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DEUTSCHE ZUSAMMENARBEIT

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KEMKOMINFO

THE DEVELOPMENT OF DIGITAL SKILL PATH FOR MSMEs

The Development of Digital Skill Path for MSMEs

Project Digital Transformation Center (DTC) and Make-IT Indonesia

On behalf of GIZ Indonesia and Bappenas

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Introduction of DTC and Make-IT Program
On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH implements the Global Program for Digital Transformation to develop innovative BMZ flagship projects on a global scale. Under the flagship activity "Digital Transformation", digital ecosystems in partner countries are supported. The Digital Transformation Center (DTC) and Make-IT Indonesia are part of this global initiative and support Indonesian national digital transformation, which is implemented together with the Ministry of National Development Planning/Bappenas. The overall objective of the project is to reduce the digital divide & disparities, and provide equal opportunities to all groups of society to benefit from the prospects of digitalization while enabling them to independently assess the risks.

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ABBREVIATION

ADB		Asian Development Bank
BPS	*Badan Pusat Statistik*	Central Agency on Statistics
BAPPENAS	*Badan Perencanaan Pembangunan Nasional*	Ministry of National Development Planning
BTS		Base transceiver station
BUMN	*Badan Usaha Milik Negara*	State-owned Enterprise
COVID-19		CoronaVirus Disease
DEA		Digital Entrepreneurship Academy
ETPD	*Elektronifikasi Transaksi Pemerintah Daerah*	Electronification of Regional Government Transactions
FEB	*Fakultas Ekonomi dan Bisnis*	Faculty of Economics and Business
GDP	*Produk Domestik Bruto*	Gross Domestic Product
GIZ		Deutsche Gessellschaft für internationale Zusammenarbeit
ICT	*Teknologi informasi dan Komunikasi*	Information and Communication Technologies
JABODETABEK	*Jakarta Bogor Depok Tangerang Bekasi*	Jakarta Bogor Depok Tangerang Bekasi
KEMENDAG	*Kementerian Perdagangan*	Ministry of Trade
KEMENKEU	*Kementerian Keuangan*	Ministry of Finance
KEMENKOPUKM	*Kementerian Koperasi dan Usaha Kecil & Mikro*	Ministry of Cooperatives and Small & Medium Enterprises
KEMENPAREKRAF	*Kementerian Pariwisata dan Ekonomi Kreatif*	Ministry of Tourism and creative economy
KEMENPERIN	*Kementerian Perindustrian*	Ministry of Industry
KEMNAKER	*Kementerian Ketenagakerjaan*	Ministry of Manpower
KEPPRES	*Keputusan Presiden*	Presidential decree

KOMINFO	*Kementerian Komunikasi dan Informatika*	Ministry of Communication and Information Technology
LSSR		Large scale social restriction
MSD		Multi Stakeholder Discussion
MSME		Micro, Small, and Medium Enterprise
OECD		Organisation for Economic Co-operation and Development
OJK	*Otoritas Jasa Keuangan*	
POS		Point of Sales
PP	*Peraturan Pemerintah*	Government Regulation
P2DD	*Percepatan dan Perluasan Digitalisasi daerah*	Task Force for the Acceleration and Expansion of Regional Digitalization
RPJMN	*Rencana Pembangunan Jangka Menengah Nasional*	National Medium-Term Development Planning
SME		Small and Medium Enterprise
SOE		State-owned Enterprise
UI	*Universitas Indonesia*	
UKM	*Usaha Kecil dan Menengah*	Small and medium enterprise
UU	*Undang-Undang*	Law

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EXECUTIVE SUMMARY

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MSMEs play a crucial role in bolstering both the global and Indonesian economies, evident in their substantial contribution to GDP and their capacity to generate employment opportunities. According to the World Bank (2022), MSMEs account for over 50% of all jobs worldwide and approximately 90% of all firms. In developing nations, formal MSMEs can constitute up to 40% of the GDP (UN, 2022). In the case of Indonesia, MSMEs hold an even more significant market share, comprising 61% of the GDP with a total value of IDR 8,574 trillion (Kamsidah, 2022).

Despite their significant contribution to the global and Indonesian economies, MSMEs have been severely impacted by market and supply chain disruptions caused by the COVID-19 pandemic. On a global scale, approximately 70-80% of MSMEs have reported a decline in income and sales (OECD, 2021). These sales losses can be attributed, in part, to the fluctuations in supply and demand resulting from the ongoing pandemic.

The COVID-19 pandemic has served as a pivotal moment in the digital transformation of MSMEs, prompting numerous businesses to shift from traditional to digital operations. Various institutions have documented the success of MSMEs in incorporating digital technology into their business processes. A survey conducted by Visa (2020) across eight countries revealed that approximately 50% of MSMEs anticipate integrating digital technology into at least one-third of their business processes by 2021. Furthermore, a staggering 93% of MSMEs stated that the COVID-19 pandemic has significantly increased their reliance on technology to facilitate their day-to-day business operations.

Although Indonesia possesses sufficient basic digital infrastructure to support the digitalization of MSMEs, the actual utilization of technology by MSMEs remains relatively low. According to DataReportal (2023), 77% of the Indonesian population already uses the internet, with 60.4% actively engaging in social media platforms. However, research conducted by the UKM Center FEB UI (2020) reveals that that social networking and instant messaging applications still dominate internet usage by MSMEs, while the adoption of technology for e-commerce transactions and product sales remains relatively low. Furthermore, the OJK (2022) also highlights that MSMEs exhibit limited digital literacy and face challenges regarding financial inclusion.

Through the 2020-2024 RPJMN and Law Number 11 of 2020 (Job Creation Law), the Indonesian government has undertaken regulatory reforms to support the advancement of MSME digitalization. To facilitate these efforts, several ministries have initiated training programs aimed at enhancing digital literacy among MSMEs. One notable initiative is the Digital Entrepreneurship Academy (DEA) launched by the Ministry of Communication and Information Technology (Kominfo), specifically targeting MSMEs and entrepreneurs. Additionally, the Ministry of Cooperatives and Small-Medium Enterprises (KemenkopUKM) has implemented the UKM Campus program, offering training assistance for SME development, including digitalization and exports. The Ministry of State-Owned Enterprises also contributes to this effort through its program known as Rumah BUMN, which provides a diverse range of training programs for MSMEs, encompassing digital-related topics.

The government and private sector have collaborated to advance the digitalization of MSMEs. Kemenparekraf, in partnership with a local technology provider, offers

training for service oriented MSMEs seeking to integrate their businesses into digital platforms (Dewanto, 2023). Similarly, the DKI Jakarta Provincial Government, through Jakpreneur, partners with multiple technology providers to deliver digital training, covering areas such as onboarding, marketing, financial reporting, and product certification.

Despite significant efforts by both government and non-government entities, it is apparent that the capacity-building training programs for digital literacy among MSMEs lack effectiveness and efficiency. One notable issue is the presence of redundant or overlapping training topics among various training providers, leading to duplication in the materials provided. This redundancy can hinder the effectiveness of the training as it fails to offer diverse and tailored content to address the specific needs of MSMEs. Furthermore, there is a noticeable lack of synchronization and coordination in the implementation of training programs between different institutions. This lack of coherence can result in inconsistencies and gaps in the training provided, further reducing its overall effectiveness.

To enhance the effectiveness and efficiency of MSME digital training, conducting a supply and demand study on digital skills capacity building is crucial. Recognizing this need, with the support of GIZ, Bappenas, and Kominfo we carried out a comprehensive mixed-method research study. The study consisted of multi-stakeholder discussions among digital technology training providers and an online survey to collect data on the training attended by MSMEs. The gathered data and information from these activities were then utilized to identify gaps and create a digital skills path based on the 3Go framework which is developed by the researchers. This approach allows for a systematic mapping of digital skills needs and ensures that the government can design a more targeted and effective MSME digital training strategy

Through MSD activities, we conducted discussions with 28 institutions in the JABODETABEK area to explore digitalization training provision. Findings revealed an increasing trend in the number of trainings provided by MSD respondents. In 2020, there were 61 MSME digitalization trainings, which rose by 30% in 2022, reaching a total of 79 trainings. The increase was primarily driven by government training initiatives. Additionally, the target participants for training varied among institutions. Government training providers focused more on micro and small businesses, while non-government providers targeted small and medium-sized MSMEs.

The data from MSD activities indicate that there is no significant difference in the pattern of training provision based on the type of MSME. Overall, 41% of the responding agencies provided training in the Go Modern and Go Digital categories, while only 34% organized Go Online training. However, when considering the level of MSMEs (micro, small, and medium), there is an uneven distribution of training types between government and non-government providers. Over 20% of agencies stated that they offer Go Modern and Go Digital training for all MSME levels. However, only 14% of agencies in the sample provided Go Online training. This reveals that the training provision pattern is still not diversified according to the specific needs of each MSME category.

A survey was conducted from May to June 2023 to map the demand for digital training among MSMEs. The survey involved 425 participants, with 63% of them are women. The Food & Beverage and Crafts sectors represented the largest portion, accounting for 69% of the total sample. The respondents were evenly distributed across 21 out of 34 provinces, with the majority residing in Java Island (53%). West Java Province had the highest number of respondents (94), followed by Yogyakarta with 83

respondents. Notably, the respondents demonstrated sufficient basic digital literacy skills, with a digital skills index of 4.7 out of a maximum score of 7.

MSMEs in the survey expressed strong interest in Go Digital-themed training, such as social media marketing and basic marketplace usage. Demand for digital training was consistent across different economic scales. However, only 30% of MSMEs participated in all training stages based on the 3Go framework. This indicates a need for improvement in training sustainability. Participants found the training they received valuable, with micro-businesses benefiting from Go Modern materials and small/medium businesses finding Go Digital and Go Online themes useful. MSMEs reported that digital training positively impacted their marketing expansion and increased business profits.

A comparative analysis of the supply and demand for digital training reveals an imbalance. There is an excess supply of Go Modern-themed training, particularly focused on digital mindset. Conversely, there is an insufficient supply of Go Digital-themed training, specifically around marketing, indicating a shortage in meeting the needs of MSMEs. Additionally, for the more advanced topic of Go Online, there is a higher availability of training than what MSMEs require, resulting in an oversupply.

Based on the findings presented, here are some recommendations:

- The government should **develop a comprehensive map of the availability and demand for digital training** across different business segments within MSMEs. This study highlights that the current training composition within each business segment tends to be homogeneous. However, the demand for training exhibits heterogeneity, indicating the need for tailored and diverse training programs. By developing such a map, the government can identify specific training gaps and design targeted initiatives that address the unique needs of MSMEs in various business segments.
- To address the needs of micro and small-scale MSMEs, it is recommended to **increase the number of training sessions on Go Digital topics**. However, it is important for training provider institutions to continue offering training on the Go Modern theme as well. This ensures that businesses have the required foundational knowledge and skills before transitioning to more advanced digital training. By maintaining a balance between Go Modern and Go Digital training, MSMEs can effectively progress in their digital transformation journey.
- In order to effectively meet the diverse digital training needs of MSMEs, **it is important to establish clear divisions among training provider institutions**. This will ensure a comprehensive coverage of training topics while avoiding redundancy or overlap in training materials.
- **The government should prioritize providing general training with basic digitalization materials (Go Modern)** to ensure that MSMEs have a strong foundation in basic digital skills. This approach allows the government to set standards and ensure that MSMEs are well-prepared for more advanced training opportunities in the future. By focusing on establishing a solid digital skill base, the government can support the digital transformation of MSMEs effectively.
- **Non-governmental training institutions, universities, and technology providers can play a crucial role in offering training on advanced topics such as Go Digital and Go Online**. These topics, which encompass areas like the use of ERP systems, are characterized by rapid development, requiring training providers to adapt accordingly. These institutions are well-equipped and resourced to provide training on these advanced topics, ensuring that the digital technology material remains relevant and up-to-date with the latest

developments. By focusing on advanced training, these providers can cater to the evolving needs of MSMEs and help them stay at the forefront of digital innovation.

- **Specialization in training topics offered by each party is crucial**, and coordination between institutions is necessary to establish clear roles and responsibilities. BAPPENAS can take the lead in initiating discussions among relevant institutions to ensure there is no overlap in providing digital technology training. This coordination will help optimize resources and streamline efforts, ensuring that each institution focuses on their specific expertise and avoids duplicating training initiatives. By clarifying the division of responsibilities, effective collaboration can be fostered, leading to a more efficient and comprehensive digital training ecosystem.
- **The government, led by BAPPENAS and Kominfo, should ensure widespread and equitable access to digital training by effectively disseminating information to all MSMEs**. Establishing a centralized information hub will promote transparency and equal opportunities for MSMEs to embrace digital technology.
- **To effectively implement the previous strategies, a dedicated platform is essential**. This platform should facilitate coordination between institutions, monitor the availability and quality of digital training, disseminate training opportunities to all MSMEs, and record the learning process of MSME participants. The government, in collaboration with relevant ministries and institutions, can take the initiative to establish this platform. This "one-stop service" approach aligns with the government's current focus on using a unified data, platform, and gateway to deliver programs and services.

CHAPTER 1
BACKGROUND

1.1 The role of MSME in the economy

Micro, Small, and Medium-Sized Enterprises (MSMEs) are vital for economies worldwide, particularly in developing nations. MSMEs constitute the majority of enterprises globally and have a significant impact on employment generation and economic growth. They account for over 50% of global jobs and approximately 90% of all enterprises. In developing countries, formal SMEs contribute up to 40% of the GDP (World Bank, 2022).

MSMEs play a significant role in the economies of several Southeast Asian countries, as demonstrated by their contribution to GDP. In Malaysia, MSMEs contribute approximately 38.2% to the country's GDP (OECD, 2021). The Philippines has a contribution value of 40% (UNDP, 2020), while Thailand's MSMEs contribute 35% to the country's GDP (Statista, 2021). In Indonesia, MSMEs contribute 61% to the country's GDP, with IDR 8,574 trillion, according to data from the Ministry of Cooperatives and SMEs (Kamsidah, 2022).

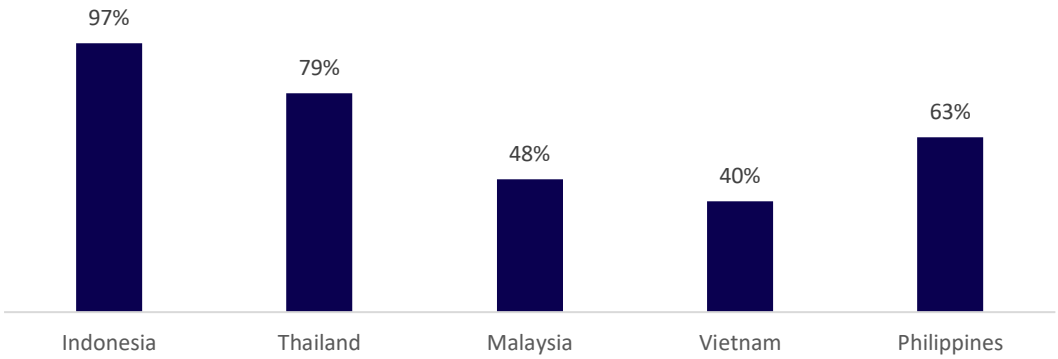

Figure 1. Average labor contribution from MSME of total labor 2015-2019

Source: ADB (processed)

Figure 1 shows that Indonesia has made a significant contribution in terms of MSME labor absorption compared to other countries. In the period of 2015-2019, the average MSME labor absorption reached 97% of the total workforce, surpassing Malaysia (48%), the Philippines (63%), Thailand (63%), and Singapore (79%) (ADB, 2022). However, the annual growth rate of MSME labor ranged from 0.5% to 3.2% in the last five years, with Thailand experiencing higher growth at 3.3% to 5.4% (ADB, 2022). Furthermore, MSME export activities in Indonesia accounted for 15.7% of total exports in 2019, surpassing Thailand (13.4%) but still lower than Malaysia (17.9%) (ADB, 2022).

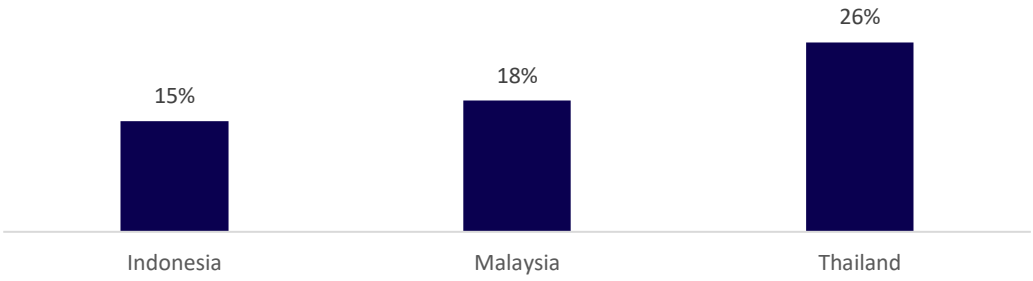

Figure 2. Average MSMEs export contribution to total export (2019)

Source: ADB (processed)

1.2 The impact of the COVID-19 pandemic on the digital transformation of MSMEs

MSMEs play a significant role in the economy, leading countries to focus on strategic policies to strengthen them. A widely implemented strategy is to develop sustainable and digitalized MSMEs for global competitiveness (Mukhoryanova et al., 2021). However, the COVID-19 pandemic has adversely affected MSMEs, revealing their vulnerability to disruptions in demand and supply chains. Globally, 70-80% of MSMEs have faced declining revenue and sales, primarily due to changes in supply and demand (OECD, 2021).

On the supply side, MSMEs faced challenges such as reduced labor supply due to government restrictions, illness or loss of workers, and employees needing to stay home to care for their children due to school closures. Additionally, disrupted supply chains resulted in shortages of spare parts and semi-finished goods. On the demand side, consumers experienced income loss, fear of contagion, and increased uncertainty, leading to reduced spending and consumption. To address these challenges, transforming business processes into digital forms is a viable strategy. This allows MSMEs to adapt to changing circumstances, improve efficiency, and tap into new market opportunities.

To address these challenges, digitalization of MSMEs is crucial in building an inclusive and resilient economy. Digital technology provides small businesses with access to essential tools, enabling them to adapt quickly during crises without significant investment. By embracing digitalization, MSMEs can enhance their agility, competitiveness, and capacity to navigate uncertain times.

The COVID-19 pandemic has accelerated the digital transformation of MSMEs worldwide, with many businesses shifting their operations online and embracing new digital tools and technology (Visa, 2020). The Global State of Small Business Report (2021) indicates that a significant percentage of MSMEs reported increased sales generated through digital channels. Large-scale e-commerce platforms, like Alibaba, witnessed the registration and involvement of MSME shops, particularly in rural and remote areas. The digitalization of MSMEs has not only improved productivity and business performance but has also fostered innovation and sustainable development. Digitalization has significantly benefited businesses, enhancing productivity, performance, and innovation while fostering sustainable development (Yoo, 2020).

1.3 Supporting infrastructure for the digitalization of MSMEs

Successful digital technology transformation for MSMEs relies on adequate infrastructure support, encompassing both physical and non-physical aspects. Basic requirements include MSMEs' understanding of digital technology usage, access to essential equipment like computers and mobile phones, and reliable internet connections.

Indonesia already possesses sufficient basic digital infrastructure to support MSME digitalization, as evidenced by a high internet adoption rate of 77% and 60% active social media users (DataReportal, 2023). However, Indonesia lags behind some other countries in terms of mobile internet speed, with a median speed of 17.27 Mbps

compared to Malaysia (36.34 Mbps), Vietnam (39.59 Mbps), and Thailand (37.85 Mbps). Ensuring improved internet speeds is crucial for enabling smooth digital transformation processes for MSMEs in Indonesia.

Based on the survey conducted by the UKM Center FEB UI (2020), it is evident that MSMEs in Indonesia predominantly use social networking and messaging apps, with limited usage for e-commerce transactions and product sales. Furthermore, Ministry of Cooperatives and SMEs data (2022) highlights that only 12% of MSME units are engaged in the digital ecosystem. There is a significant lack of national digital financial literacy (36%) and inclusion (31.3%) according to OJK (2022). These findings emphasize the urgent need for the government to prioritize increasing access to and promoting digital technology for MSMEs' business operations to avoid falling behind and encountering challenges.

To address these issues, the government has been advocating the upgrading of national MSME policies and governance. The 2020-2024 RPJMN and Law Number 11 of 2020 (Job Creation Law) have been instrumental in removing regulatory obstacles to the growth and digitalization of MSMEs. Digital transformation is a key aspect of the industrial policy in the 2020-2024 RPJMN, with a focus on ICT infrastructure development, utilization, and providing necessary facilities to promote digital transformation. The Ministry of Communications and Informatics (Kominfo) has also outlined a strategic plan for 2020-2024, with the goal of enhancing digital human resources to implement the RPJMN. These efforts highlight the government's commitment to supporting MSMEs' digital transformation agenda.

The implemented Strategic Plan includes initiatives like "MSME Go Online" and "MSME Scaling Up," which directly aim MSMEs, to facilitate their adoption of digital technology and enable business growth. The "MSME Go Online" program assists MSMEs in onboarding to online marketplaces, providing training on product uploading, customer interaction, and order management. This support is expected to increase transactions, turnover, assets, and employment for MSMEs. Other initiatives in the plan include the development of 1000 digital start-ups, digital literacy programs, and training for digital talents.

Furthermore, the Ministry has prioritized digital infrastructure development, including the installation of Base Transceiver Stations (BTS) in underdeveloped and remote areas, facilitating 4G cellular connectivity and internet access in public facilities. The significant growth in BTS installation, reaching 39,062 BTS in 2021, indicates progress in digital infrastructure development (BPS, 2022). A strong digital infrastructure not only accelerates digital adoption among MSMEs but also attracts more consumers to the digital market. Prioritizing remote areas in infrastructure development can further accelerate MSMEs in those regions, where digital access may be limited.

1.4 Providing digital technology training as an effort to accelerate the technological transformation of MSMEs

In addition to regulatory support, the government has implemented training programs to facilitate the digitalization of MSMEs. These programs aim to foster digital innovation and enable MSMEs to undergo successful digital transformation. They are designed with diverse approaches and perspectives, considering the unique characteristics of the

MSME ecosystem. This approach accelerates digital transformation efforts across different sectors (OECD, 2019). Various ministries and institutions have developed training programs to enhance MSME literacy in the face of digital economic growth. For instance, the Ministry of Cooperative and SMEs offers the UKM Campus program, providing training assistance for SME development, including digitalization and exports.

The Ministry of State-Owned Enterprises (SOE) has a similar program called Rumah BUMN, which involves various SOEs in providing training to MSMEs, including digital materials. Additionally, the Ministry of SOE and SOEs have launched the PADI program, which is a marketplace specifically designed for MSMEs to provide goods and services for government institutions. The Ministry of Communications and Informatics also plays a role in supporting MSMEs through their programs. The Digital Entrepreneurship Academy (DEA) offers self-development training programs for individuals and entrepreneurs, with targets of 22,500 participants in 2021 and 60,000 participants in 2022. Furthermore, their Digital Economy working unit conducts training programs specifically for MSMEs in the manufacturing sector, particularly in food and crafts. This program provides digital training ranging from basic to intermediate levels, offers starter kits with necessary tools, and provides funding assistance for participation in virtual expos.

In addition to government initiatives, non-governmental organizations also play a crucial role in supporting the digitalization agenda of MSMEs and their capacity building. Two types of organizations specifically cater to MSMEs' capacity-building activities: training providers and technology/platform providers. Training providers offer business-related training programs, including digital skills training, to empower MSME owners. These organizations may charge a fee for their services or offer training for free. Examples of such organizations include Go-UKM and the Wiranesia Foundation. On the other hand, Technology or platform[1] providers own and operate digital services, business-related technologies, or platforms that cater to the needs of MSME owners. They may offer digital skills training as part of their activities, aligning with the services or technologies they provide. MOKA and SIRCLO are examples of such organizations.

Collaboration between the government and the private sector is also essential in supporting the digitalization agenda of MSMEs. For instance, the Ministry of Tourism and Creative Economy collaborates with local technology providers to offer training for MSMEs in the service sector, helping them integrate their businesses into digital platforms (Dewanto, 2023). The DKI Jakarta Regional Government, through Jakpreneur, partners with various technology providers to provide digital training, covering topics such as onboarding, marketing, financial reports, and certification.

Despite significant funding, capacity-building activities for MSMEs have yet to be effectively and efficiently implemented. There are several challenges that need to be addressed to improve the overall effectiveness of these activities. One challenge is the duplication of training topics, which can overwhelm learners and hinder their progress. The availability of similar and duplicated training materials can lead to inefficiencies in the learning process, hindering the acceleration of digital literacy among MSMEs. Asymmetric information is another issue, as not all MSME owners are well-informed about training programs or have equal access to program information. This lack of information can hinder their participation and limit their opportunities for capacity building. Finding suitable training programs that address the specific needs of MSMEs is also one

[1] Organization which owns and operates digital/technology services that support or related to the business process that meet the needs of business owners.

noticeable issue in MSMEs training provision. The available training options may not be tailored to their industry, size, or unique requirements, making it difficult for MSMEs to find the right training that meets their specific needs. Sustaining the impact of training programs over the long term is also a challenge. Without ongoing support, reinforcement, and follow-up, the knowledge and skills gained through training may not be effectively applied or retained by MSMEs.

To address the challenges in capacity-building activities for MSMEs, GIZ, Bappenas, and Kominfo are working together to develop digital skill paths specifically tailored to the needs of MSMEs. These skill paths aim to provide a standardized capacity development strategy that can be used by the Indonesian government as a model for MSMEs. By developing standardized skill paths, the aim is to provide MSMEs with targeted and tailored training programs that address their specific needs and challenges. This collaborative effort seeks to enhance the effectiveness and efficiency of capacity-building activities, ensuring that MSMEs can acquire the necessary digital skills and knowledge to thrive in the digital era.

1.5 Objectives

This study has two objectives: first, to evaluate the digital skill landscape of MSMEs in Indonesia, and second, to develop a Digital Skill Path that can serve as a reference model for the government in formulating digital capacity development strategies which are specifically tailored for MSMEs. The findings from this study will contribute to enhance the digital skills and knowledge of MSMEs. Thus, enabling them to effectively navigate the digital landscape and seize opportunities for growth and competitiveness. The Digital Skill Path will provide a roadmap for the government to design targeted interventions and initiatives that cater to the specific needs of MSMEs in their digital transformation journey.

More specifically, the following are the research objectives in this study:

1. Evaluate the various digital skills trainings provided by the Ministry and by technology/platform providers for MSMEs.
2. Identify gaps/missing links and recommend necessary digital skills training materials.
3. Develop an initial foundation for the design of a digital skills path/curriculum for MSMEs.

This research report is organized as follows. Section 2 provides information on policy context and current research on MSMEs and digitalization. Section 3 provides an overview of the methodology and strategy for this study. Section 4 presents the supply analysis obtained from the multi-stakeholder discussions (MSD). Section 5 informs the state of demand for digital training from MSME online survey respondents. The results from sections 4 and 5 will serve as basis for gap analysis between demand and supply of digital skills training in Indonesia, which is presented in Section 6. Section 7 presents the conclusion summarizing the analysis and providing recommendations to support digital skills development in Indonesia.

CHAPTER 2
LITERATURE REVIEW

MSME development is a topic of interest for both the government and academics. The government has established policies and regulations to support MSMEs, while academics contribute by providing research findings and insights. This section discusses policy developments and research findings related to the digitalization of MSMEs, aiming to provide a comprehensive understanding of the issues addressed in this report.

2.1 MSMEs definition by Indonesian Government

Each country has its own definition of MSME, in Indonesia the definition of MSME is regulated in Law No. 20, 2008 and Government regulation No. 7, 2021 (UKM Center FEB UI, 2022). Law Nr. 20, 2008 that contains information about small and medium enterprise formulates a definition of MSME which is divided based on ownership, net assets, and revenue.

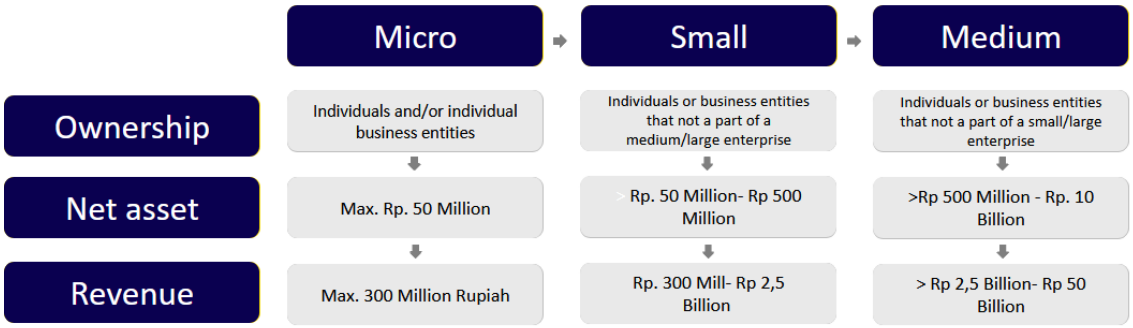

Figure 3. MSMEs Definition as per Law Number 2, 2008

Source: Authors (2022) based on Law 2/2008

Government regulation No. 7, 2021 on the ease, protection, and empowerment of Cooperatives and Micro, Small, and Medium enterprise also has a categorization of MSME. This regulation has the same classification as the previously mentioned Law. However, this latest regulation classifies the revenue's range of medium-sized enterprise to become relatively similar to the revenue's range of micro and small business.

Figure 4. MSMEs Definition as per Government Regulation 7/2021

Source: Authors (2022) based on Government Regulation 7/2021

The presence of multiple definitions and classifications of MSMEs in Indonesia creates challenges in policy analysis due to the differing criteria used. To ensure coherence with existing government programs, this research report adopts the MSME definition based on PP No. 7 of 2021. This standardized definition allows the recommendations to align more effectively with government initiatives, facilitating their implementation and impact on MSME development.

2.2 MSMEs Digital transformation in various countries

Digital transformation is a key priority for MSMEs to enhance their global competitiveness and contribute to the overall economic growth of a country. Thailand has emerged as a success story in this regard, with survey results from Salesforce in 2022 indicating that 100% of MSMEs in Thailand have executed online operations. The majority of these MSMEs have expressed their commitment to sustaining their digital transformation efforts in the long term. This digital reform has enabled Thai MSMEs to excel in areas such as meeting customer demand, delivering high-quality products, and personalizing customer engagement, thereby enhancing their overall business performance.

The willingness of MSMEs to embrace digital technology is a key driver of success in Thailand's digital transformation journey. This readiness has played a crucial role in supporting the seamless integration of digital technology into their business processes. However, a study conducted by Paypal in Malaysia in 2022 revealed that MSMEs still face certain challenges in implementing digital technology. These challenges include a lack of IT expertise and support, difficulties in establishing digital security and data protection measures, and limited time to research and manage the digital migration process. These findings highlight the complexity of digitalization for businesses and emphasize the importance of collaborative efforts between the government and relevant sectors to address these barriers and facilitate a successful digital transformation for MSMEs.

Training plays a crucial role in facilitating the digital transformation process for MSMEs. However, providing effective training requires careful planning and coordination. Some Literatures, supported by experiences from European countries, emphasizes the importance of addressing the gap between available training materials and the specific needs of MSMEs (European Digital SME Alliance, 2021). Additionally, the lack of coordination among training providers and a shortage of competent instructors have been identified as major challenges.

The involvement of the private sector is crucial in driving MSME digital initiatives alongside government efforts. In several developed countries, collaboration between the private sector and the government has proven effective in identifying MSME needs and providing appropriate technological tools. Reports highlight that implementing the right digital tools can significantly enhance the efficiency of MSMEs' business processes.

For instance, the federal government of Germany has implemented a comprehensive strategy for the digital transformation of MSMEs, even prior to the pandemic. Through partnerships with various stakeholders, Centers of Excellence have been established across different cities to offer customized solutions for MSMEs seeking digital transformation. This initiative has led to a substantial increase in the number of MSMEs establishing their own online shops or websites. Hence, reducing their dependence on specific marketplaces.

In Japan, the private sector has initiated various initiatives to support MSMEs' digital transformation. For example, a private company has distributed software to local vocational schools and provided training to students on how to utilize these tools. This aims to ensure that local MSMEs can hire skilled workers who can assist in accelerating their digital transformation. Hardware suppliers have also developed technology solutions tailored to the specific needs of local MSMEs. These initiatives have fostered

a culture of digitalization at the regional level and have contributed to increased productivity.

Similar non-governmental support can be observed in other developed countries. In Spain, the government collaborates with technology provider Vodafone to enhance digital insights and implementation for MSMEs. The Australian government works with private entities to offer consulting services for MSMEs that want to conduct Digital transformation. Financial assistance for digitalization efforts is also available in countries like the United States. These public-private collaborations and initiatives demonstrate the importance of non-governmental support in enabling MSMEs to embrace digital transformation and leverage the benefits of technology in their business operations.

2.3 Framework for the development of MSMEs digitalization in Indonesia

Various stakeholders in Indonesia have developed specific frameworks to guide the digitalization of MSMEs within their respective institutions. A notable framework is the concept of "3Go" introduced by Rumah Kreatif BUMN in 2019. This concept comprises three elements: Go Modern, Go Digital, and Go Online. It serves as a syllabus or guideline to assist MSMEs in their digital transformation journey. The framework aims to provide comprehensive guidance and support for MSMEs in adopting modern technologies, embracing digital platforms, and establishing an online presence.

The Go Modern stage in the digitalization framework focuses on coaching MSMEs to modernize their business activities. This includes improving product quality, creating a brand, enhancing packaging, obtaining licensing and standardization, among other aspects. This stage is particularly suitable for home-based MSMEs with 1-2 workers. The Go Modern training is divided into three stages. The first stage aims to help MSMEs create a brand for their product, targeting those with only one product. The next stage focuses on improving packaging according to specific standards and is intended for MSMEs that have completed the previous stage. The final stage provides training in simple business management, covering areas such as accounting, tax, human resources, and other aspects. Through the Go Modern stage, MSMEs are expected to acquire the necessary skills to effectively run their businesses.

During the Go Digital stage of the digitalization framework, MSMEs receive training materials focused on digital applications and business process automation. The training begins with the creation of basic digital accounts, such as email, and then progresses to training on digital applications and social media application. This stage is specifically designed for MSMEs that have completed the training at the Go Modern stage and have a staff of 3-5 employees. The Go Digital training is divided into three stages. The first stage aims to help businesses create digital accounts, while the next stage focuses on enhancing their ability to use digital applications that offer significant benefits, such as POS and Google Maps. The final stage of the Go Digital category provides training on the basic application of social media. By completing the Go Digital stage, MSMEs are expected to have the skills to access and utilize essential digital technologies for business purposes.

In the final stage of the digitalization framework, known as Go Online, MSMEs receive advanced topic training aimed at maximizing their existing digital technology. The training materials focus on enhancing the ability to compete in the digital market. Examples of training conducted include social media advertising, marketplace utilization, and website

development. The Go Online training is divided into three stages. The first stage focuses on social media advertising, targeting MSMEs who have completed the Go Digital stage and require additional skills to compete effectively in the digital market. The next stage provides a basic understanding of entering the marketplace, offering marketing options in the digital world. The last stage of the Go Online category offers training for website development, as websites contribute to building professionalism and consumer engagement. By completing the Go Online stage, MSMEs are expected to have access to the digital world and able to compete successfully in it.

Figure 5. Stages of digital training MSMEs by Rumah Kreatif BUMN

Source: Rumah Kreatif BUMN (2019, processed)

Rumah BUMN in 2023, formerly known as Rumah Kreatif BUMN, has adapted to the evolving MSME landscape and revised the 3Go concept. Under the new definition, Go Modern signifies MSMEs being registered on the Rumah BUMN website. Go Digital entails active participation on social media platforms. Lastly, Go Online involves MSMEs that have successfully registered in marketplaces. These updated criteria reflect the changing digital environment and provide clear benchmarks for MSMEs to strive towards.

Bakti (2020) has developed a comprehensive digital training module for MSMEs, specifically focusing on digital marketing. The module is divided into five stages, starting with basic training in business development and digital skills. The subsequent stages cover digital brand building, accessing e-commerce platforms, marketing strategies in marketplaces and social media, and finally, digital operations encompassing finance, operations, and human resources. This module aims to equip MSMEs with the necessary knowledge and skills to successfully navigate the digital market and optimize their digital adoption.

Figure 6. Digitalization training stage by Bakti

Source: Bakti (2020)

Kominfo has introduced the Digital Entrepreneurship Academy (DEA) as a training program to enhance the capacity of MSME entrepreneurs in digital skills (2023). DEA consists of four levels of training: basic digital entrepreneurship, basic digital marketing, business operational management, and business analytics & optimization. These training levels aim to equip MSMEs with the necessary knowledge and skills to succeed in the digital business landscape.

CHAPTER 3
RESEARCH METHODOLOGY

To address the need for a customized strategy in mapping the supply and demand side of the digital training gap, a tailored approach was developed during the research process. This strategy aims to effectively analyze the results and address the emerging issues. By adapting the approach to the specific context and requirements, the research team can provide more targeted and relevant insights to support the development of digital training programs for MSMEs.

3.1 Overview of research's phases

Figure 7 illustrates the phases of analysis and research used in this study. The initial phase involved a thorough review of current regulations and existing research on MSME digital training to establish a foundation for the study. This process revealed that comprehensive information on available digital training and the specific needs of MSMEs was challenging to obtain. Previous studies, while attempting to describe training needs, lacked the necessary detail for in-depth analysis. To address these gaps, the research team conducted independent data collection, encompassing qualitative and quantitative approaches, to obtain a more comprehensive and detailed understanding of the supply and demand for digital technology training. The collected data was then analyzed to identify patterns, trends, and gaps in digital training for MSMEs. The findings from this analysis provided the basis for developing recommendations to support the development of effective digital training programs for MSMEs.

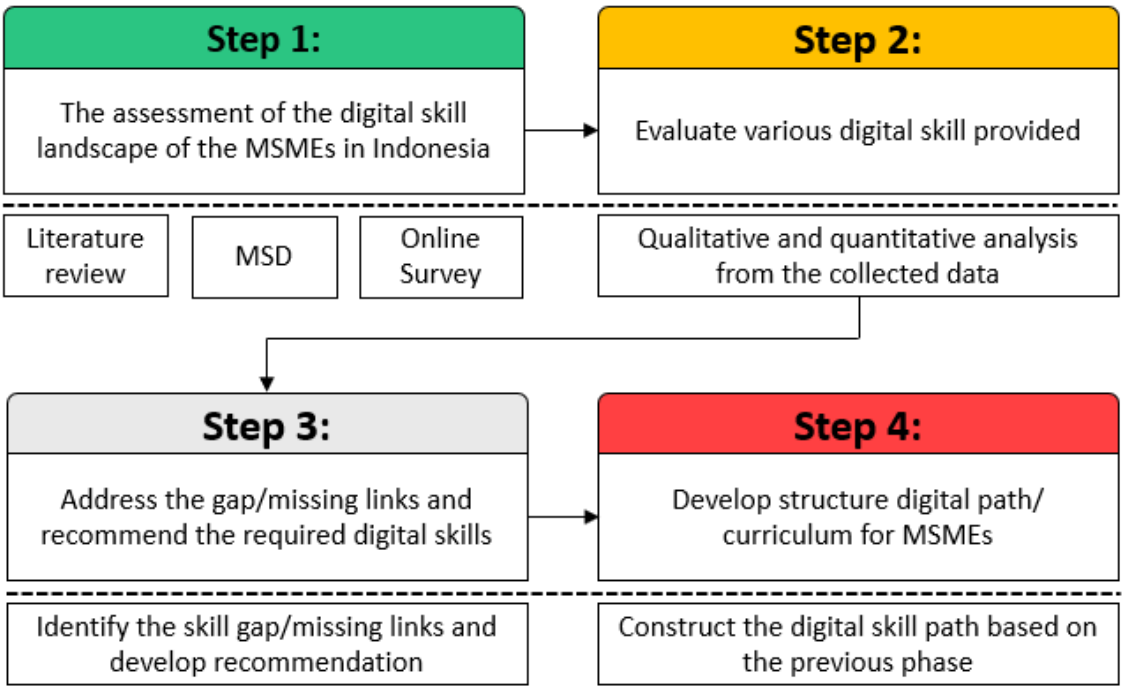

Figure 7. Research phase

Source: Authors (2023)

In the initial phase of our research, we conducted multi stakeholder discussions (MSD) to map the supply conditions of digital training. These discussions provided valuable insights from various stakeholders involved in digital training for MSMEs. We then distributed online questionnaires to MSMEs to gather information about their training history and perceived usefulness of the training they had attended. The data collected

from these activities served as the foundation for our analysis, enabling us to map the digital training gap and develop digital skills path tailored to the needs of MSMEs in Indonesia. This path aims to provide guidance and recommendations for enhancing the digital skills of MSMEs, enabling them to thrive in the digital era.

3.2 Phase 1: Data collection

3.2.1 Multi Stakeholder Discussions (MSD)

The Multi-stakeholder discussions (MSD) served as a platform to assess the landscape of MSME digital training providers through discussions and surveys. The topics covered included MSME empowerment policies, capability development, training material overview, and evaluation of training conducted between 2020 and 2022.

In collaboration with Bappenas and GIZ we identified reputable institutions, including ministries, associations, local governments, state-owned enterprises, universities, training providers/communities, and technology providers. Invitations were extended to 21 ministry working units, four associations, five local governments, five universities, five training providers/communities, and six technology providers.

The MSD was held from 9th to 10th of February at Aston Bogor Hotel and Resort. The first day's sessions ran from 9:00 AM to 4:30 PM, while the second day's sessions were held from 9:00 AM to 2:00 PM. Of the 50 institutions invited, 28 participants attended the MSD. The detailed information of the participants can be found in the table below:

Table 1. List of invited and attended participants of MSD

Institution	Invited	Attended
Ministry	23	16
State-owned enterprise	5	2
Local government	5	1
Universities	5	4
Training Providers	5	2
Technology Providers	6	3
Total	49	28

Source: Authors (2023)

The Multi stakeholder discussions (MSD) were conducted in two parts. In the first part, participants were asked to complete a questionnaire to gather detailed data on digital training activities provided by relevant institutions. We assisted participants who encountered any difficulties with the questionnaire, and the completion time was approximately one hour.

After completing the questionnaire, participants proceeded to a separate room for an in-depth interview. During this second part, we discussed current and future policies regarding MSMEs' digital training. Interviewers followed guidelines to ensure consistent information from each participant, and the duration of each interview was approximately one hour.

The survey results provided an overview of the digital training landscape for MSMEs, while the interviews allowed for a qualitative description of digital training development

policies. To ensure comprehensive information, the discussions from the interviews were transcribed.

We partnered with various government agencies, academic institutions, and private organizations to gather information from MSMEs and assess the current condition of MSME digital training. These partnerships allowed us to obtain insights from multiple stakeholders and ensure a comprehensive understanding of the supply and demand aspects of digital training. Our partners were:

1. Ministry of National Development Planning
2. Ministry of Communication and Information Technology
3. Ministry of Tourism and Creative Economy
4. Provincial government of Special capital Region of Jakarta
5. Provincial government of Special Region of Yogyakarta
6. Provincial government of Bali
7. Provincial government of Banten
8. Provincial government of West Java
9. PT TELKOM
10. BRI Research Institute
11. Mandiri Institute
12. PT Pos Indonesia
13. Ministry of Cooperatives and Small & Medium Enterprises
14. Bank Indonesia

3.2.2 Online Survey

The online survey[2] consists of five parts. The purpose of this survey is to gather both basic and detailed information about MSMEs, particularly their training experiences from 2020 to 2022. The survey was conducted between April and June 2023 and covered various aspects such as technological preferences, digital capabilities, the impact of previous training, challenges faced during and after training, and preferences for future training. Each section of the survey was designed to provide a comprehensive understanding of MSMEs' training needs and experiences.

Section A: The first section collects basic information of the respondents. This section helps us to confirm that our dataset does not contain any duplicates.

Section B: This part aims to collect the information of the business. It contains information such as the year of establishment, number of labors, monthly profit, etc. This part allows us to classify MSMEs according to our needs during the analysis.

Section C: Digital literacy and information of technological application is collected in this part. This section summarizes to what extent MSMEs had applied digital technology in their daily business activity.

Section D: This section collected the historical data of training that has been received by the MSMEs. We also asked about their perception of the taken training. Furthermore, through this section we can measure the impact of their training on their business activity with the help of retrospective questions.

[2] The information shared by MSMEs is kept confidential and it is guaranteed that the respondents' data will be secured. The respondents were consenting to participate in this study

Section E: This last section covers suggestions and recommendations for MSME development policy. This information, combined with MSD data, could become the basis of our policy recommendation, and will accommodate the view from training provider and the actual need from MSMEs.

3.3 Phase 2: Data Validation

After collecting data through the MSD and online survey, we proceeded with the review and validation of the MSME training data provided by the ministry and other training providers. The purpose of this stage was to verify and cross-reference the training data obtained during the MSD. The data includes information such as the number of participants, event details, total budget, and evaluation results, if available, for each training program. We collected this data from various stakeholders involved in the MSD, including ministries, agencies, universities, local governments, and the private sector.

After ensuring that all data collected has good quality, our team conducted a descriptive statistical analysis to capture the patterns of supply and demand for MSME digital training. In addition to analyzing the entire sample, the research team also evaluated the supply and demand of digital training in smaller groups such as location (province), business scale, 3Go training framework, and business sector.

3.4 Phase 3: Analysis and Identification of gaps

Once the collected data was validated, we completed a descriptive statistical analysis to examine the patterns of supply and demand for MSME digital training. The analysis involved evaluating the entire sample of respondents, as well as exploring the supply and demand dynamics within smaller groups based on factors such as location (province), business scale, the 3Go training framework, and business sector. By conducting these subgroup analyses, we aimed to gain a more nuanced understanding of the specific needs and trends in digital training across different segments of MSMEs. This approach allowed us to identify potential variations and tailor recommendations accordingly to better support MSMEs in their digital transformation efforts.

3.4.1 MSME Digitalization Development Framework used in the study

In the context of this study, we have adopted the concept of the 3Go Digitalization development model, which is widely known and understood by various stakeholders. The initial stage of the digitalization journey is referred to as "Go Modern." In this stage, the focus is on providing access to digitalization and introducing MSMEs to fundamental digital topics. The training emphasizes the development of a digital mindset and covers basic skills in utilizing digital technology. Participants are guided to understand the proper use of digital tools and applications. The desired outcome of this stage is for MSMEs to acquire a solid understanding of digital technology fundamentals, which is essential for their digital journey and future utilization of digital tools.

The next stage is Go Digital where MSMEs are introduced to the options and ways to utilize existing digital technology efficiently. At this stage, MSMEs will get acquainted with several digital applications that can be used in encouraging business activities. Some types of training are using social media for marketing activities, basic training on marketplaces and training on fintech. Some of these trainings

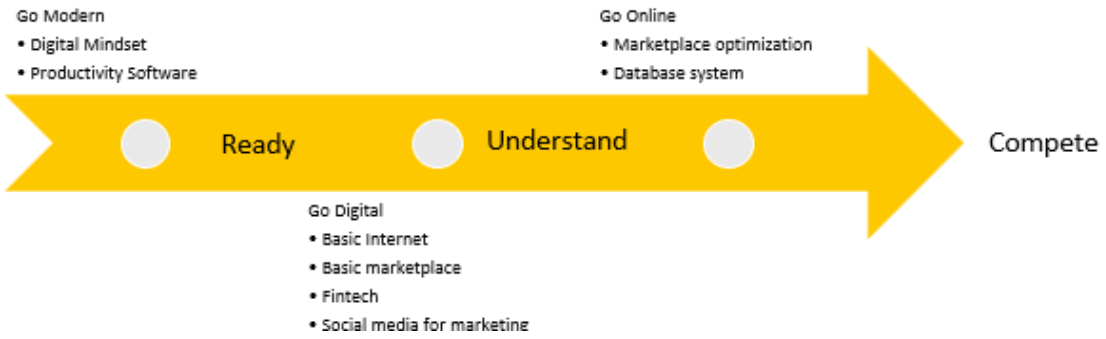

Figure 8. Modified digitalization training stages used in the study

Source: Authors (2023)

aim to encourage the use of digital technology for MSME business activities.

In the Go Online stage, MSMEs undergo advanced training to become competitive players in the digital market. This stage builds upon the foundational digital skills acquired in the previous stages. The training focuses on optimizing the use of online marketplaces and database systems. By mastering these topics, MSMEs can enhance their digital presence, effectively manage their online storefronts, and utilize data-driven insights to make informed business decisions. The objective is to enable MSMEs participate in the digital market and also compete and thrive in a digital environment.

3.4.2 Data analysis

In this study we utilized the 3Go[3] analysis framework to map the data on digital skill training. Descriptive analysis was applied to provide a comprehensive description of the supply and demand conditions. Them the team compiled the availability ratio (supply) and the needs ratio (demand) based on the collected data. This method is commonly used to assess the extent of unmet needs in public service provision, highlighting any gaps or deficits in the supply of services. By employing this analysis, insights can be gained into areas where the public sector can address the deficit and meet the demand for digital skill training.

The supply and demand ratios of digital skills training are aggregated based on the 3Go framework to assess the training provision gap across different groups. A comparative analysis of the supply and demand ratios is then conducted for each type of training, providing a more nuanced understanding of the training landscape. For example, the analysis identifies a gap in the supply of digital training under the Go Digital theme. Further investigation is conducted to determine if this gap is consistent across all Go Digital training or if it is predominantly associated with a particular type of training. This information is valuable for policymakers and relevant institutions as it enables them to prioritize and allocate resources to address the training needs within each of the 3Go categories effectively.

To analyze the gap, we are focusing on the proportion within the limited training population data. We assume that the data fulfills the central tendency properties, where the sample data represents the population condition. To compare the data between demand and supply, we use the total sample as normalization. The normalization formula

[3] The Analytical Hierarchy Process (AHP) method planned to be used in the analysis could not be used due to the limited data available.

for the proportion refers to $p_s = \frac{X_s}{\sum X_s}$, where s= 1,2,..,n refers to the training topic supplied. Similarly, $p_d = \frac{X_d}{\sum X_d}$, where d= 1,2,..,n refers to the training topic demanded. The gap can be calculated by subtracting the normalized proportion of demand and supply.

3.5 Phase 4: Formulation of recommendation

Based on the gap analysis of digital training using the 3Go framework, we have developed a guidance document/roadmap that outlines the ideal direction, target audience, and focus areas for digital skills training programs for MSMEs, considering their specific needs and the current landscape. This document serves as a framework to guide the development and implementation of effective digital skills training initiatives tailored to the characteristics of MSMEs. However, it is important to note that the recommendations provided in this document are preliminary and should be further discussed and refined by the government and relevant stakeholders. Further research is also necessary to address any remaining gaps and to ensure the ongoing effectiveness of digital technology training for MSMEs in Indonesia.

CHAPTER 4
DIGITAL TRAINING SKILLS FOR MSME

In this section, we aim to provide an overview of the current landscape of digital training offerings for MSMEs based on data obtained from training providers participating in the MSD. The analysis in Section 4 draws upon two primary sources of data: information collected through questionnaires and insights gathered from discussions with policymakers during the MSD activities. These data sources contribute to our understanding of the existing digital training provision for MSMEs and help inform the subsequent analysis and recommendations presented in this report.

4.1 Provision of digital training

The digital transformation of MSMEs is a key priority for the Indonesian government as it seeks to enhance the country's economic performance and resilience in the face of global challenges. President Jokowi has expressed his support for MSME digitalization, setting a target of connecting 30 million MSMEs to the digital ecosystem by 2024. The data from the MSD further validates this commitment, demonstrating a significant increase in digital skills training for MSMEs provided by both government and non-government institutions between 2020 and 2022. The number of MSME digitalization trainings rose from 61 in 2020 to 79 in 2022, representing a 30% increase (Figure 9). This indicates a concerted effort to support MSMEs in their digital transformation journey.

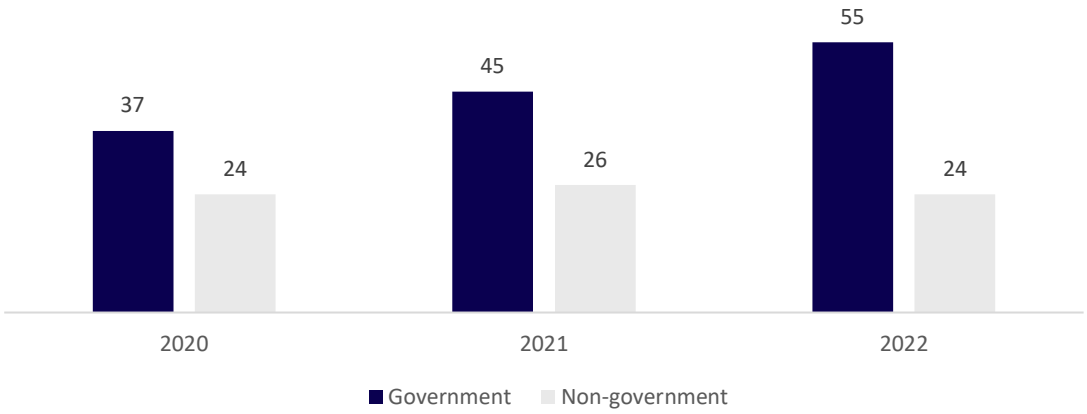

Figure 9. Number of MSME digital skill training provided in year 2020-2022

Source: Authors (2023)

The government has played a significant role in increasing the number of digital skills trainings for MSMEs during the period of 2020-2022[4], as indicated by the MSD data. The number of trainings provided by the government has consistently increased each year, while the number of trainings offered by non-government institutions[5] remained relatively stable. Moreover, the government's contribution in terms of digital skills training has surpassed that of non-government organizations in the sample. This finding highlights the crucial role of the government in leading the provision of digital skills training for MSMEs. However, it is important for the government to further enhance its support for non-government institutions by creating an enabling environment and providing incentives to encourage their participation in digitalization training. This is particularly

[4] Consists of central government, local government and SOEs
[5] Consists of Universities, Training Providers, and Technology Providers

crucial considering the lack of change in the number of trainings offered by private institutions during the study period.

According to Figure 10, digital training providers, whether governmental or non-governmental, offer a range of activities and programs to increase the digital literacy of MSMEs. The most common activities provided by training providers include seminars (75%), coaching (89%), and training sessions (93%). Other forms of support such as product curation, financing assistance, and policymaking for MSME empowerment are also provided by digital training providers, although to a slightly lesser extent.

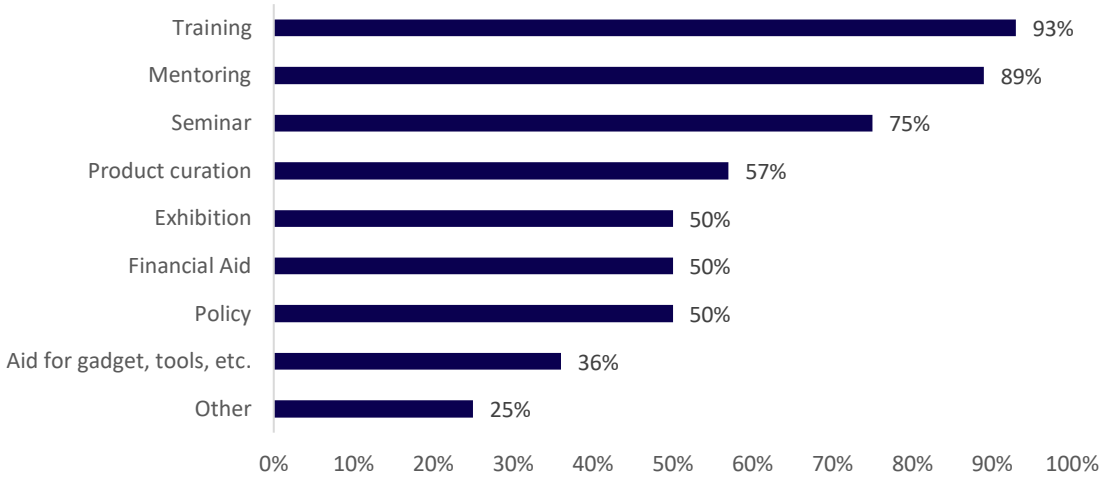

Figure 10. Activities for MSMEs empowerment

Source: Authors (2023)

Through the data collection process conducted during the MSD, the research team were able to gain insights into the focus of different institutions in providing digital training to MSMEs. The collected information covered a wide range of institutions, and for the purpose of this report, we have categorized them into two main groups. The first group is the government group, which comprises ministries/agencies, local governments, and state-owned enterprises (SOEs). The second group represents training providers from the private and education sectors. This group includes training institutions, technology service providers, universities, and communities. This categorization allows us to analyze the patterns and strategies of digital training provision from different types of institutions and this provides valuable insights into the overall landscape of MSME digital training in Indonesia.

Figure 11 illustrates that most of the training programs offered by stakeholders focus on beginner and intermediate topics in the digital skills training for MSMEs. At the beginner level, the training programs primarily revolve around developing a digital mindset, with 18 out of 24 stakeholders offering such programs. In the intermediate level, the most common topic is marketing on social media, which is provided by 20 out of 24 stakeholders. However, at the advanced level, the number of stakeholders offering training programs is relatively small, ranging from 4 to 6 stakeholders.

Figure 11 also highlights the different characteristics of training provided by government and non-government institutions. Non-governmental organizations demonstrate a more diverse distribution of training topics compared to the government. Training topics such as the use of productivity software and basic internet, which are less frequently provided by the government, have a similar proportion to other trainings in non-government organizations. This variation in training topics suggests that non-government institutions

have a more flexible and adaptable approach in addressing the specific needs of MSMEs. It also reflects the ability of non-government organizations to cater to a broader range of digital skills requirements for MSMEs. In contrast, the government's focus on marketing topics, particularly marketing using social media and marketplaces, indicates a specific priority in their training programs as stated in their policy documents. However, this concentration on similar topics across multiple ministries can lead to inefficiencies and potential duplication of training activities.

> "Even the mentoring that is carried out between [our ministry] can overlap. so that it doesn't overlap, we can map it with the NIK. If you have received certain training, you can advance to the material level. Thus, the main need is synchronization. This is because many ministries and agencies are doing so that there is duplication in training not to mention local governments." (Ministry A, 9 February 2023)

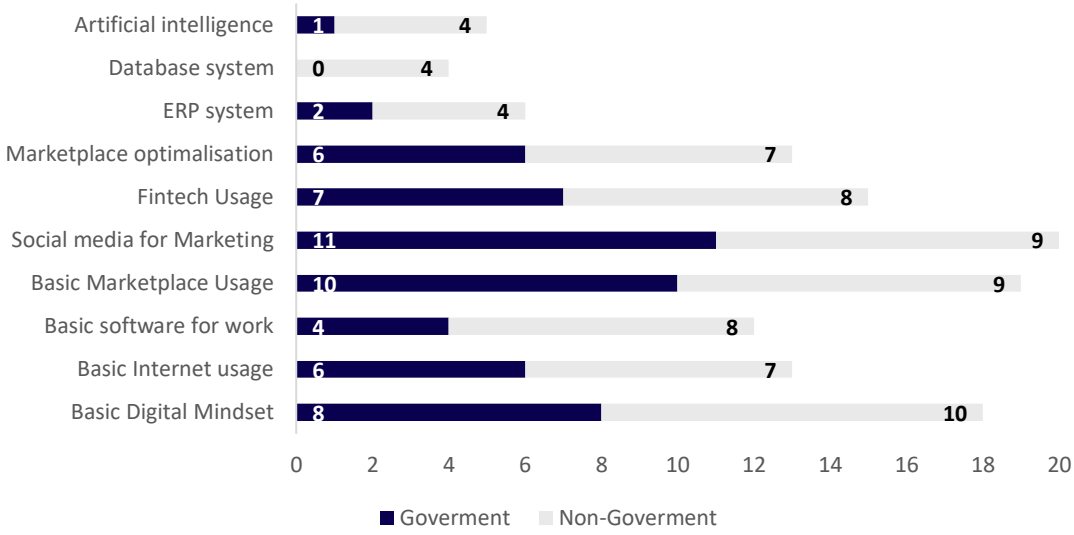

Figure 11. Distribution of training topics based on type of training provider

Source: Authors (2023)

Table 2 provides information on the coverage rate of training topics in each institution. Training service providers demonstrate the highest coverage rate, with 90% of the training topics being covered by institutions in this category. Similarly, universities exhibit a high coverage rate, with 78% of the training topics being available. Notably, both institutions have a 100% coverage rate for beginner and intermediate training topics. This indicates their potential to comprehensively address the digital skills needs of MSMEs in various areas. The high coverage rate suggests that these institutions can offer a wide range of training options to provide the diverse requirements of MSMEs.

Table 2. Availability rate of training from each stakeholder

Provider	Availability Rate
Training Providers/Community	90%
University	78%
Technology Provider	47%
Ministries/Agencies	42%
State-owned enterprise	35%

Source: Authors (2023)

4.2 Digitalization training by segmentation

The data collected through MSD activities indicates that micro and small enterprises are the primary target of digital training providers, with over 30% of providers offering training to this segment (Figure 12). However, only 17% of institutions provide training specifically for MSMEs in the medium segment. It is important to note that digital technology transformation is crucial for all types of MSMEs, and their success in integrating digital technology into their business operations relies on the support and training they receive. Therefore, it is essential to ensure that digitalization training is provided equally to all levels of MSME segmentation, rather than focusing solely on one segment. However, it is also important to recognize that each business segment may have unique needs and challenges when it comes to integrating digital technology and training programs should be tailored accordingly.

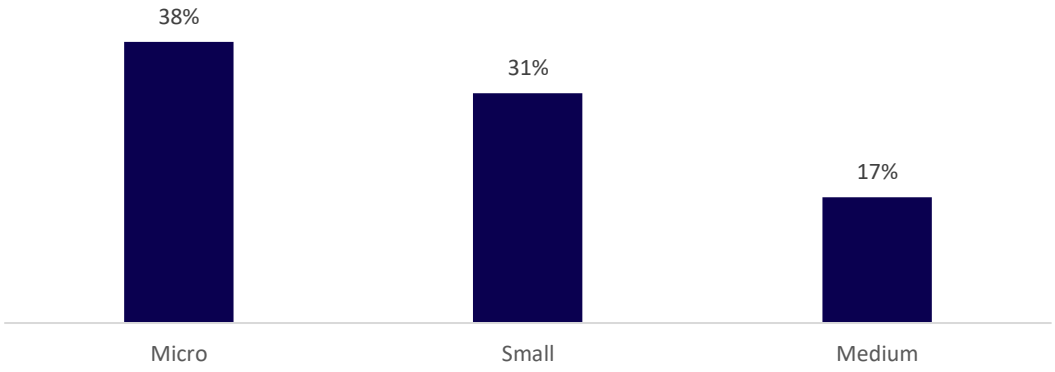

Figure 12. Digital training skill provided by business segmentation

Source: Authors (2023)

Figure 13 illustrates that each training provider has a different target participant focus in providing digital training activities. Among government agencies, 38% of the trainings are not restricting to specific segment of MSME and are open to all segment. However, a significant portion of their trainings, 47%, are targeted towards micro and small MSMEs. In contrast, technology providers primarily focus on training for small and medium enterprises (54%), with a smaller proportion targeting micro enterprises (18%). These findings indicate that government agencies prioritize providing digital training to micro and small MSMEs, recognizing their need for support in digitalization efforts. Technology providers, on the other hand, tend to focus more on small and medium-sized MSMEs, which may be attributed to their capacity and resources to cater to businesses of that scale.

As indicated in Figure 13, there is a distinct targeting pattern observed between universities and training provider institutions in terms of their digital training programs for MSMEs. Universities do not specifically target MSMEs based on segmentation and instead make their training programs available to all interested businesses. In contrast, training provider institutions have a more specific targeting approach, focusing on certain segments of MSMEs. The data reveals that only 14% of the total training provided by training provider institutions is aimed at all types of MSMEs, indicating that most of their programs are tailored to specific segments.

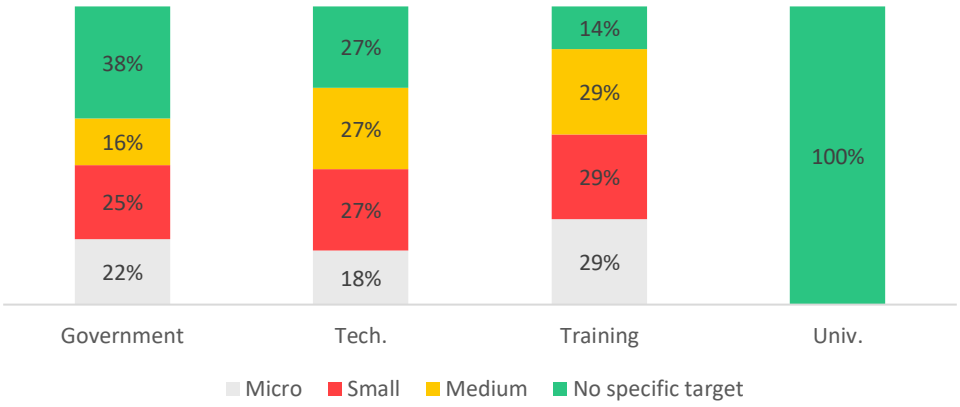

Figure 13. Segmentation's target for digital training according to training provider

Source: Authors (2023)

The distribution of training programs among different stakeholders provides valuable insights into the implementation of MSME digitalization training. Each stakeholder has its own specialization and focus in providing training based on their expertise and resources. However, it is important to consider the appropriateness of training topics for each MSME segment and business sector.

The need for digital skills training varies not only based on business segmentation but also on the specific business sector. For instance, certain sectors such as fisheries may have lower penetration of digital technology application and may require entry-level technology training that is more relevant to their specific needs. It is essential to tailor the training programs to address the unique challenges and requirements of different sectors. So that, the training content and approach align with the specific characteristics and context of each sector is ensured.

> "Mostly they are pragmatic, they can easily access it, adapt it, feel the benefits, they will be able to enter immediately. The key is the needs of what they need we must know." (Technology provider A, February 10, 2023)

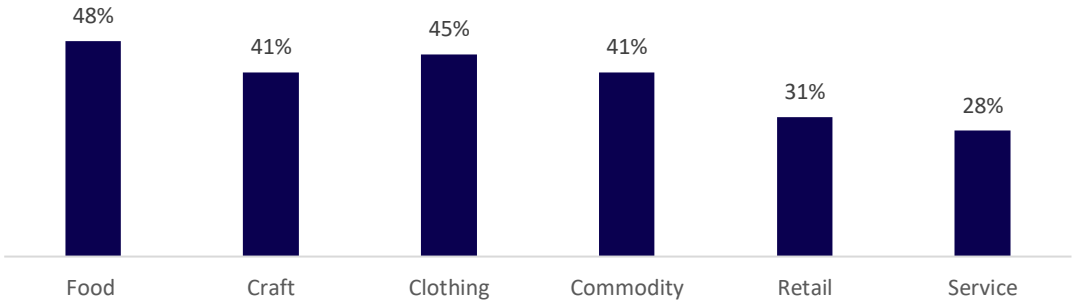

Figure 14. Digital skill training in year 2022 based on business sector

Source: Authors (2023)

Figure 14 highlights the differences in the proportion of training providers across different business sectors. It indicates that the Food, Clothing, Crafts, and Commodities sectors are prioritized by digitalization training providers, with over 40% of MSD respondents stating that they offer training specifically for these sectors. On the other hand, the Trade and Services sector has received less attention from training providers.

By considering the specific needs of different MSME segments and sectors, training providers can develop more targeted and effective digital skills training programs that cater to the diverse requirements of MSMEs in various industries. This approach can help maximize the impact of digitalization training and support the overall digital transformation of MSMEs in Indonesia.

4.3 Digitalization Training in the 3Go Framework

The digital capacity building of MSMEs is a key priority for stakeholders in Indonesia. Digitalization plays a crucial role in enabling effective policy implementation and promoting the adoption of products and services tailored for MSMEs. To support this digital transformation, stakeholders have developed training programs categorized into three main areas: Go Modern, Go Digital, and Go Online. These categories focus on different aspects of digitalization, such as modernizing business activities, utilizing digital technologies and maximizing online presence. By addressing specific areas of digitalization, these training programs aim to equip MSMEs with the necessary skills and knowledge to thrive in the digital economy.

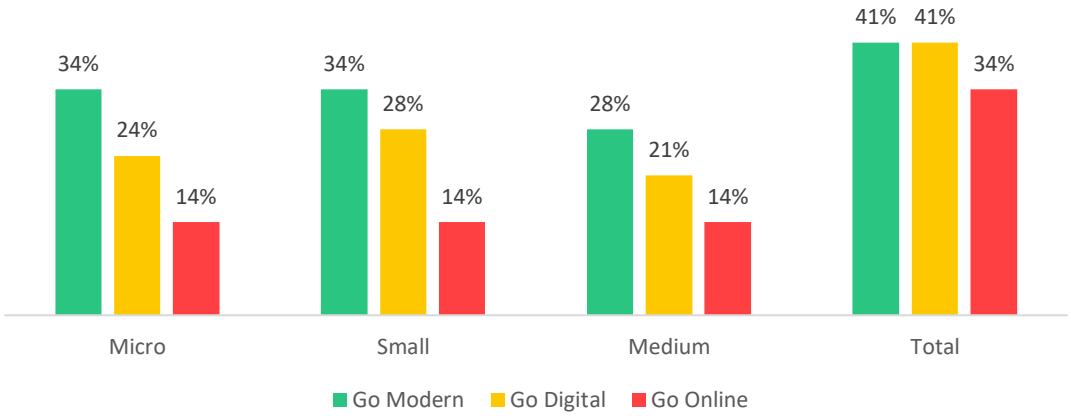

Figure 15. Distribution of digital training skill provided by 3Go framework and business segmentation

Source: Authors (2023)

Figure 15 shows the distribution of digitalization training providers according to the 3Go framework and business segmentation. It shows that a significant number of training providers focus on the Go Modern and Go Digital frameworks. However, there is a slightly lower representation of training providers offering materials related to Go Online. The findings presented in Figure 15 reveal a discrepancy between the 3Go framework assumption and the actual pattern of digital skills training provision as reported by MSD respondents. This disparity indicates a less-than-ideal situation as MSMEs with higher segmentation, which generally require more advanced digital skills, are not receiving training accordingly. To address this issue, there is a need to reorganize the structure of digital skills training within relevant institutions. This reorganization should ensure that training is not only available but also evenly distributed and tailored to different business

segmentations. Such measures are crucial to effectively stimulate MSME business development through appropriate and targeted digital skills training.

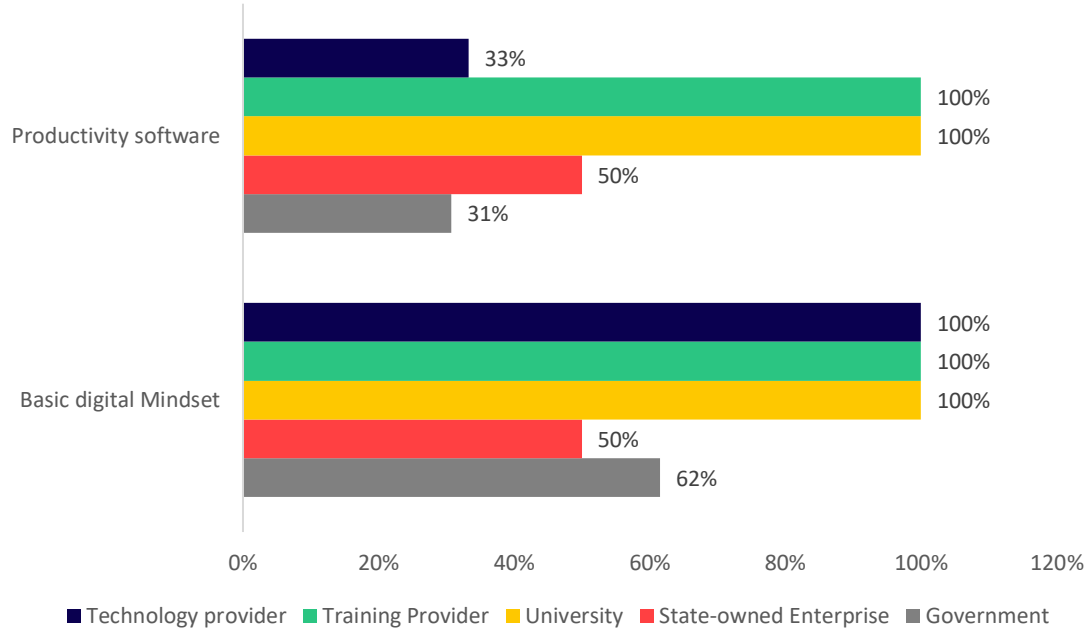

Figure 16. Provider of Go Modern training by institutions

Source: Authors (2023)

Figure 16 highlights the prioritization of digital training topics at the beginner level by different institutions. The data reveals that basic digital mindset training is the most offered topic by all stakeholders, including universities, technology service providers, training service providers, SOEs, and ministries/agencies. This indicates that developing a digital mindset is considered a fundamental and essential aspect of digitalization training across different institutions. The high percentage of training providers offering this topic emphasizes its importance in preparing MSMEs for digital transformation.

Training on productivity software and basic internet skills is not as commonly provided compared to other beginner-level topics (Figure 16). Universities and training providers have a higher percentage of training programs focusing on these topics, indicating their recognition of the importance of these skills for MSMEs. However, the percentage is relatively lower among technology service providers, ministries, and agencies. This suggests that training on basic digital skills, such as productivity software and internet usage, has not been a primary focus for some institutions, both in the government and private sectors.

According to Figure 17, the prioritization of digital training topics at the intermediate level varies among institutions. The topic of basic internet is not consistently provided by all institutions. While training providers and universities cover this topic, technology service providers show a lower percentage. Among government institutions, 46% prioritize training on basic internet, which is lower compared to the focus on basic digital mindset training. No SOEs specifically prioritize this training topic, possibly due to considering basic internet skills as a prerequisite rather than a standalone training topic.

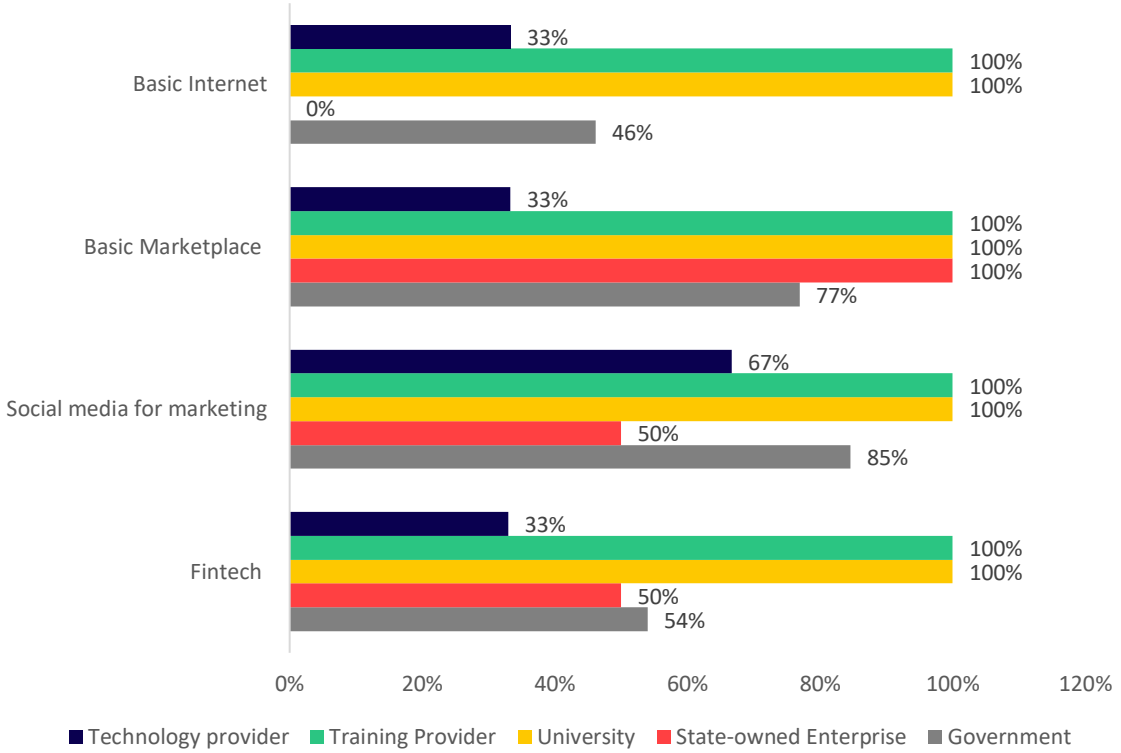

Figure 17. Provider of Go Digital training by institutions

Source: Authors (2023)

Marketing training, specifically through social media and marketplaces, is a common focus for intermediate-level training conducted by the government. All respondents from universities and training providers/communities offer training on marketing topics. Among SOEs, all respondents provide training on marketplace marketing, while only half offer training on social media marketing. Ministries prioritize both social media and marketplace marketing, with over 75% of respondents offering training on these topics. Technology service providers prioritize social media marketing, with 67% of respondents providing training, while only 33% provide training on marketplaces. This difference in prioritization may be due to marketplaces being perceived as indirect competitors in the local technology provider market. Overall, marketing training holds a high priority compared to other training topics.

There are variations in the prioritization of fintech-related training among different training providers. All universities and training providers offer training on this topic. Ministries and state-owned enterprises have a lower proportion of respondents providing fintech training, at around 50%. Technology service providers have the lowest proportion, with only 33% of respondents offering fintech training. This discrepancy may exist due to technology service providers being indirect competitors of fintech providers in the market.

Figure 18 indicates that the topic of marketplace optimization is primarily provided by universities and training providers, with fewer institutions offering similar training. For instance, technology service providers did not report conducting such training. Among the government institutions, only 46% of respondents mentioned providing training on this topic. This suggests that some institutions still prioritize digital penetration rather than focusing on optimizing and enhancing digital competitiveness.

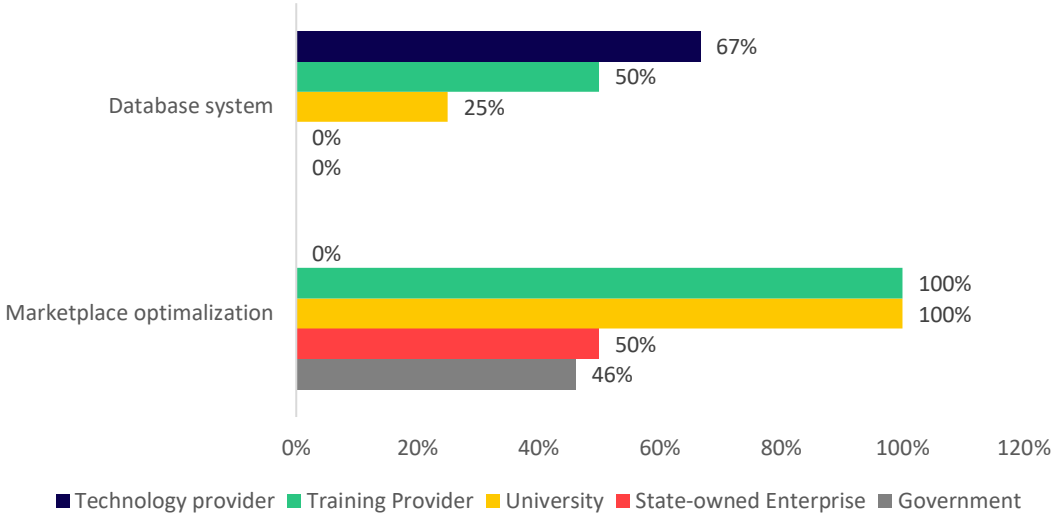

Figure 18. Provider of Go Online training by institutions

Source: Authors (2023)

The provision of training programs on advanced topics, particularly the usage of ERP systems, is more prominent among technology providers. Around 67% of respondents from technology provider institutions offer training on this topic, which is the highest percentage compared to other institutions. This can be attributed to the focus of technology providers on advanced digital technologies and their aim to assist businesses in advanced management related to their operations. For example, the application from technology provider B is not designed as a basic technology for running a business but helps businesses to carry out advanced management related to their business activities.

> "[This application] is designed for *intermediate businesses*, not for end users. Between stalls and buying from wholesalers, there is one alternative distribution called motorist. We see that stalls can survive if the supply is okay, if for example they don't have a price comparison. If we go directly to the shop, we can cut off the supply. So, what we are doing is supporting the chain and setting prices." (Technology provider B, 10 February 2023)

Further to the topics that have been summarized in the discussion above, there were other digitalization training topics discussed in MSD but did not fit into the training framework in this study. These topics are as follows:

1. Application and Optimization of the POS System
2. Implementation of Making 4.0 on the Production Line
3. Policy on Trade through Electronic Systems
4. Conventional and Online Export Mechanisms
5. Incubation of Marketplace Introduction
6. Financial Education Module for Women and Special Financial Literacy Module
7. Marketing Content Planning and Strategy, Simple Website Development
8. Digital Content Creation
9. CRM, Database, UX, Logo Drawing, Mobile/Web Programming
10. Tracking Device Training to Fishermen
11. Modernization of Business Operations

4.4 Training providers and cooperation mechanisms

During the MSD questionnaire, participants were asked about the transfer of data sources when collaborating with other agencies to provide digital training for MSMEs. The purpose of this question was to evaluate the impact of the training and avoid duplicating training for the same MSMEs. Approximately 55% of the participants who collaborated with other agencies in providing digital training reported that there was a transfer of MSME data sources. However, some participants who answered "no" raised concerns about data privacy issues that prevented them from sharing MSME data. This indicates the importance of addressing data privacy concerns when collaborating and sharing data for training purposes to ensure the protection of MSME information.

Further analysis of the MSD data revealed that there are collaborative efforts among institutions in conducting digital training for MSMEs. On average, more than 60% of the participating institutions in the MSD indicated that they have some form of cooperation with other institutions for digital training initiatives (Figure 19).

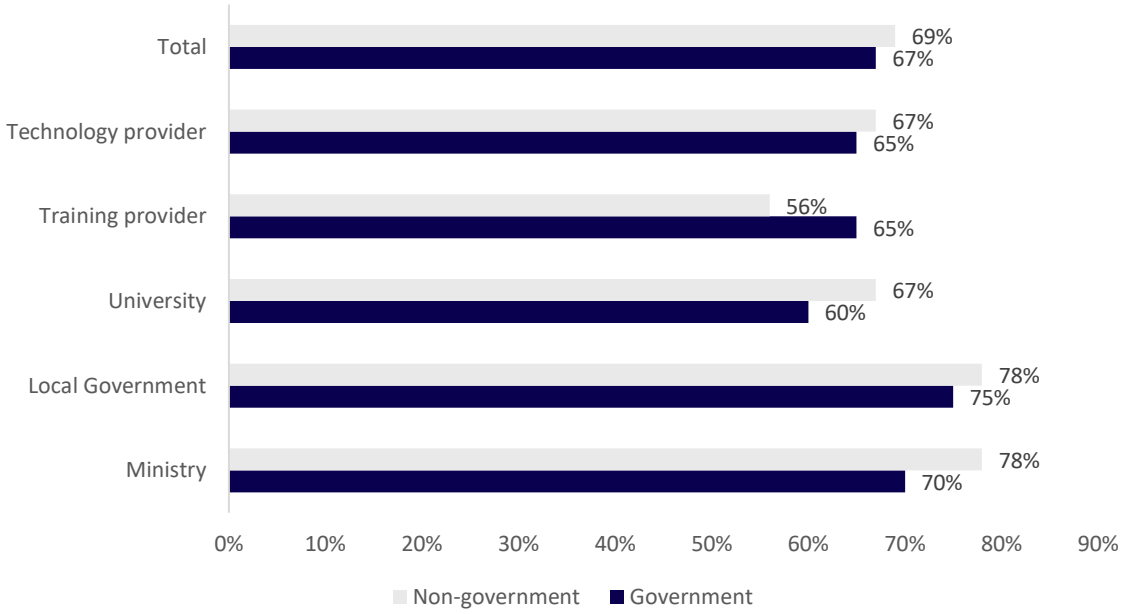

Figure 19. Inter-institution collaboration in providing digital training
Source: Authors (2023)

The MSD participants highlighted that both government and non-government training providers frequently seek collaboration with ministries/agencies and local governments. When it comes to the forms of collaboration, cost sharing was found to be rarely used among all institutions in the sample. The most common forms of collaboration among digital technology training providers are the provision of resource persons/training providers and the coordination of training participants. Interestingly some government agencies prefer a specific type of collaboration based on the type of partner involved. When collaborating with another government agency, coordinating training participants is the most used type of cooperation. On the other hand, providing resource persons/training providers is more frequently used when collaborating with non-government institutions.

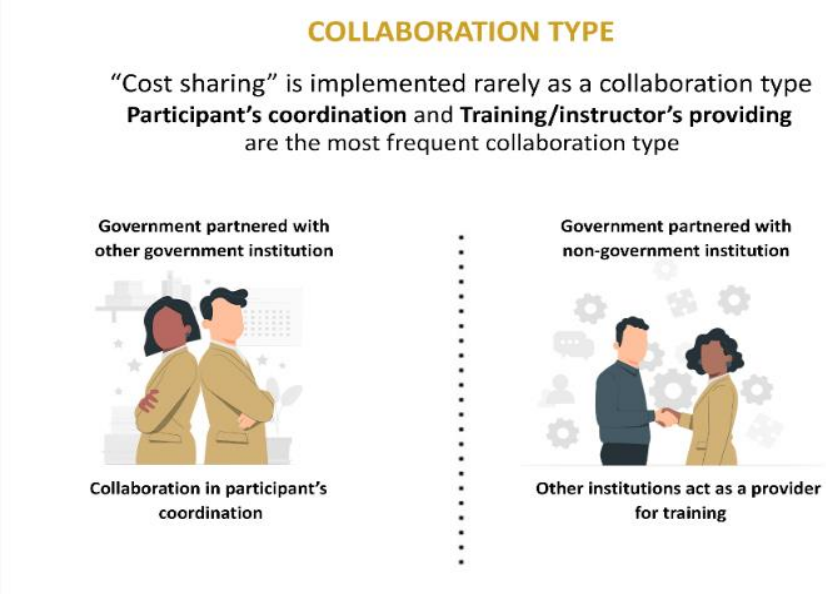

Figure 20. Cooperation across institution

Source: Authors (2023)

The findings from Figure 20 indicate that there is room for improvement in the pattern of cooperation between government training providers. The most common form of collaboration among government agencies is limited to coordinating training participants and this suggests a potential for overlap in training materials and implementation. This is a concerning observation considering the significant role of the government in providing digitalization training for MSMEs in Indonesia. It highlights the need for better coordination and collaboration among government training providers to ensure a more effective and efficient training ecosystem for MSMEs.

The presence of overlapping or unclear division of training tasks among training provider institutions, particularly government agencies, can be attributed to several factors. Firstly, there is a lack of coordination between ministries and a lack of a central institution that oversees and coordinates digital training programs for MSMEs. Each ministry operates independently based on their own understanding and capabilities. This lack of coordination can lead to duplication of efforts and inefficiencies in training provision. For instance, the existence of multiple platforms offering similar training content from different institutions reflects the lack of coordination between these entities. Secondly, the existence of different definitions of MSMEs issued by various government agencies adds to the challenge. These differing definitions make it difficult to target trainees effectively and efficiently, thereby reducing the overall impact of the training programs.

> "This was debated 2-3 years ago, the nature of SMEs, micro and small, they produce their own products and sell them themselves. Well, what is the [our] role and position of and what are the limits is also difficult, we cannot just market the product and not think about the quality of the product. So, it is not because of the sectoral ego of each ministry/institution but rather the role of industrial focus. But how to maintain the quality of these products, creating superior domestic products cannot be done alone. It could be that the existing ones are already existing, asked [us] to bring to the market. We see that we cannot just market without seeing and improving quality. At least there are intersections between the Ministry of Industry and the Ministry of Trade, for example packaging, because in the manufacturing process, maybe we can mentor. But when entering the market, the packaging must

> be adapted to the market. So, when entering the market, the goods must be modified first (so they must go back to the Ministry of Industry).” (Ministry A, February 9, 2023)

Finally, on the topic of Go Online training, technology service providers can act as the providers of the training. The government can also serve as a coordinator of this training activities and assist the implementation of these activities with various forms of support, such as providing funds.

CHAPTER 5
DIGITAL SKILL TRAINING FROM MSMEs PERSPECTIVE

In Section 5, the report focuses on capturing the demand for digital technology training among MSMEs. This information is crucial for conducting a comprehensive analysis of the training gap, which is presented in Section 6. The data collected for this section comes from an online survey that was distributed to MSMEs across various regions in Indonesia.

5.1 Characteristics of the participating MSMEs

Collecting data on the demand for digital technology training from MSMEs is a crucial step in understanding their specific needs and preferences. The online survey conducted in this study involved **425 MSMEs**[6] in Indonesia. The questionnaires were distributed to respondents through the network of training participants and relevant ministries/institutions involved in the activity. By gathering information on the participation of MSMEs in digital technology training, the survey aimed to capture their training needs, interests, and challenges. It provided valuable insights into the demand for different types of training programs, the preferred training methods, and the specific areas where MSMEs sought to improve their digital skills and capabilities.

Figure 21. Main characteristic of online survey respondents

Source: Authors (2023)

Figure 21 highlights that most participants involved in data collection activities were female, comprising 63% of the respondents. This indicates a significant presence of women entrepreneurs in the MSME sector. The average age of female respondents was 45 years old, while male respondents had an average age of 39 years old. These findings emphasize the important role of women in the development of MSMEs, as they utilize

[6] The participation from MSMEs is voluntary

entrepreneurship as a means of self-fulfillment, particularly for individuals who may lack access to formal employment opportunities.

The data collected reveals a lack of variation in the economic scale of the MSMEs in the sample. The majority (92%) of the MSMEs fall into the micro-scale category, with annual sales of less than IDR 2 billion. Only 7% of the MSMEs are classified as small businesses, while medium-sized businesses make up just 1% of the sample. This imbalance can be attributed to the specific definition of MSMEs used in the study, which aligns with Government Regulation No. 7 of 2021 article 35 point (5). This approach ensures the findings are in line with government policies and facilitates the implementation of policy recommendations resulting from the research.

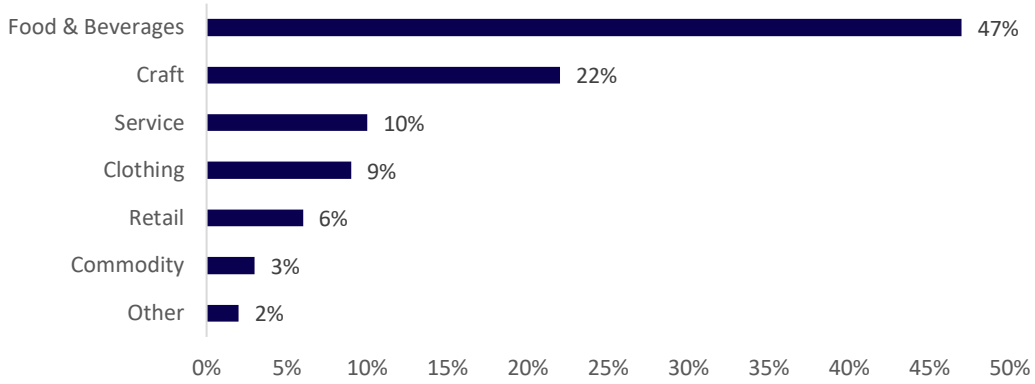

Figure 22. Distribution of business sector

Source: Authors (2023)

Figure 22 illustrates the distribution of business sectors among the MSMEs in the sample. The Food & Beverage industry dominates, representing nearly 50% of the respondents. Craft products are the second largest business sector with 22% of the respondents engaged in this sector. Other sectors such as Services, Clothing, Trade, and Commodities have a smaller representation, accounting for less than 11% of the total sample. Regarding education levels, Figure 23 indicates that most of the respondents have attained at least a Senior High School education, with over one-third of the respondents reporting education equivalent to a bachelor's degree. This suggests a good level of education among the MSME owners in the sample.

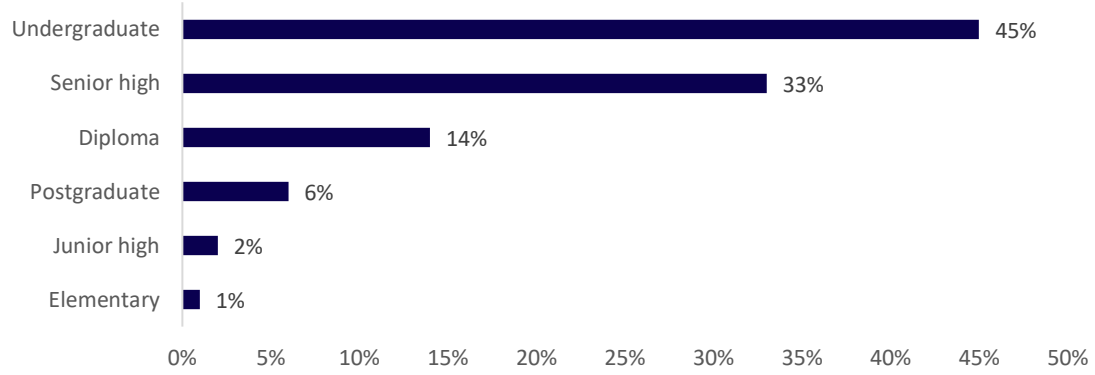

Figure 23. Distribution of educational background

Source: Authors (2023)

Figure 24 displays the distribution of respondents based on their location in Indonesia, representing 21 provinces. Most respondents in the sample are residents of Java,

accounting for 53% of the total. Among the Java provinces, West Java has the highest number of respondents, with 94 participants, followed by Yogyakarta with 83 participants. North Sumatra is the province with the third largest contribution, with 49 respondents. While the research team managed to gather information on MSMEs from regions outside Java, their representation in the sample is limited. Apart from North Sumatra, the number of respondents from other provinces is relatively low, averaging 9 respondents per province.

Figure 24. Distribution of respondents by location

Source: Authors (2023)

5.2 Knowledge and mastery of digital technology by MSMEs

Knowledge and mastery of digital technology by MSMEs are important factors that can affect the success of the digital transformation process. We attempted to measure the application of digital technology by MSMEs through a series of questions and the results are illustrated in Figure 25. The majority of MSMEs have a good level of digital technology mastery. They reported being able to independently operate smartphones and engage in online marketing, sales, and purchasing processes. However, the data also indicates that the utilization of loans on digital platforms is not yet a common practice among MSMEs.

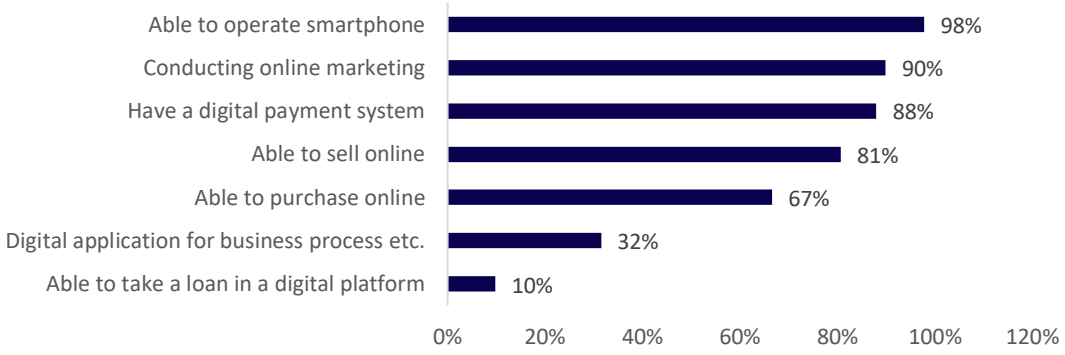

Figure 25. Percentage of digital technology application among MSME

Source: Authors (2023)

On average, MSMEs in the sample have a mastery level of 4.4 out of 7 types of digital technology. When examining the data by education level, Diploma 1-3 graduates have

the highest average mastery level, followed by postgraduates. Junior high school and undergraduate graduates have a similar level of mastery, while elementary school graduates have the lowest average level of mastery.

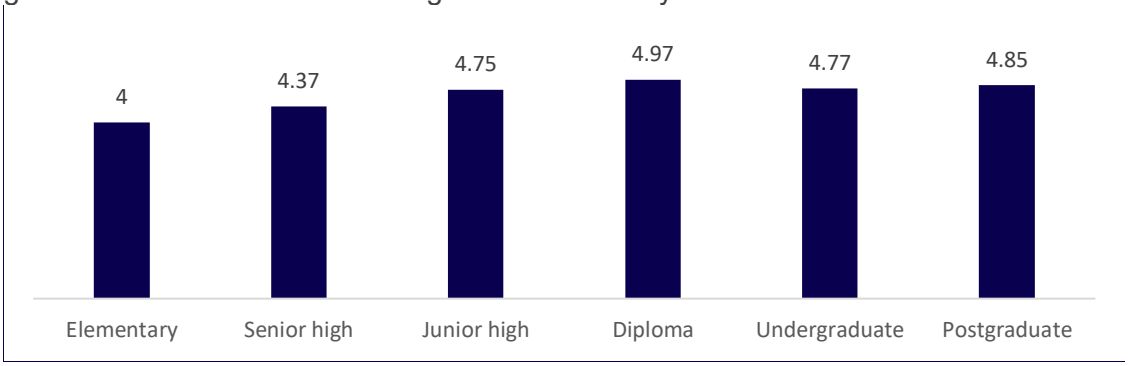

Figure 26. Distribution of digital index by educational background

Source: Authors (2023)

When analyzing the sample by business segmentation, there are variations in the level of technology mastery among entrepreneurs. Medium-sized businesses have the highest level of mastery, with an average of 5 types of technology. Micro businesses in the sample use more types of technology compared to small businesses, with an average of 4.7 and 4.5 types respectively. The high level of technology mastery and the proportion of well-educated respondents in the sample may be influenced by the survey design, which targeted MSMEs that have already participated in digital skills training and therefore possess a certain level of digital skills.

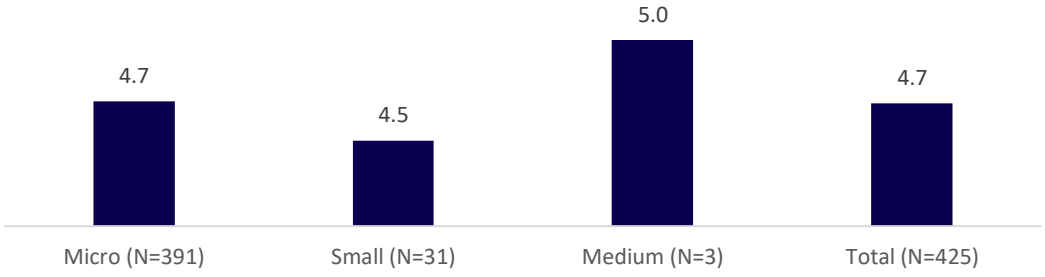

Figure 27. Average level of digital application by business segmentation

Source: Authors (2023)

5.3 Participation of MSMEs in digital technology training

In addition to the high level of technology application among MSMEs they also participated in various digitalization training. MSMEs participate in digitalization training for various reasons (Figure 28). The most common reason mentioned by the respondents is to improve their digital capabilities, indicating a strong desire to enhance their skills and knowledge in utilizing digital technology. Increasing productivity is also a significant motivation for participating in training, reflecting the recognition of digitalization to enhance operational efficiency and effectiveness. A substantial proportion of the sample mentioned that they joined training programs to expand their business relations, highlighting the importance of networking and establishing connections in the digital landscape.

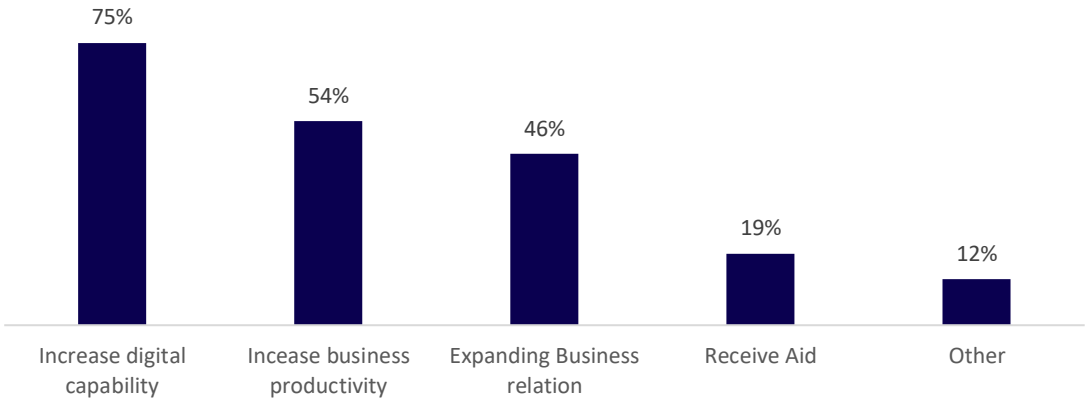

Figure 28. Reasons of training's participation

Source: Authors (2023)

Figure 29 demonstrates the interest of MSMEs in different types of training based on their business segmentation. Intermediate-level digital skills training attracts the highest proportion of MSMEs. Go Digital training is the most popular, with 76% of MSMEs participating, followed by Go Modern training, which is favored by over half of the respondents. In comparison, the proportion of MSMEs participating in Go Online training is lower. This pattern remains consistent when the data is aggregated across different business segments.

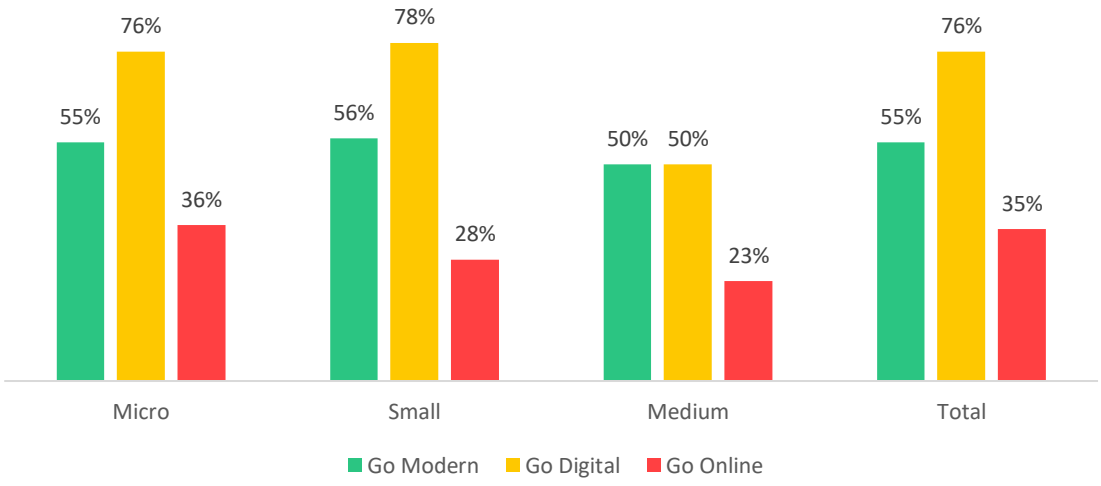

Figure 29. Distribution of MSMEs by business segmentation

Source: Authors (2023)

Figure 30 provides insights into the distribution of 3Go training participants across different age groups. The data shows that Go Digital training has the highest attendance among all age groups, followed by Go Modern training in second place. On the other hand, Go Online training has the lowest attendance, with an average of around 30% across age groups. This suggests that MSMEs across different age groups are more inclined to participate in digital training that focuses on digital transformation and modernization, rather than training specifically targeting online platforms and e-commerce.

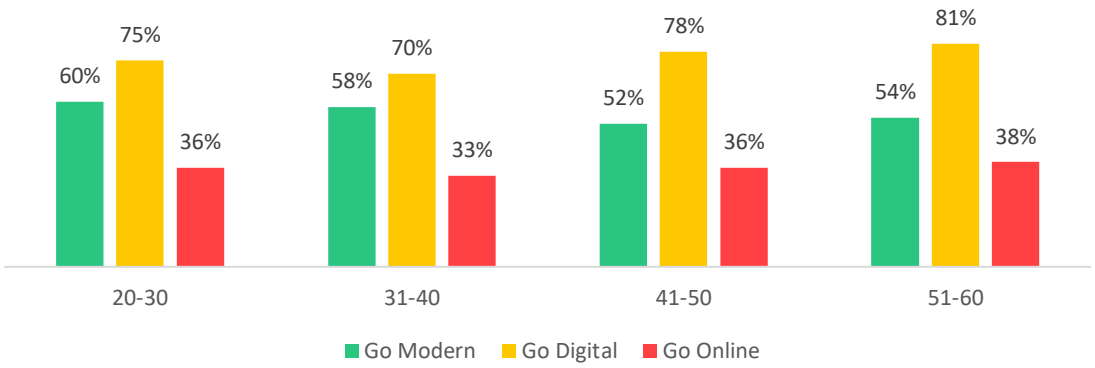

Figure 30. Distribution of MSMEs by age group

Source: Authors (2023)

The 3Go framework assumes that the continuity of the training provided is an important key to the success for an enterprise to adopt digital technology in its business. Therefore, the research team tried to capture this concept by identifying which MSMEs had participated in training across all 3Go stages (Figure 31). Figure 31 highlights the continuity of training participation across the 3Go stages. The data indicates that only 30% of MSMEs in the sample reported participating in training across all three stages of the 3Go framework. This percentage is similar for both Micro and Medium enterprises. However, the percentage drops significantly to 19% for small enterprises, indicating a lower level of training continuity in this segment.

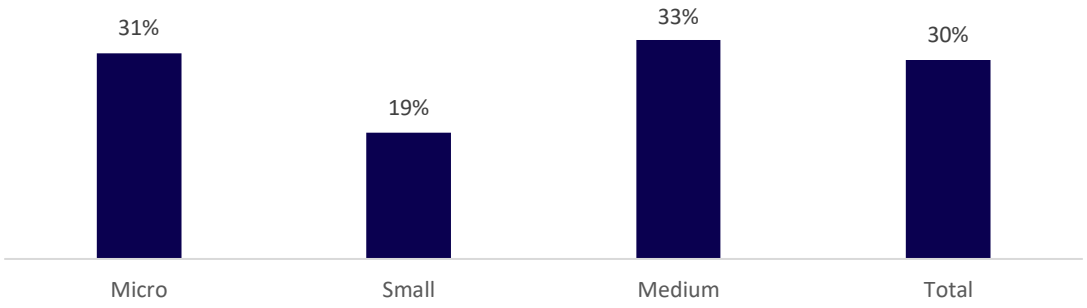

Figure 31. Percentage of MSME that attended training in all 3Go stages

Source: Authors (2023)

Box 1: Digital technology training participation patterns between regions

Figure 32 provides a regional analysis of the distribution of 3Go training participants. The data is divided into three regions: Jabodetabek, Java Island outside Jabodetabek, and regions outside Java Island. Across the entire sample, 55% of respondents have participated in Go Modern training, 76% have attended Go Digital training, and 35% of respondents have attended training from the Go Online category. This pattern is consistent across all regions, with Go Digital training being the most frequently attended and Go Online training being the least attended. The participation rate for Go Digital training is highest in the Java region outside Jabodetabek, reaching 85%, while the lowest participation rate for Go Online training is observed in the regions outside Java Island. This regional analysis highlights the varying levels of engagement with different types of digital training across different regions in Indonesia.

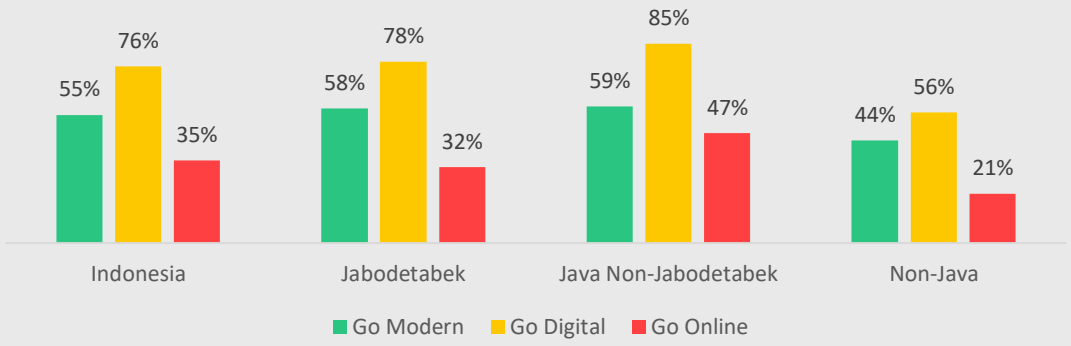

Figure 32. Distribution of 3Go training's participation by regions

Source: Authors (2023)

Looking deeper into individual training, the analysis reveals that MSMEs exhibit higher demand for training topics related to marketplace and social media marketing, while displaying lower interest in more advanced topics such as ERP, database, AI, and fintech. The participation for marketplace and social media training remains consistently high across all regions, while the interest in advanced topics and fintech training is relatively low, with less than 10% of respondents expressing interest in these areas. This indicates that MSMEs prioritize acquiring digital skills that directly impact their marketing and sales activities, while showing less enthusiasm for more technical or specialized areas of digital technology.

Table 3. 3Go participation rate by region

Training topic	Region			
	Indonesia	Jabodetabek	Java Non-Jabodetabek	Other regions
Digital Mindset	33%	34%	35%	29%
Productivity software	45%	46%	50%	37%
Basic internet	42%	43%	49%	29%
Basic marketplace	61%	60%	73%	43%
Social media for marketing	67%	67%	76%	52%
Fintech	32%	30%	38%	25%
Marketplace optimalization	35%	32%	48%	19%
Database system	7%	7%	9%	4%

Source: Authors (2023)

There are several explanations for the low variation of training participation between regions. The higher concentration of online survey respondents from Java, particularly the Jabodetabek and Java Non-Jabodetabek regions, has a significant impact on the overall participation patterns observed in the sample. As a result, the participation rates and patterns may not accurately reflect the variations in other regions. The grouping of regions with a relatively lower number of MSME respondents, such as Kalimantan Island, Sulawesi Island, and the eastern Indonesia region, limits the ability to capture and represent the participation variations in those areas even further. Therefore, it is important to acknowledge that the observed participation patterns may not fully depict the true variations across all regions due to the limitations of the sample size and distribution

According to the responses from the online survey, MSMEs perceive the digital skills training they have participated in as highly useful. The average usefulness rating for Go Modern and Go Online training is very high, at 6.2 and 6.5 respectively. However, the average usefulness rating for Go Digital training is slightly lower, at 5.2. These ratings indicate a generally positive perception of the usefulness of the training received by MSMEs.

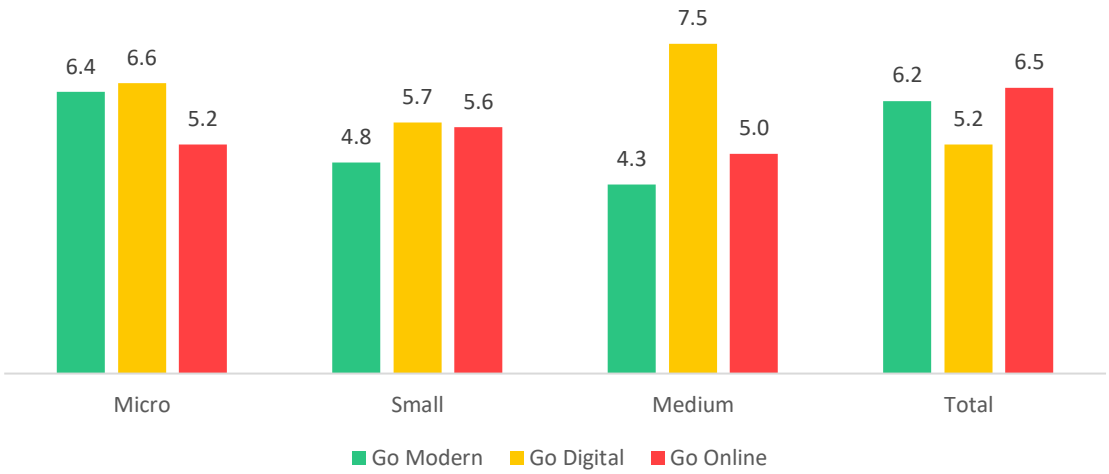

Figure 33. Perception of digital training

Source: Authors (2023)

Figure 34 illustrates the impact of digitalization training on the overall business development of MSMEs. The data shows that 40% of respondents reported being able to expand their marketing scale after participating in digital skills training. The training resulted in increased profits and improved efficiency in recording business transactions for a significant portion of the respondents. Only a small percentage (6%) stated that their business did not experience any changes in development after participating in digital training.

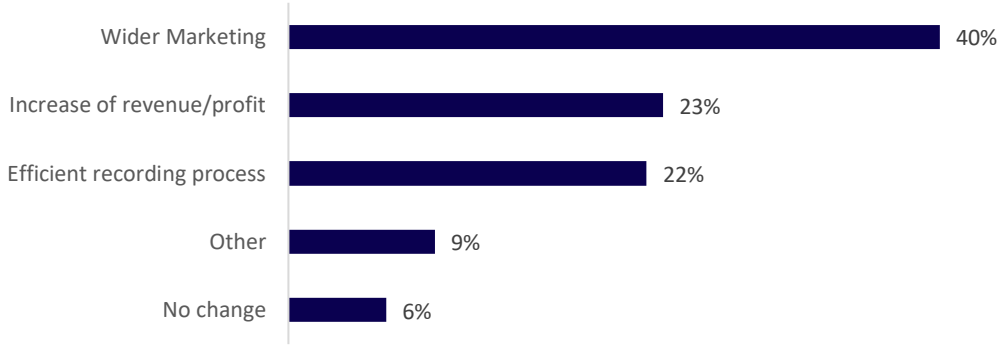

Figure 34. Impact of digital training on MSMEs business

Source: Authors (2023)

Figure 35 shows that most of digital training received by MSMEs relates to social media marketing and basic marketplace operations. This highlights the importance of marketing training for MSMEs. On the other hand, the training topic with the lowest percentage of respondents is database system training where only 7% of respondents participated in. This may be due to the perceived complexity and limited benefits of the technology for their business.

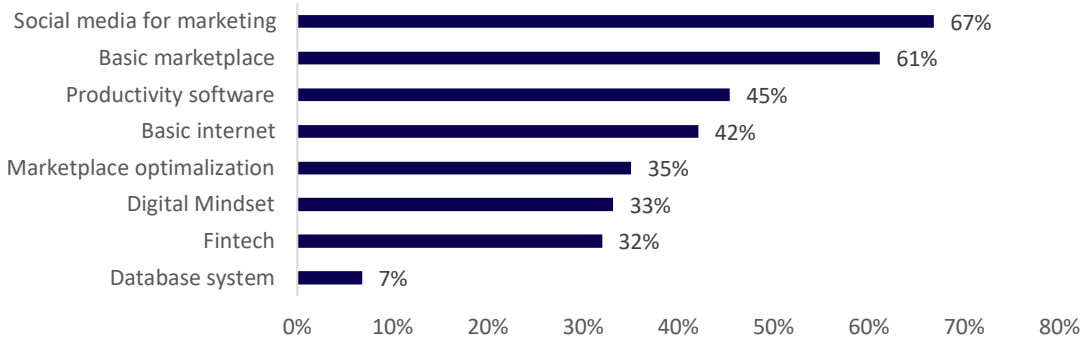

Figure 35. Proportion of MSME that receive digital training

Source: Authors (2023)

Figure 36 highlights the sources from which MSMEs in the sample obtained digital technology training. The data shows that a significant proportion of MSMEs received training from ministries/institutions, local governments, and training providers. Together these three institutions accounted for more than two-thirds of the training received by respondents. This can be attributed to several factors such as the mandated role of these institutions in providing training to MSMEs and their established networks within the MSME community.

Figure 36 highlights the prominent role of Ministries, Local governments, and Training providers in organizing digital training for MSMEs. According to the data, these three institutions were responsible for organizing 84% of the training on Productivity software, Digital mindset, and social media for marketing that the MSMEs in the sample had attended. This indicates the significant contribution and collaboration between these institutions in providing targeted digital training to enhance MSMEs' digital skill.

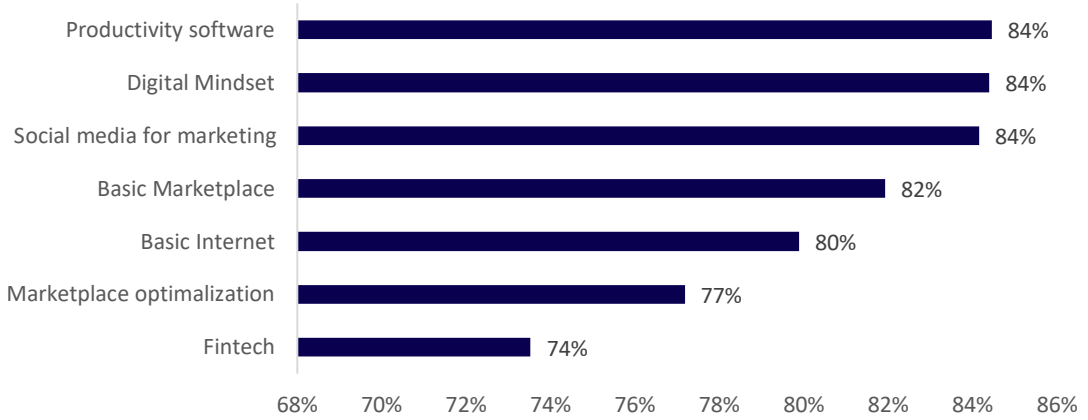

Figure 36. Proportion of MSME that receive digital training from Ministry/Association, Local government, and Training provider

Source: Authors (2023)

The findings from the online survey strongly support the hypothesis that digitalization training is crucial for the progress of MSMEs. Beyond knowledge enhancement, the training serves as a platform for MSMEs to share and showcase their products to a broader audience. This highlights the significance of digital skills in expanding business

opportunities and reaching a wider customer base, ultimately contributing to the growth and success of MSMEs in the digital era.

5.4 MSMEs training assistance, expectations, and constraints

The policy makers and institutions should consider various aspects when providing digital skills training to MSMEs. A crucial aspect is the inclusion of a mentoring program alongside the training to support participants during and after the training process. This mentoring program enables MSMEs to address any challenges or difficulties they may encounter when applying new technologies. Training providers should also acknowledge the importance of digital literacy for effective technology adoption by MSMEs. Establishing a platform for MSMEs to seek guidance and assistance regarding training materials and other related aspects will facilitate their mastery of new technologies. This comprehensive approach ensures that MSMEs receive the necessary support to maximize the benefits of digital skills training and successfully integrate digital technology into their business operations.

Figure 37 highlights that a significant percentage of respondents did not receive any form of mentoring during and after the digital skills training. While most respondents reported receiving mentoring support, it is crucial to address the needs of those who lack this support, especially for basic training materials such as Basic Internet, Fintech, and Productivity software. Without adequate information and mentoring, MSMEs may face challenges in digitalizing their business and may struggle to compete in the digital market.

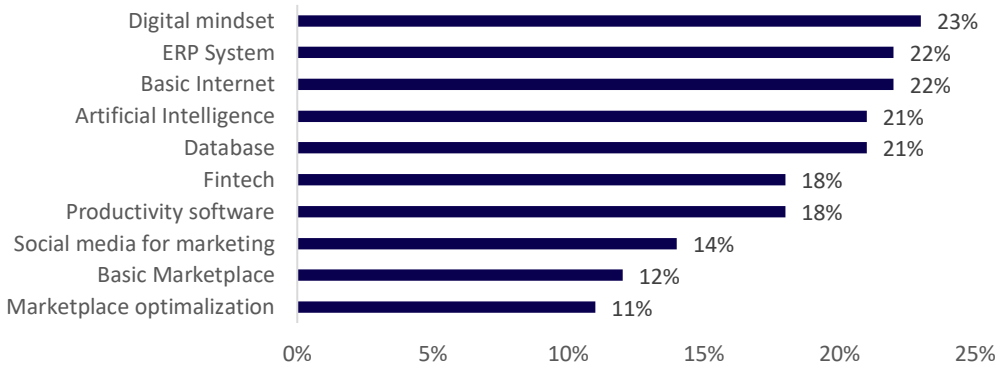

Figure 37. Percentage of respondent who did not receive training

Source: Authors (2023)

Figure 38 highlights that many MSMEs expressed a need for training in digital marketing, even though they may have received similar training in the past. This finding suggests that some businesses have not fully mastered the training materials or may not be aware of the availability of such training. It emphasizes the importance of continuous learning and ongoing support to help MSMEs strengthen their digital marketing skills.

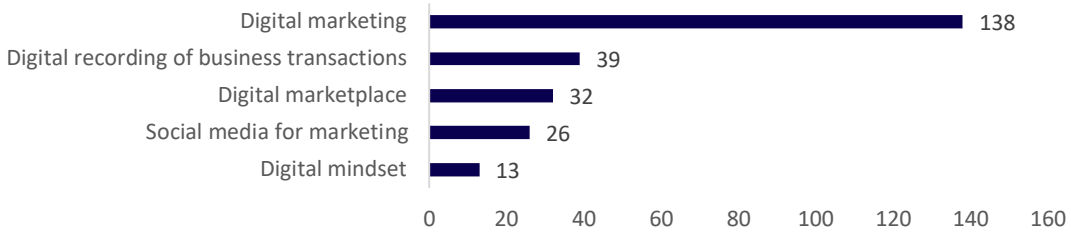

Figure 38. Demanded training from MSME

Source: Authors (2023)

Figure 39 highlights some of the challenges faced by MSMEs during the training process. The most common constraint is the training schedule, followed by the difficulty of applying the taught material to their business activities. Also 14% of respondents found the training location to be difficult to reach. Figure 40 presents the constraints experienced by MSMEs after the training. The two most frequently mentioned challenges are the difficulty of applying digital technology and the high implementation cost. These findings indicate that MSMEs may encounter practical difficulties and financial barriers when trying to implement and integrate digital technologies into their business operations.

Figure 39. Challenges during the training

Source: Authors (2023)

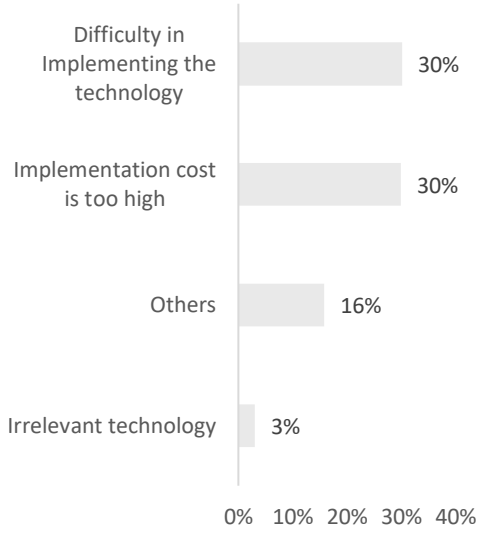

Figure 40. Challenges after the training

Source: Authors (2023)

CHAPTER 6
GAP ANALYSIS AND MAPPING OF DIGITALIZATION TRAINING IN INDONESIA

6.1 Gap analysis between Supply and Demand of Digital Training

Figure 41 provides a comparative analysis of the supply and demand for digital training. If the result is positive, it signifies that there is a surplus of training in that particular topic, with more training available than demanded by MSMEs. Conversely, if the result is negative, it indicates a deficit, meaning the demand for training in that specific topic exceeds the available supply.

A positive gap value indicates a surplus supply of training for that topic, while a negative gap value indicates a deficit supply. The larger the positive gap, the higher the surplus, and the larger the negative gap, the higher the deficit.

This analysis allows us to identify training topics where there is a strong demand from MSMEs, but the available supply falls short, helping training providers and policymakers prioritize areas that require more attention and resources. By addressing these gaps, we can better align with the actual needs of MSMEs and enhance their digital skills

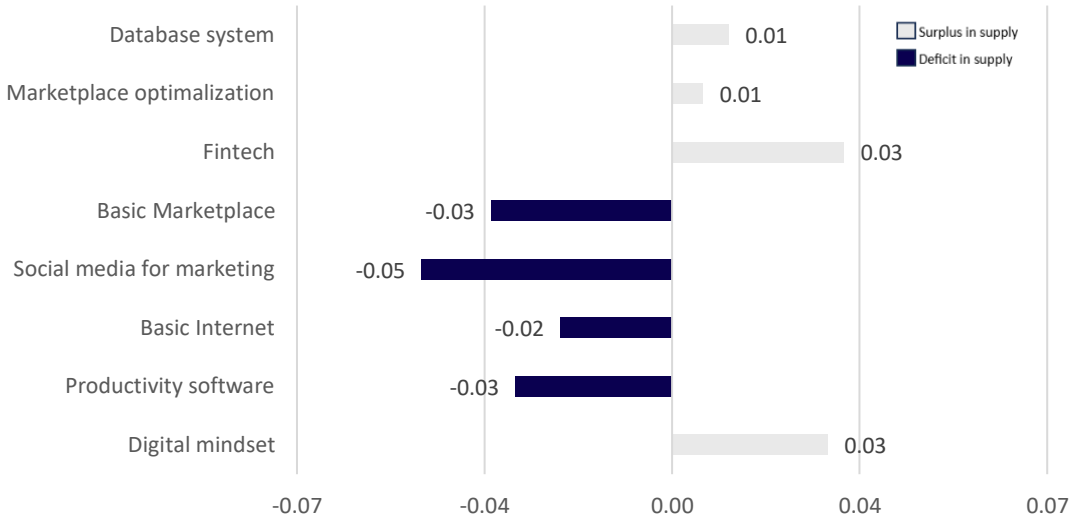

Figure 41. Gap analysis between supply and demand

Source: Authors (2023)

Note: Supply is indicated as the percentage of actual training provided out of the total training available. Supply ratio equals to the total actual digital training provided by training provider divided by the Total training available. The demand for digital skill training is represented as the percentage of MSME participants for a specific training topic divided by the total number of MSMEs in the sample. Demand ratio equals the number of MSME participations in the specific training topics divided by the Total number of MSME in the sample. To measure the gap between supply and demand, the supply ratio will be subtracted from the demand ratio. Training gap equals the Supply ratio less the Demand ratio.

The results presented in Figure 41 indeed indicate a gap in the training supply for digital skills. In the Go Modern category, there seems to be an adequate supply of training on the topic of digital mindset, with a small positive ratio gap of 0.03 (surplus in supply). However, there is a more significant gap for training on productivity software, with a

negative ratio gap of -0.03 (deficit in supply). This suggests that the demand for training in productivity software exceeds the available supply, indicating a deficit in training programs in this area.

There is a clear gap between the supply and demand for digital training in the Go Digital category. While marketing training seems to have the highest ratio, it is still insufficient to meet the demand (ratio gap of -0.05). Similarly, training on basic internet (ratio gap of -0.02) and social media for marketing (ratio gap of -0.05) is also lacking in comparison to the demand from MSMEs. However, the topic of fintech training appears to have more supply than demand, indicating that there may be relatively more training available in this area compared to the current demand (ratio gap of 0.03).

The high deficit in the supply of training for the use of social media for marketing and basic marketplace skills is a noteworthy finding. It suggests that there is a significant demand from MSMEs for these basic digital skills, but the current supply of training falls short in meeting this demand. There are a few things to note when interpreting these results. First, the number of digital trainings for these two topics is not low. Many training providers, whether ministries, local governments, or other training providers, have offered similar materials to MSME.

Second, it is important to understand that the data collected by us mainly came from institutions reside in Jabodetabek area. While these institutions also provide training in other locations, most of their training is held in Jabodetabek. As such, the digital training supply figures in this study largely reflect the actual conditions in the Jabodetabek region. The demand for digital training figures, on the other hand, represents a broader area of study. As reflected in Figure 38, requests for digital training data came from 21 out of 34 provinces (before the division of provinces and districts in Papua) in Indonesia. Almost half of the demand for these trainings came from MSMEs from areas outside Jabodetabek, more specifically from East Java and Yogyakarta. The total demand for these trainings in these two provinces was 42% and 38% respectively.

Third, the lack of understanding among MSMEs regarding the link between digital marketing and business success is an important observation. It is crucial to address this misconception and provide MSMEs with a more comprehensive understanding of the role of digital technology in their overall business operations. While participating in online marketplaces and utilizing social media platforms can open new market opportunities, it is important for MSMEs to recognize that these platforms alone do not guarantee business success. The effective application of digital technology requires a holistic approach that considers various factors, such as product presentation, efficient transaction processes, and inventory management. MSMEs should focus not only on attracting attention to their products online but also on providing a seamless and efficient customer experience. This includes optimizing the transaction process, ensuring prompt and reliable delivery, and maintaining accurate stock records. By aligning their digital practices with their overall business operations, MSMEs can maximize the benefits of digital technology and improve their competitiveness in the online market.

This view is sometimes not well understood by MSMEs. The role of training institutions to provide this understanding is very important to ensure that MSMEs in Indonesia can make the most of this new technology. In addition to providing understanding, training institutions also need to prepare appropriate advanced training materials so that MSMEs are not confused about what material they should receive after completing basic topic training. On more advanced training topics, which include Go Online, most of the training has a higher level of availability compared to the needs possessed by MSMEs. The

reason may be due to the digital technology service provider encouraging their technological adaptation through training.

From the gap analysis we can summarize, that digital training topics that can be increased are topics in the Go Digital category, especially those that focus on marketing. It must be considered that the purpose of MSMEs to enter the digital world is to increase their sales. Therefore, this training topic becomes a necessity for them. Even so, this sampling was conducted on MSMEs using their personal perceptions. Therefore, there needs to be consideration that MSMEs measure their needs not on business needs analysis but using perceptions.

The importance of regional analysis in digital training provision is evident from the gap analysis results. Regional analysis allows us to understand the variations in training demands and supply across different areas in Indonesia. By examining training needs and offerings on a regional level, policymakers and training providers can make targeted interventions to address the specific challenges and opportunities faced by MSMEs in each region.

Regional analysis helps identify regions with the highest demand for digital training but limited access to such programs. This allows stakeholders to prioritize resources and efforts in these areas, ensuring that MSMEs in underserved regions have equal opportunities to acquire digital skills. It also allows for the optimization of resource allocation, strategically locating training centers and programs where they are most needed.

Table 4. Regional analysis of Gap between supply and demand

Training topic	Region			
	Indonesia	Jabodetabek	Java Non-Jabodetabek	Non-Java
Digital Mindset	0.03	0.04	0.02	0.03
Basic Internet	-0.02	-0.01	-0.03	-0.02
Productivity software	-0.03	-0.05	-0.01	-0.04
Basic marketplace	-0.04	-0.03	-0.04	-0.03
Social media for marketing	-0.05	-0.07	-0.02	-0.08
Fintech	0.03	0.03	0.04	0.03
Marketplace optimalization	0.00	0.02	-0.01	0.03
Database system	0.01	0.02	0.00	0.01

Source: Authors (2023)

Note: The gap between supply and demand is as per Figure 41 where the supply ratio will be subtracted from the demand ratio.

The gap between supply and demand for digital technology training reveals distinct patterns when examined at the regional level. While the overall supply deficit pattern shown in Figure 41 remains apparent, there are notable variations in demand for specific training topics across regions. In Jabodetabek, the topic of using Productivity software exhibits a higher deficit compared to other regions, with a deficit of -0.05. Similarly, the topic of marketing using social media displays a significant disparity from other regions, with a deficit of -0.07, ranking as the second-highest deficit. The Non-Java region, on the other hand, exhibits the highest deficit for this topic with -0.08. These findings emphasize the differences in demand levels between regions in Indonesia, as illustrated in Box 1. It is essential to incorporate regional elements in the planning of digital training

development to address the training needs of MSMEs in all regions of Indonesia, rather than focusing exclusively on one region.

Box 2: Gap analysis based on gender

Inclusive policies have increasingly focused on providing equal opportunities for all segments of society, including marginalized groups such as women. Over the past decade, there has been a growing recognition of the significant role women play in the development of MSMEs. Women not only serve as key actors in business activities but also contribute to the empowerment of their communities.

Studies have shown that some women choose not to re-enter the formal labor market after marriage and face challenges when attempting to return. Many views entrepreneurship and MSMEs as viable alternatives that offer flexibility to support family income while balancing household responsibilities. The relatively low barriers to entry in the MSME sector make it an attractive option for women seeking economic independence.

The research team sought to examine the relationship between demand and supply for digital technology training and gender factors. On the supply side, the research team evaluated the availability of government policies specifically targeting women-led MSMEs and analyzed the data from online surveys to look at differences in demand for digital training between genders.

The data obtained from the MSD indicates that a small percentage of agencies have recognized the importance of providing digitalization training with a specific focus on women-led MSMEs. The training programs conducted by Kominfo, OJK, KODE Creative Hub, and ARUNA are commendable initiatives that aim to address the unique challenges and needs faced by women entrepreneurs in the digitalization process. KODE Creative Hub has been particularly proactive in providing digitalization training specifically for women, with 20 training programs conducted in the last three years. However, the majority of agencies, approximately 78%, have not planned to provide women-specific digitalization training in the future. This suggests that there is a lack of recognition and urgency among these agencies regarding the importance of targeting women-led MSMEs in their training initiatives.

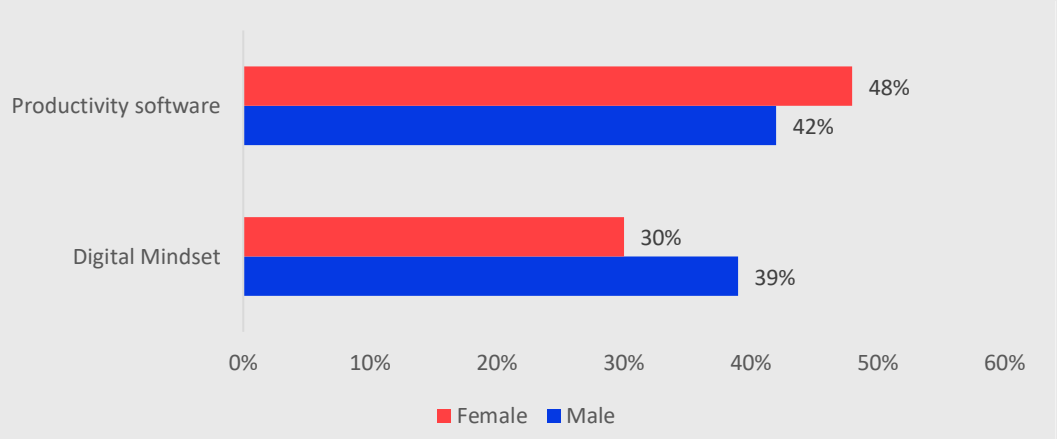

Figure 42. Distribution of Go Modern training by gender

Source: Authors (2023)

The results of the online survey highlight the existence of gaps in the participation of MSMEs, both male and female, in digitalization training programs. In the Go Modern training category, the survey reveals that a relatively lower percentage of participants, specifically 39% of males and 30% of females, have engaged in training focused on developing a basic digital mindset. Furthermore, the survey indicates that participation rates in training related to the use of productivity software, a crucial aspect of digitalization, are also not optimal. While 42% of male participants have taken part in such training, the percentage is slightly higher at 48% among female participants.

The participation patterns in the Go Digital training category highlight similar trends among male and female participants. According to the survey results, approximately 46% of male participants and 40% of female participants reported receiving training on basic internet. Basic marketplace training, on the other hand, was attended by 54% of male respondents and a higher percentage of 65% among female respondents. In terms of training on the basic use of the internet, approximately 40% of male participants and 46% of female participants indicated their participation in related training. However, the lowest level of participation was observed in training specifically focused on fintech, where only 35% of male participants and a relatively lower proportion of 26% among female participants reported their attendance in such training.

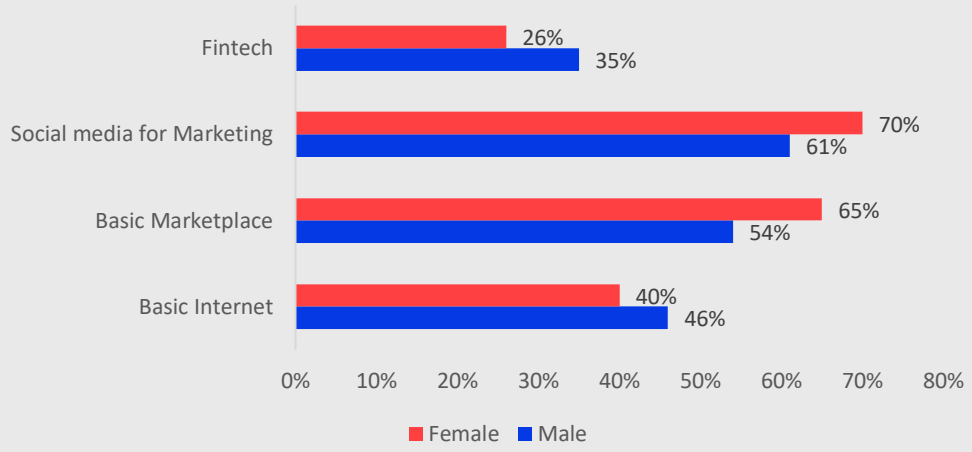

Figure 43. Distribution of Go Digital training by gender

Source: Authors (2023)

The participation rates in the Go Global training category, particularly in topics related to the use of database systems, indicate relatively low engagement from both male and female participants. According to the survey findings, approximately 36% of male participants and 33% of female participants reported attending training related to marketplace optimization. However, the participation rates for training on the use of database systems were notably lower. Only 8% of male respondents and 6% of female respondents indicated their participation in this specific training.

Marketplace platforms provide valuable opportunities for women entrepreneurs to overcome mobility barriers and reach a wider customer base. By promoting and selling products online, women can balance household responsibilities while growing their businesses. Targeted training and support can further empower women in leveraging digital marketplaces for economic empowerment and growth.

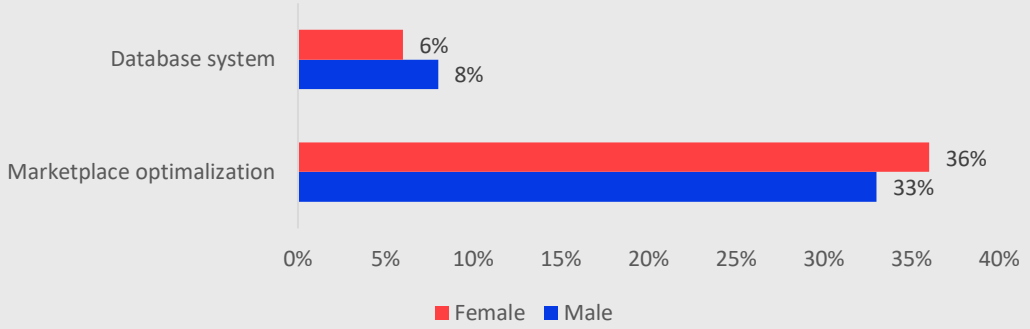

Figure 44. Distribution of Go global training by Gender

Source: Authors (2023)

The analysis of digital technology training programs indicates that there is no significant difference in the participation rates between women and men. This is an important finding as it demonstrates that the training initiatives have effectively provided equal opportunities for both genders. The results suggest that the training policies have recognized the significant role that women play in MSMEs and have implemented inclusive approaches to ensure their active participation in the training programs.

The fact that women's participation is comparable to men's in the training programs highlights the importance of addressing gender equality in the digitalization efforts for MSMEs. It signifies that women are not being left behind in accessing digital skills and knowledge, enabling them to fully participate in the digital transformation of their businesses. This inclusive approach promotes equal opportunities and empowers women entrepreneurs to leverage digital technologies for business growth and success.

6.1.1 Gap Analysis of Digital Training for MSMEs Based on Business Segmentation

Analyzing the digital training gap across different segments of MSMEs, such as micro, small, and medium enterprises, is crucial as their characteristics and needs vary. By understanding these differences, policymakers and training organizers can tailor their programs to meet the specific requirements of each segment and ensure that digital training initiatives are effectively reaching all MSMEs.

Table 5 provides a useful comparison of each training topic within the 3Go framework. It highlights the supply conditions for each topic and identifies potential gaps in training provision. In terms of the digital mindset training topic, there is a surplus supply condition overall, indicating that there are sufficient training opportunities available for MSMEs in this area. This surplus supply is also observed across different business segments, suggesting that training providers have successfully addressed the demand for digital mindset training.

On the other hand, the productivity software training topic shows a deficit supply condition in general. This means that there is a shortage of training opportunities specifically focused on productivity software for MSMEs. This deficit is particularly notable within the micro business segment, where the training provision falls short of meeting the demand. In contrast, the supply of productivity software training appears to

be greater in small and medium enterprises, indicating that training providers have recognized the importance of addressing the productivity needs of these business segments.

Table 5. Gap of digital training on MSMEs based on segmentation

Topics	Segmentation			
	Micro	Small	Medium	Overall
Digital Mindset	0,02	0,01	0,02	0.03
Productivity Software	-0,02	0,01	0,02	-0.03
Basic Internet	0,02	-0,04	0,02	-0.02
Social Media for Marketing	-0,08	-0,09	-0,05	-0.05
Basic Marketplace	-0,10	-0,14	-0,04	-0.03
Fintech	0,03	0,07	-0,11	0.03
Marketplace Optimalization	0,00	0,02	-0,07	0.01
Database System	0,04	0,05	0,1	0.01

Source: Authors (2023)
Note: The segmentation gap is calculated as per Figure 41

In the Go Digital category, there are notable deficits in the supply of training for three out of the four training topics. The topics of social media and marketplace training consistently exhibit deficit supply conditions across all three business segments (micro, small, and medium enterprises). The training topic of basic internet also shows a general deficit supply condition, indicating a shortage of training opportunities focused on basic internet for MSMEs. However, there is relatively more training available for micro and medium-sized enterprises compared to small enterprises in this specific topic.

Interestingly, the training topic of fintech stands out as the only one with a surplus supply condition overall. This indicates that there are more training opportunities available for MSMEs in fintech-related skills. However, it is important to highlight the high supply deficit in fintech training specifically for medium-sized enterprises, suggesting a gap in meeting the demand for fintech training in this business segment.

In the Go Online training category, there is a large gap between supply and demand for specific training topics. Marketplace optimization training, which is crucial for effective online marketing, has a deficit supply condition across all segments and overall. This indicates a significant need for more training opportunities and support in this area. On the other hand, database training is consistently in surplus supply, implying that there is a higher availability of training compared to the demand. While this surplus may indicate a positive trend in terms of database skills development, it also highlights the need for training providers to reassess the balance and reallocate resources to address the deficit in sales-related topics.

Conducting a gap analysis is essential for identifying the discrepancies between training needs and availability. It is also important to consider the limitations of rational decision-making among MSMEs. There is a possibility that respondents may lack awareness or understanding of their ideal training needs, which could impact the accuracy of their self-assessment. Therefore, alongside the gap analysis, efforts should be made to educate MSMEs about their digital needs and the benefits of specific training programs.

It is also crucial to increase the frequency of training sessions. The analysis has highlighted the disparity in training accessibility, but it is equally important to ensure that the available training is adequate and meets the specific needs of MSMEs. This may

involve revising and enhancing existing training programs, as well as developing new ones that align with the evolving digital landscape and emerging business requirements. By doing so, MSMEs can acquire the necessary digital skills and knowledge to effectively navigate the digital realm and drive their business growth.

6.2 Mapping Digitalization Training Skill Program

The gap analysis results play a crucial role in developing the digital training path for MSMEs, as they provide valuable insights and information for stakeholders. By understanding the gaps between the demand and supply of digital training, stakeholders can design and implement targeted and effective training programs to support MSMEs. This enables them to acquire the necessary digital skills and knowledge, ultimately enhancing their competitiveness and success in the digital economy. This sub-section discusses in detail on the proposed roles and responsibilities of each stakeholder involved in in MSMEs digital training and what type of training topics should be provided.

When it comes to helping MSMEs with digitalization, the first step is to assess how digitalization will affect them. This assessment will help determine what kind of training they need to get the desired results. Figure 34 displays the impact of digitalization training on MSMEs. According to the data, the biggest impact felt by MSMEs is the expansion of their business markets, as reported by at least 40% of respondents. Additionally, MSMEs can also experience increased profits and revenue (23%) and more efficient business activities (22%).

The government has placed a significant emphasis on marketing as a key objective of digitalization. The ministry has organized several training sessions that focus on marketing, which aligns with the overall goal of MSMEs to enhance their marketing activities. This overlap is natural because marketing plays an essential role in various aspects of businesses, making it a crucial topic in every digitalization training session.

> “We see that we cannot just market without looking at and improving quality. At least there are intersections between [counterpart ministry] and [our ministry]. For example, the packaging process, in the manufacturing process, may be mentored. However, when entering the market, the packaging must be adapted to the market. So when entering the market, the goods must be modified first.” (Ministry A, 9 February 2023)

Marketing is crucial and to ensure its effectiveness, the training should focus on improving it. Figure 45 depicts how digitalization training should prioritize marketing training. This training should be provided during the Go Digital and Go Online stages. At the Go Digital stage, the training should cover social media and basic marketplace. Both of these training topics are complementary and can boost the sales of MSMEs. Social media training is more popular than basic marketplace training, with a higher participation rate.

During the Go Online phase, advanced marketplace optimization training is provided, building on the basic marketing training offered in the earlier Go Digital phase. The Go Digital training is focused on introducing and penetrating the market, whereas the Go Online training concentrates on the needs and abilities of MSMEs to compete effectively

in the digital marketplace. Marketplace optimization training is specifically designed to enhance the competitiveness of MSMEs in the marketplace. Other training programs, such as those focused on social media, also aim to improve the digital marketing capabilities of MSMEs.

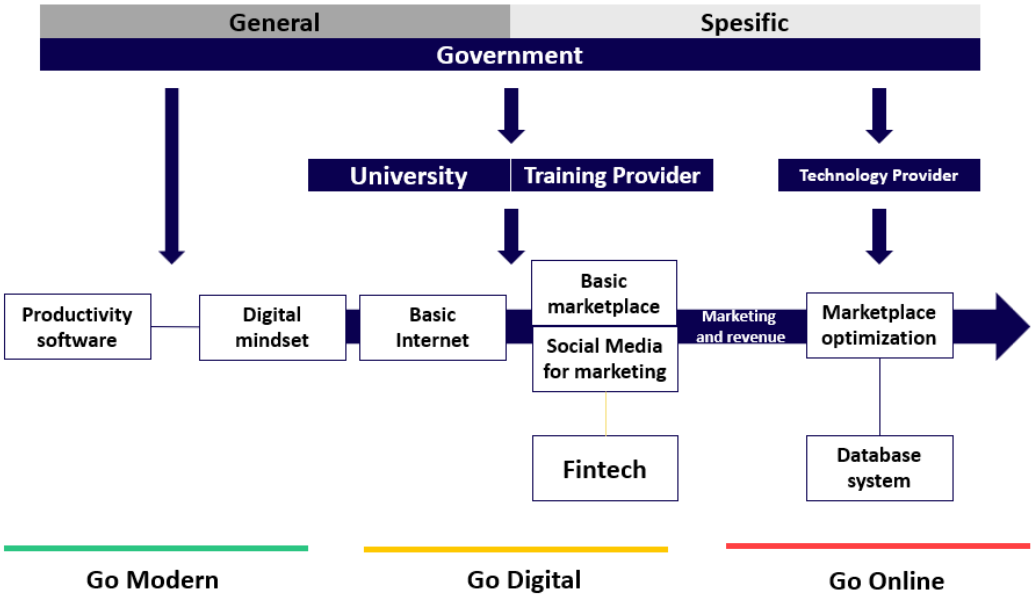

Figure 45. Mapping of Digital Training Topic

Source: Authors (2023)

Before implementing digitalization training in marketing, it is necessary to provide some fundamental training. MSMEs must first receive training on basic internet and develop a digital mindset. Basic internet training falls under the Go Digital category, while digital mindset training falls under the Go Modern category. Before starting the digital marketing training, there should also be an introductory class that explains which digital marketing channel is currently available. The marketing channel must also be evaluated first, whether it is suitable enough for MSME to adopt.

When developing marketing training for MSMEs, it is recommended to include digitalization training options as a complement to the digital training framework. In the Go Modern aspect, it is beneficial to start with training on productivity software before delving further into the digital mindset. This will help MSMEs become more knowledgeable in utilizing digital technology. However, this training is not mandatory. Figure 45 illustrates the nature of this training through a dotted line connecting productivity software training with digital mindset. This characteristic arises because some utility-based software can fulfill the needs of productivity software more practically, making the benefits of using it more minimal and indirect. Therefore, MSMEs will require more digitalization training that can provide direct benefits to their businesses.

> "Not just talking about technology, but (MSMEs) are pragmatic. (Something) that is easy, easy for them to adapt access and feel the benefits will be easier for them to enter. If it is not easy enough, they will leave it, (especially) when [Our technology]

> sells dreams (that) do not match with them. We have to know where the “key” is (Technology provider B, 10 February 2023)”

During the Go Digital phase, there are additional training resources available to complement the digital training program. One of these resources is fintech-focused training, specifically related to payment systems. By improving the payment system, consumers may be more inclined to purchase products from micro, small, and medium enterprises (MSMEs). Easy access to financing can also contribute to this outcome. In addition to payment system training, fintech training may also cover financing options that MSMEs can utilize.

During the Go Online stage of training, it can be beneficial to incorporate databases as a supplementary material. One potential topic that may warrant the use of a database is the analysis of market needs and consumer mapping using Big data. Databases can also serve purposes such as collecting data on consumers or fulfilling other business needs.

In the framework, fintech and database training are not compulsory. Figure 45 shows this with a dotted line separating them from other training at the same level. Moreover, these training courses do not have to follow the preceding training. This means that they can be carried out alongside marketing training at the same level. Although not mandatory, they can be used to complement marketing training.

To improve the training framework, we can identify the roles of digital training stakeholders. Figure 20 shows how the government can partner with different stakeholders to provide digitalization training. In Figure 45, we have adjusted the mapping to prioritize the Go Modern stage, which has a significant but challenging-to-measure impact. Other stakeholders will then focus on this stage. Given the government's public service function, it can lead the training efforts.

The government can partner with different stakeholders for the Go Digital and Go Online training programs. In the Go Digital training, universities and training providers can be involved. Universities offer more general training without distinguishing business scale, while training providers offer more targeted training for specific business scales. For the Go Online training, the government can collaborate with technology providers who also benefit from promoting their products. This partnership creates a mutually beneficial solution.

This sub-section discusses in detail on the proposed roles and responsibilities of each stakeholder involved in in MSMEs digital training and what type of training topics should be provided.

6.2.1 Division of stakeholder’s role in conducting digital skill training

The analysis results indicate that the government, particularly the ministry responsible for digital skill training, continues to play a crucial role in providing training for MSMEs in digital skills. However, it is important to address the issue of overlapping training materials offered by different training providers. This overlapping can lead to redundancy

and inefficiency in the training process, as well as confusion for MSMEs in selecting the most relevant and suitable training programs.

Dividing the roles of government based on their characteristics and responsibilities can help provide clarity and avoid confusion. Below is a breakdown of the roles for non-technical ministries and technical ministries:

Non-Technical Ministries:

1. Coordination and Collaboration: Non-technical ministries can facilitate coordination and collaboration among various stakeholders involved in digital skill training. They can organize forums, meetings, or working groups to bring together different ministries, training providers, industry associations, and MSME representatives to exchange knowledge, share best practices, and align their efforts.
2. Policy Support: Non-technical ministries can develop supportive policies and regulations to create an enabling environment for digital skill training. This includes providing incentives or subsidies for MSMEs to participate in training programs, promoting partnerships between training providers and industry players, and advocating for the integration of digital skills into the national education system.
3. Needs Assessment and Feedback: Non-technical ministries can conduct regular needs assessments to identify the specific digital skill gaps and training needs of MSMEs. They can also establish mechanisms for collecting feedback from MSMEs on the effectiveness and relevance of the training programs, which can help inform future training initiatives.

Technical Ministries:

1. Curriculum Development: Technical ministries can take the lead in developing comprehensive and up-to-date curriculum for digital skill training programs. This includes identifying the specific technical skills and knowledge needed by MSMEs and designing training modules accordingly.
2. Training Delivery: Technical ministries can organize training sessions, workshops, or webinars to deliver the digital skill training programs to MSMEs. They can leverage their expertise and resources to ensure that the training is accessible, relevant, and effective.
3. Training Material Standardization: Technical ministries can establish guidelines or standards for training materials used by both government and non-government training providers. This helps ensure consistency, quality, and compatibility across different training programs.

Non-government training providers play a crucial role in providing a holistic digital skill training program for MSMEs. They contribute to the diversity and availability of training materials, ensuring that MSMEs have access to a wide range of learning opportunities. They can also collaborate with the government in various ways, including:

1. Developing Advanced Training Materials: Non-government training providers can work closely with the government to develop advanced training materials that address specific digital skills gaps and emerging technologies. By leveraging their expertise and industry knowledge, they can contribute to the creation of high-quality training content that aligns with the needs of MSMEs.

2. Sharing Best Practices and Insights: Non-government training providers can collaborate with the government by sharing best practices and insights gained from their training programs. They can provide valuable feedback on the effectiveness of different training approaches, highlight success stories, and identify areas for improvement. This information can inform the government's policies and strategies for digital skill development.
3. Participating in Government-led Programs: Non-government training providers can actively participate in government-led programs and initiatives aimed at supporting MSMEs. This can include partnering with the government to deliver training programs, serving as trainers or mentors in government-supported initiatives, or contributing to policy discussions and decision-making processes.
4. Utilizing Government Referrals: Non-government training providers can benefit from government referrals of MSMEs that need training. As the government interacts closely with MSMEs through various programs and initiatives, they can refer businesses to trusted and qualified training providers. This collaboration can help non-government training providers connect with MSMEs in need of training and ensure that the training reaches the target audience effectively.

Local governments have the potential to wield substantial influence within the ecosystem of digital skill training for MSMEs by harmonizing their functions and responsibilities with the delineated roles of both non-technical and technical ministries. Here's how local governments can seamlessly integrate into this framework:

Non-Technical Local Government:

1. Policy Advocacy: Non-technical local government officials can advocate for policies that support the growth of the local MSME sector. They may work with provincial or district level councils to propose and endorse policies that create a favourable environment for digital skill training.
2. Resource Allocation: These officials can allocate local resources, such as budgetary funds or infrastructure, to support digital training initiatives. They might oversee the allocation of grants or subsidies to MSMEs to cover training costs.
3. Promotion and Awareness: Non-technical local government officials can play a vital role in promoting digital skill training opportunities among local MSMEs. They can use local communication channels and networks to raise awareness about available training programs.
4. Coordination: Coordinating efforts among local MSME associations, training providers, and other stakeholders is a key responsibility. They can facilitate partnerships and collaboration to ensure that training efforts are efficient and effective.
5. Needs Assessment: Non-technical local government officials may conduct localized needs assessments to understand the specific digital skill gaps within their region. This data can inform the development of training programs tailored to local MSMEs' requirements and align them with national digital training plan.

Technical Local Government:

1. Curriculum Development: Technical local government entities can contribute to the development of training curricula that align with national curriculum and the specific needs of local MSMEs. They may work closely with local technical institutes or vocational training centres to design relevant programs.

2. Training Delivery: These entities can organize and deliver technical training sessions, workshops, or seminars. They focus on enhancing the technical competencies of local MSMEs, helping them effectively adopt digital technologies in their business operations.
3. Resource Provision: They may provide access to training resources, such as training venues, technology infrastructure, or equipment. This support ensures that MSMEs have the necessary resources to engage in digital skill development.
4. Capacity Building: Technical local government bodies are responsible for building the capacity and skills of local MSMEs in specific technical areas relevant to the region's economic activities. They empower businesses to thrive in the digital landscape.

Building upon the previous suggestion, Figure 45 depicts the collaboration between stakeholders in delivering digital skill training for MSMEs through the 3Go framework. In the Go Modern category, all stakeholders contribute to this training initiative, with the technical ministries playing a particularly significant role. However, it is important to note that this training category poses challenges as the impact on MSMEs may not be immediately evident. In addressing this gap, government-owned community services can play a crucial role in ensuring the effective implementation of training outcomes.

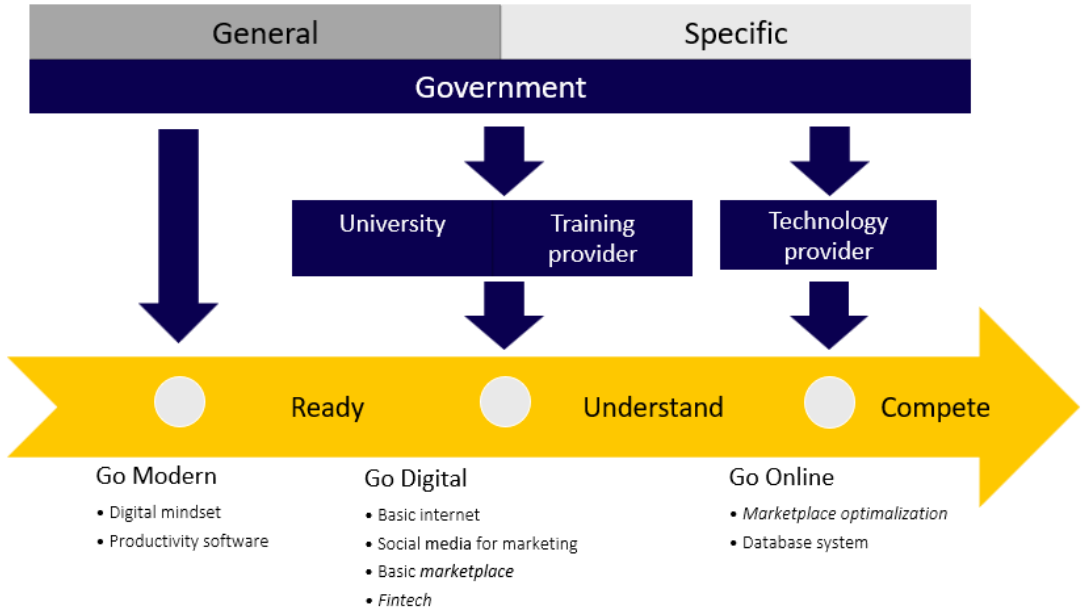

Figure 46. Stakeholder's role in digital skill training

Source: Authors (2023)

In the Go Digital category, the government can take on the role of coordinating training activities, while universities, training institutions, or communities can implement the training programs. These entities have the expertise and resources to conduct such activities effectively. The key distinction lies in the target audience, with training institutions being well-suited for providing training tailored to the specific business scales of micro, small, and medium enterprises. On the other hand, universities typically offer more generalized training programs that cater to a broader audience. This collaboration ensures that a wide range of training options are available to meet the diverse needs of MSMEs in their digital transformation journey.

This strategic grouping of stakeholders enables a more targeted and efficient allocation of resources, ensuring that each stakeholder can contribute their expertise and capacity effectively. Through collaboration and coordination, these stakeholders can maximize the impact of digitalization training for MSMEs in Indonesia. By leveraging their respective strengths and working together towards a common goal, they can create a supportive ecosystem that empowers MSMEs to thrive in the digital era. This multi-stakeholder approach fosters synergy, innovation, and sustainable growth in the MSME sector.

6.2.2 Strategy in providing inclusive digital skill training programs

Based on the findings presented in section 6.1, it is evident that there is a deficit in the number of training programs provided by training providers. To address this gap, training providers should focus on increasing the number of training sessions and expanding their coverage to reach more MSMEs. This can be achieved through collaborations with government agencies, universities, and other stakeholders to pool resources and expertise.

Training providers should prioritize addressing the specific training needs of different regions in Indonesia. The analysis revealed that there are variations in training demands across regions, such as the higher deficit in Productivity software training in Jabodetabek and the significant deficit in social media marketing training in Jabodetabek and the Non-Java region. This highlights the importance of tailoring training programs to address the specific needs of each region. Training providers can work closely with local government agencies and stakeholders to identify regional training requirements and develop targeted programs to address those needs.

The gap analysis highlights the need to prioritize digital training topics in the Go Digital category, particularly those related to marketing. It is essential to recognize that MSMEs' primary goal in entering the digital realm is to boost their sales. Therefore, training programs focusing on marketing skills are crucial for their success. However, it is important to acknowledge that this analysis is based on the perceptions of MSMEs themselves. Their perceptions may not always align with a comprehensive business needs analysis. Hence, it is necessary to strike a balance between addressing perceived needs and conducting thorough assessments of the actual requirements of MSMEs to ensure the effectiveness and relevance of the training provided. Additionally, training providers should strive to provide comprehensive and diverse training materials that cover a wide range of topics. The analysis identified the need for additional training topics, such as fintech, content creation, cybersecurity, and digital logistics. By expanding the training topics available, MSMEs can gain a more comprehensive understanding of digital skills and be better equipped to navigate the digital landscape.

Lastly, as discussed in the previous section, collaboration between training providers, government agencies, and other stakeholders is essential for delivering effective and impactful training programs. By pooling resources, expertise, and networks, stakeholders can create a cohesive ecosystem that supports the digital skill development of MSMEs. This collaboration can involve sharing best practices, coordinating training schedules, and leveraging existing infrastructure to reach a larger audience.

To provide better training for MSMEs based on segmentation, it is important to tailor the training programs to the specific needs and characteristics of each segment. Based on the business development in each segment, the digital training skill material should be developed as follows:

- For the micro segment, which comprises the smallest businesses, the training should focus on basic digital skills and foundational knowledge. This can include training on basic internet, social media marketing, and online marketplace navigation. The training should be accessible, practical, and designed to accommodate limited resources and technical capabilities.
- For the small segment, which represents businesses with a slightly higher scale, the training can delve deeper into advanced digital skills and strategies. This may include topics such as e-commerce optimization, digital marketing tactics, and data analytics. The training should provide practical guidance on leveraging digital tools and platforms to expand market reach and improve operational efficiency.
- For the medium segment, which consists of more established businesses, the training should be more advanced and tailored to their specific industry and growth objectives. This can involve topics such as enterprise resource planning (ERP) systems, supply chain management, and advanced digital marketing techniques. The training should focus on enhancing competitiveness, scalability, and international market expansion.

It is also important to consider the unique characteristics and challenges faced by each segment. This includes factors such as financial constraints, limited technical expertise, and time constraints. Training programs should be designed to address these challenges and provide practical solutions that can be easily implemented by MSMEs.

Training providers should also adopt flexible and inclusive training delivery methods, such as online platforms, webinars, and self-paced learning modules, to accommodate the diverse needs and schedules of MSMEs. The training should emphasize hands-on practice, case studies, and real-world examples to enhance the learning experience and ensure practical application of the acquired skills.

6.2.3 The proposed adjustment of training material to 3Go framework

The ability to measure the impact and purpose of digitalization in MSMEs is indeed a challenge. As stated by Reim et al. (2022) digitalization should result in added value for MSMEs. This added value can be realized when MSMEs have clear goals and objectives for adopting digitalization. A key goal is to expand their market reach, with the international market being a significant target. The data already supports the notion that expanding the market is a crucial motivation for MSMEs to embrace the digital ecosystem. By leveraging digital technology, MSMEs can overcome demographic restrictions and conduct product sales on a broader scale. This demonstrates the transformative potential of digitalization for MSMEs in unlocking new market opportunities.

Table 6. Recommended adjustment of 3Go Framework

Framework	Definition	Training's topic
Go Modern	Understanding and applying basic digital technology	Digital mindset Productivity software
Go Digital	Digitalization of business process	Basic Internet Social media for marketing Basic marketplace Basic fintech*

Framework	Definition	Training's topic
Go Online	Business optimalization using digital technology	Marketplace optimalization
		Database system
		Advanced fintech*
		Digital content (video & photos) **
		Digital security (cyber digital) **
Go Global	Digital technology for export	ERP system
		Digital Logistic**
Misc.	Additional technological training	Artificial Intelligence

Source: Authors (2023)

Note:
*Based on MSD discussions, this topic is recommended to be separated between basic and advanced
**These topics are recommended for the improvement of 3Go framework

Go Global and ERP Training Importance

The government has recognized the need to boost exports from MSMEs and has introduced the "Go Global" concept as part of their digitalization program. The low contribution of MSMEs to exports, currently at 14%, and the relatively low utilization of e-commerce at 21% among MSMEs highlight the importance of expanding digitalization efforts for export-oriented initiatives. The "Go Global" concept extends beyond simply going online and emphasizes the need to tap into global markets. As a result, adjustments have been made to the training categorization, including the inclusion of enterprise resource planning (ERP) related training in the Go Global stage. This expansion aims to equip MSMEs with the necessary skills and knowledge to navigate international markets and enhance their export capabilities.

The data suggests that there is a significant gap in the provision of training on enterprise resource planning (ERP) topics, particularly among universities, government entities, and state-owned enterprises (SOEs). Only a small percentage of respondents from these sectors reported offering ERP training. In contrast, training provider institutions emerged as the primary providers of ERP training, with over 60% of respondents stating that they offer training on this advanced topic. This highlights the need for increased collaboration and efforts from universities, government entities, and SOEs to address the gap and provide more comprehensive training on ERP systems for MSMEs.

Separation of Fintech Training

One technology provider conveyed the important role of the many features available. Fintech is not only a source of financing, but also a payment system to a recording system. One of the MSD participants also told us that integrating digital payment to the business allows MSMEs to offer additional services such as, selling phone credit or e-money credit, which can bring new added value for them (Technology Provider B, 10 February 2023). Therefore, the expansion of fintech training is necessary.

The development of fintech training topics is a valuable addition to the digital training program for MSMEs. The fintech training can be divided into two categories: basic and advanced. In the basic training, MSMEs can learn about the fundamental features of

payment fintech, such as QRIS usage, and loan fintech, including training on applying for consumptive loans. On the other hand, the advanced fintech training covers more advanced topics such as financial recording, EDC usage, productive loan applications, and crowdfunding. These two training topics can be included in different categories, with the basic fintech training falling under the Go Digital category and the advanced fintech training falling under the Go Online category. This comprehensive approach to fintech training can equip MSMEs with the necessary knowledge and skills to effectively leverage financial technology for their business needs. The advanced fintech training can also be integrated with “Initial Public offering (IPO)” preparation class.

Content Creator Training

Improving the quality of MSME content is a necessary form of training. This is closely linked to the low quality of MSME products that can be promoted on social media. Most MSMEs displayed their products in e-commerce or social media with a simple photo. It is recommended to provide MSMEs additional training that covers basic application of design software and photography. So that, their products look more appealing and more professional. (Technology provider C, 10 February 2023)

In addition to fintech training, it is crucial for MSMEs to receive training on content creation. Content creator training is essential as it equips MSMEs with the skills to create engaging and impactful content across various digital media platforms, including written, graphic, and video content. This training enables MSMEs to effectively compete in the digital landscape by capturing the attention of their target audience.

Digital Security Training

As MSMEs continue to grow in size, security concerns become an important aspect of their digitalization. This is also a concern shared by some training providers. The implementation of digital security training for MSMEs has been discussed with other credit institutions that provide funding for MSMEs. However, the implementation is still in early stages (Ministry C, 9 February 2023)

On the other hand, training on cyber security or digital security is necessary to raise awareness among MSMEs about the importance of safeguarding their digital accounts. As MSMEs venture into the online realm and compete with other businesses, ensuring the security of their digital assets and sensitive information is crucial to maintain the quality and integrity of their products. This training topic is particularly relevant at the Go Online stage of the digital training program.

Digital Logistic Training

As an archipelago, Indonesia faces significant logistical challenges that must be addressed when expanding to the global market. Training on digital logistics is crucial for MSMEs to leverage digital technology in optimizing their logistics processes and reducing costs. This topic becomes especially relevant in the Go Global stage, where MSMEs aim to expand their market access to international networks

> “Some are also cooperation between fellow B2B marketplaces to match, because if one of the obstacles is logistics, because for furniture and machinery the obstacle is in logistics, because B2B is not only enough on catalog, besides that we also try to match the characteristics of the product.” (Ministry D, 9 February 2023)

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On the other hand, Artificial intelligence training can provide MSMEs with valuable skills in harnessing the power of artificial intelligence technologies to enhance their business operations. Although not initially included in the main framework, AI training can be an important addition to equip MSMEs with advanced digital skills. By incorporating these additional training topics, the framework can be adjusted to better meet the evolving needs of MSMEs, as reflected in Table 6.

6.2.4 The proposed post-training development program

Apart from outlining the training topics, the mapping process should also encompass the post-training program. While the discussion on this may not be exhaustive, it is imperative as the training topics will be directly linked to the post-training program. Additionally, the post-training program plays a more significant role in the effectiveness of delivering the lesson compared to the training itself.

The quality of a post-training program can be significantly affected by the budget allocated to it. Higher budget allocations usually result in better post-training programs. The level of the post-training program can vary based on the budget. The most optimal level of post-training programs is the one with a large or almost unlimited budget. Such programs offer features like one-on-one coaching, regular meetings, and an e-learning system. Based on the experience of our experience, the post-training program for implementing the lessons can be completed within four months.

> “I was chatting with other technology provider. Their community is able to apply new technology very quickly because their community is downstream people. They only need three months to use high performance technology, for medium technology they only need 15 to 30 days.” (Technology provider B, 10 Februari 2023)

The medium level option for the post-training program involves periodic face-to-face meetings with the MSMEs to provide updates and reminders on the training's lessons learned. Due to budget constraints, an online evaluation and monitoring platform can be used. Additionally, an e-learning program can be implemented to provide easy access to training materials and integration with evaluation and monitoring tools. It is important to note that this post-training program's effectiveness takes a longer duration compared to the best option, but the exact timeframe is difficult to determine.

The minimum approach for post-training programs involves relying solely on online platforms such as e-learning, social media groups and online forums. This option is typically used when the trainer has a limited budget and cannot afford the more comprehensive options. Since the interaction is limited to online platforms, it becomes difficult to measure the effectiveness of the program and determine its ideal duration. Therefore, this approach is not recommended for organizations that require a more robust training program.

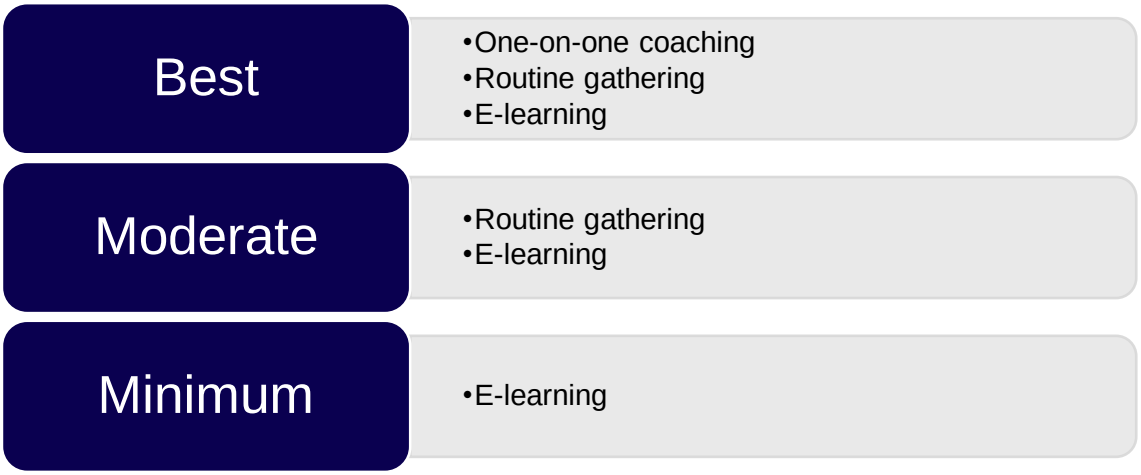

Figure 47. Proposed post-training program

Source: Authors (2023)

CHAPTER 7
CONCLUSION, RECOMMENDATION, AND LIMITATION

7.1 Conclusion

Based on the results there is a gap between supply and demand in digital training. If we look at the percentage of available training topics, training on the topic of Go Digital is the training with the most demanded topics. However, when looking at the supply side, training on the topic of Go Digital has the same frequency as training on Go Modern. This result illustrates that the Go Digital topic requires a large amount of training compared to Go Modern and Go Online. The latter two do not require as much training because the topics can be self-taught, or the topics are not necessary for business.

This research shows that the main motivation to adopt digital technology is to increase sales. This is why MSMEs chose a lot of training related to topics in the Go Digital category, which includes some training to enter digital marketing facilities. However, it is worth noting that MSMEs did not choose many trainings in the Go Online category even though it also has topics on marketplace optimization. This indicates that training in this category is still not widely understood by MSMEs, so their urgency in attending training on this topic is still low.

The availability of training is still evenly distributed between aspects of Go Modern, Go Digital and Go Online. Similar distribution can be seen when the sample is broken down by business segmentation, where the three training compositions do not change in each MSME segment. This condition indicates that the availability of training is still homogeneous and has no variation in its topics. The data shows that there is a decrease in the level of availability of financing for middle-class businesses when compared to micro and small businesses.

In terms of demand for training, the heterogeneity of needs can be seen in each training segment. Go Digital training is largely demanded by micro and small business whereas, the medium business demands less training from Go Modern and Go Digital compared to its two counterparts. Nevertheless, it can be summarized that the demand for training decreases as business scale increases, along with the increase in the mastery of technology.

This relationship between training demand and supply suggests that heterogeneity in training is needed. The availability of training at higher business scales will change and will reduce more basic training such as Go Modern and Go Digital. On the availability side, there is no significant change in training at each business scale.

If we examine the business sector segmentation, the training composition in each sector is relatively similar. However, for the trade and services sector, digital training is less available. This might be caused by the demanded topics in these two types of businesses. As we know, trading and service businesses have limited types of products to be widely distributed, making applying digital technology in these two types of businesses difficult to implement.

The results show a gap between the availability and demand of marketing-related training, especially at the Go Digital stage. This training can be encouraged through cooperation between the government and various parties such as universities and training institutions.

The results show that there is a need for the availability of a mentoring and learning platform. Having a platform for MSMEs to ask and learn about problems that

might arise directly related to the training materials and other aspects related to the training will help them master these new technologies more quickly.

There is a need for different types of digital skills training. This is not only because of differences in business segmentation, but also in the type of MSME business sector.

A clear division of labor between stakeholders is needed. For example, in the Go Digital category, the government can act as a coordinator of training activities, while the training activities can be carried out by universities and training institutions or communities.

7.2 Recommendations

Based on several conclusions that have been presented, our recommendations are:

1. **The government needs to adjust between the supply and demand of digital training.** In micro and small-scale businesses, it is necessary to increase the training on the topic of going digital. However, it should be considered that some training at the Go Modern level is still needed to support basic needs on Go Digital topics. The government should also realize that under certain conditions, MSME do not have the sense of urgency of training on modern topics.
2. **The government needs to reorganize the *staging* phase of business training.** This study shows that the composition of training in each business segment still tends to be homogeneous. On the contrary, the demand for training shows heterogeneity. Therefore, the government should increase the topic of going online for medium-sized businesses and reduce the intensity of other topics.
3. **The government must ensure that the training provided will give direct benefits for MSME, especially increasing sales.** The main motivation of the MSME, when they are participating in digital training, is to increase sales. Therefore, the government can also prepare a channel for MSME who have participated in the training. In this regard, MSMEs also need to be educated about the importance of further training at the Go Online stage. This topic will help MSMEs to not only adopt digital technology, but also compete in the digital market.
4. **The government can focus on providing general training.** This is due to the difficulty of such training to have a direct impact on MSMEs. However, the role of these topics is important as the advanced topics will require these topics as basic skills.
5. **The government could encourage more training with the output of increased marketing capacity** because there is still a high demand for marketing-based training.
6. **Training institutions, universities and technology providers may wish to focus on offering training on advanced topics.** These topics (e.g., ERP systems) are characterized by rapid development and training providers need to adapt. Training providers, universities and technology providers are well-resourced to provide this and ensure that the digital technology material provided remains relevant to the latest developments.
7. **The government needs to provide an environment for training institutions, universities, and technology providers to enter the policy planning process of MSME digitalization training development and ensure that they get a**

portion of training implementation according to their respective competencies.

8. **Specialization of the training topics provided by each stakeholder is important and there is a need for inter-agency coordination to determine the tasks and responsibilities of each stakeholder.** BAPPENAS can initiate this discussion process and further ensure that there is no overlap in the provision of digital technology training between relevant institutions. The Job Creation Law has provided an initial framework for inter-institutional cooperation in the provision of digital technology training and can be adopted in the process of determining the training specialization of each institution.
9. **A good socialization strategy for the availability of digital technology training is needed to ensure that every MSME who needs it knows about it.** This is to avoid "saturation" of the same trainees in several digital technology training courses and provide opportunities for other MSME who have not had the opportunity to participate in training. The government can serve as a "distributor" that accommodates training opportunities from provider institutions and delivers them to MSME. With a centralized and coordinated information door, it is expected that all MSME can get the same opportunity to access the digital technology needed.
10. **Some digital technology training materials need to be compiled in an online form to provide opportunities for MSME who cannot participate in training activities directly.** Digital training providers are mostly conducted in certain areas and many MSMEs do not have sufficient resources to join the training offered. The training should also be done in the form of pre-recording so that the MSMEs have the flexibility to access the material.
11. **The assistance during and after the training is important**. Only conveying the learning material to MSMEs does not encourage the MSMEs to apply the new technology optimally. The assistance will help MSMEs to address the problems which may arise during the implementation.
12. **To ensure that all the previous strategies are well implemented, it is necessary to have a platform that can accommodate the coordination process between institutions, monitor the availability and quality of digital training, disseminate the availability of training to all MSMEs, and the learning process of recording training by MSME.** Through relevant ministries and institutions, the government can collaborate to initiate the creation of this platform. The "one stop service" platform strategy is in line with the spirit of the current government which calls for the use of one data, one platform and one door to deliver its programs.

7.3 Limitation and future study

The study, while providing valuable insights into the dynamics of digital training supply and demand for Micro, Small, and Medium-sized Enterprises (MSMEs), is not without its limitations. These limitations are essential to acknowledge in order to interpret the findings accurately and guide future research efforts.

1. **Geographic Representativeness**
   A key limitation lies in the geographical focus of data collection, which is primarily concentrated on Jabodetabek areas and several main cities outside of Java island. This may limit the broad applicability of results across all of Indonesia. Caution is advised when making nationwide inferences based on this dataset

however it does provide valuable indications and insights into MSME digitalization training supply and demand within this specific area.

2. **Representation of Local Government**
   The participation of local government entities in the study can be considered low. As a results, the analysis may not provide a complete comprehension of local governments' roles in digital training provision for MSMEs. However, prior discussions have emphasized the substantial influence of local governments in this area. Recognizing their involvement remains crucial despite this study's limitations.
3. **Scope of Training Materials**
   The study adopted the 3Go framework, which outlines a general list of training materials considered essential for MSMEs' digitalization. However, this framework may not encompass all the diverse training that is offered by various training providers, including ministries and local governments. Training programs outside the 3Go framework may address specific, niche needs that are not explicitly covered in the framework. This limitation emphasizes the importance of future research that delves into the actual training materials offered by different stakeholders, thereby enhancing the framework's comprehensiveness and yielding more precise results.

The limitations identified in this study pave the way for promising avenues of future research. Here are some potential research directions that can build upon the current findings:

- **Expanding Geographical Coverage for Supply Data**
  Future research should aim to collect data from training providers, local government, and other stakeholders in diverse regions across Indonesia. This broader geographical scope ensures that findings are not just limited to Jabodetabek and could represent the entire nation's digital training landscape.
- **Comprehensive Curriculum Analysis to Enhance the 3Go Framework**
  Future research should comprehensively analyzes the training materials and curricula used by various training providers (including ministries). A complete assessment on the content, methodologies, and learning outcomes can improve the implementation of the 3Go framework to meet the changing needs of MSMEs.
- **Training Provider Specialization Strategies**
  Building on curriculum analysis insights, future research is needed to explore specialization areas and training strategies among training providers and ministries. This include identifying the strengths and weaknesses and their niche skills in specific areas or production sectors. This approach leads to more effective and tailored training experiences for MSMEs.
- **Best Practice Benchmarking**
  Benchmarking approach can be utilized in future research considering the challenges in obtaining data from numerous stakeholders. Selecting ministries or training providers recognized for best practices and using them as standards promotes uniformity in training quality and provides insights into effective digital training for MSMEs.

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ANNEX

Table 7. Case studies summary of MSME digital Transformation in various countries

No	Research/ report Title	Country	Main Findings	Impact/ recommendation
1	*Accelerating Small and Medium-Sized Enterprise (SME) Digitalization in Malaysia (Paypal, 2022)*	Malaysia	Paypal conducted a survey with 1000 Malaysian MSMEs as the respondents to evaluate MSMEs readiness in adopting digital technology Main findings -44% of the respondents had lack of necessary IT expertise and support -42% of the respondents reported to have difficulty in establishing digital security and data protection -33% of the respondent answered that they had limited time to research and manage digital migration	There is an urgency of more collaboration between public and private sector in order to increase effectivity of digital development for MSME
2	*Case studies on digital technologies of MSMES (ADB, 2022)*	Japan	MSMEs digital landscape is not only measured by e-commerce penetration but also, we need to see how the entrepreneurs integrate the technology in the business process. This report informs us several success stories of digital transformation in Japan	Public-private sector cooperation is mandatory in developing digitalization for MSME. The private sector has decent resource to develop technology that match the needs of MSME
3	*Four ways Thai SMEs are leading the way in digital transformation (Salesforces, 2022)*	Thailand	Thailand is one of the countries with the best digital transformation. The survey from Salesforce reported that 100% of MSMEs have operated their business online. Most of the MSMEs predict that this strategy will be conducted in the long run	The strategy allows MSMEs in Thailand to 1) Keeping up the demand 2) providing a quality product 3) personalizing customer engagement

No	Research/ report Title	Country	Main Findings	Impact/ recommendation
4	*Digital skills for SMEs: challenges and opportunities*	Europe	This report maps the condition of digital skill training in Europe. Findings: *- mismatch training offering with SME needs* *- poor access to guidance, education and training* *- Shortage human resource* *- digital immaturity* *- structured approach to skills development in organization* *- financial constraint* *- disconnect from ecosystem*	A well-structured digital skill path is needed and it must match with the needs of MSME
5	*SME digitalization to build back better (OECD, 2021)*	Ireland, New Zealand, United States, Germany, Italia, Spain, and South Korea	This report displays how the cooperation between public and private sector can promote the creation of digital technology that match the needs of MSME	The appropriate digital technology is able to: -accelerate the launching of online shop -increase the efficiency of business process and contribute to the application of eco-friendly technology -increase the digital capability of MSMEs - Increase in number of website and MSMEs online shop
6	*SMEs digital. Strategies for the digital transformation (Germany Federal Ministry for Economic Affair and Energy, 2019)*	Germany	This report shows how the German government motivate the creation of digital technology that match the needs of MSME	Increase in number of website and MSMEs online shop

No	Research/ report Title	Country	Main Findings	Impact/ recommendation
7	*What comes after SME Digital Transformation? — Measuring Effectiveness of Public Policy and Identifying Trends for the Post-Digital Era APEC (APEC, 2023)*	Chile, Australia, Vietnam, and New Zealand	This report displays how the cooperation between public and private sector can promote the creation of digital technology that match the needs of MSME	The appropriate digital technology is able to: -improve the effort of training participants -Some MSMEs were successfully paired with innovator that gave them more guidance