various parties widely.
2. Banks need to provide special light loans for MSMEs both in terms of requirements and interest rates as well as possible training related to digitalisation in banking.
3. Government assistance is not only partial and not interrelated and project-based training, but needs ongoing assistance. In addition, the government provides infrastructure and learning instruments in the form of instructions and regulations including tax incentives, development, protection of domestic products, employment, micro and macro prudential stability, assistance and capital.
4. MSMEs need to be encouraged to have a strong network and motivation to be able to survive and respond to any challenges therefore the involvement of industry and private parties such as banking, manufacturing, NGOs and NGOs, non-profits need to be encouraged to contribute through the provision of capital and business assistance, by involving academics to support education, training and community empowerment activities, research and cooperation in absorbing or providing desired goods and services.
5. MSMEs need to be assisted by government to fulfil consumer rights that are often ignored, so as to build customer trust and loyalty.

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