

The Path to
Success:
How Women-Owned Businesses
Transform in the Era of Digitalization
South Korea Case Study



Knowledge Partner:





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About Konrad-Adenauer-Stiftung's Regional Economic Programme Asia (SOPAS)

Konrad-Adenauer-Stiftung (KAS) is a German political foundation that holds freedom, justice, and solidarity as the basic principles underlying their work. KAS Regional Economic Programme Asia (SOPAS) is a regional forum that contributes to the debate and reform of economic and governance models in Asia. SOPAS focuses on the following three strategic areas: (1) advancing women in leadership; (2) free trade and multilateralism; and (3) the future of work. Furthermore, it brings together a network of policymakers, economists, political analysts, and thought leaders across Asia to discuss emerging issues, propose policy alternatives and share best practices. These discussions in Asia are also brought to the fore in Europe through expert conferences, seminars, and workshops. Publications on these key topics are regularly released to provide insights and recommendations to national and regional policymakers.

About Woomentum

Woomentum is an independent organization that supports women leaders and women in business. Our mission is to help better the lives of women and their communities by enabling women leaders to grow sustainable and profitable businesses. Woomentum's head office in Singapore runs multiple projects in research, advocacy, and capacity building throughout South-East Asia. Our project activities are in support of women-led SMEs and women-led technology startups. As ecosystem builders, we actively engage with entrepreneurs, investors, donors, and policymakers.

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Please cite this publication as:
Konrad-Adenauer-Stiftung. (2021). *The Path to Success: How Women-owned Businesses Transform in the Era of Digitalization, South Korea*. KAS Publishing.

ISBN 978-4-910690-08-7

Foreword by KAS Japan



Rabea Brauer



Cristita Marie Perez

It is an established fact that women in Asia are less present in managerial positions and are hardly found in technological sectors. Accordingly, for the sake of stable societies and sustainable economic growth, we must understand what role women play in the current technological upheavals. Does the COVID-driven digitalization lead to business disadvantages? Are women left even further behind in the STEM sectors? Or does technological progress make way for new independence, more flexible work structures, new financing methods, and new startups?

In 2020, Konrad-Adenauer-Stiftung's Regional Economic Programme Asia (SOPAS) partnered with Woomentum and, after months of research amidst the COVID-19 pandemic, launched the publication, *The path to success: How women-owned businesses transform in the era of digitalization*. The first set of country studies focused on Cambodia, Indonesia, Malaysia, and Myanmar. These comparative case studies revealed how women-owned small and medium-sized enterprises (or WSMEs) use and take advantage of new technologies to grow their businesses. The research results also outlined WSME's challenges with regard to access to financing, mentoring, improving business processes, and COVID-19 mitigation and management.

The present volume is an expansion of the research we started almost two years ago. This time, we focus on three additional countries: Vietnam, South Korea, and Singapore. We continued to find similar themes with more countries included. The general findings can be summarized as follows:

- WSMEs continue to rely on internal funding for various reasons; the most dominant of these reasons are the reluctance to relinquish control and/or meet unsustainable growth targets.
- WSMEs crave and seek mentoring and networking. However, most want long-term mentor-mentee relationships based on shared values and beliefs. While continuous skills learning is prized, at the same time, time and the demands of both businesses and families pose certain limitations.
- Although the pandemic accelerated WSME's digitalization, these processes are adapted *ad hoc*, without a clear digitalization roadmap as a foundational guide. WSMEs have tremendously benefited from digitalization, but most want a systematic set of processes to sustain these gains.

The individual country contexts provide a deeper and more nuanced analysis of these common trends. In this publication, we outline concrete recommendations for action for policymakers in the respective countries on the analyzed difficulties of women, e.g., using financial instruments or using technologies profitably. We separately present recommendations for governments, financial institutions, SME networks, and other relevant institutions.

The message is clear: WSMEs can and want to thrive in the digital age. However, in order to turn this dormant potential into lived reality, support from all sides is necessary.

Rabea Brauer

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Foreword by Woomentum



Mouna Aouri



Alice Thet

Despite the countless challenges that we have faced during the COVID-19 crisis, one silver lining of the current pandemic is that it has considerably accelerated the digital transformation of small- and medium-sized enterprises (SMEs) in Asia. While today's digital revolution is a pivotal movement among all businesses, it is particularly important for women-owned SMEs (WSMEs). Here at Woomentum, we believe that digitalization is a key factor that can help women entrepreneurs successfully overcome gender-specific challenges in business.

Aided by digital technologies, women entrepreneurs can further empower their families, communities, and society as a whole.

Since the beginning of our research in 2020, we have conducted in-depth interviews with a stunning total of 146 WSMEs and 60+ experts across seven Asian countries (Cambodia, Indonesia, Malaysia, Myanmar, Singapore, South Korea, and Vietnam). The results of this large-scale endeavor revealed that, while certain challenges to digitalization are universal, some opportunities are country-specific. Yet the biggest reward of our project has been the opportunity to discover and publish—in this report and via other Woomentum channels—the fascinating success stories of dozens of inspiring, resourceful, and courageous female entrepreneurs.

In this second volume, we mapped the digital maturity of participating WSMEs based on a model adapted from the Cisco Digital Maturity Index and sought to better understand the unique challenges at each level of digital maturity. While this report identifies numerous challenges, each of these challenges presents a meaningful opportunity for governments, financial institutions, WSMEs networks, and other relevant institutions to collaboratively ensure that women entrepreneurs are not left behind in today's digital revolution. Along with the valuable support of the Lee Kuan Yew School of Public Policy, we formulated key recommendations specific to government institutions and classified them by the policy cycle stage. It is our hope that this publication will spark dialogue within the community to support the digitalization of WSMEs in Asia, thereby unlocking the true economic potential of women entrepreneurs.

Last but not least, we are extremely grateful to Konrad-Adenauer-Stiftung, all interviewed WSMEs and participating experts, and, most importantly, to all our team members, researchers, writers, editors, and designers. Without your contribution, this much needed research would not have been published. Despite being spread across seven different time zones, our team has been able to seamlessly collaborate, brainstorm, and run events virtually – all thanks to the power of digitalization, so vehemently advocated for in the present volume.

Mouna Aouri

Founder & CEO, Woomentum

Alice Thet

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Acknowledgments and Authors' Contribution

This project was conducted as a joint effort between Konrad-Adenauer-Stiftung (KAS) and Woomentum to shed light on the challenges faced and opportunities provided by digitalization to women-owned small and medium enterprises in Asia, particularly during the COVID-19 global pandemic.

The South Korea case study was led by Songyi Lee, assisted by Hyunjung Shin, Minzi Kang, Seon Yeong Lee, and Marta Allina. The team would like to thank Woomentum for providing continuous support and feedback throughout the research. The report would not be published without the contributions from all of the WSME (women-owned small and medium enterprise), experts, and advisory panelists who shared their thoughts and expertise. Lastly, the team would like to apologize to anyone who may have been unintentionally overlooked in these acknowledgments.

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Acronyms and Abbreviations

AI	Artificial Intelligence
AP	Advisory Panel
BBA	BigBang Angels
CCEI	Center(s) for Creative Economy and Innovation
CEO	Chief Executive Officer
COC	Chamber of Commerces
COVID-19	Coronavirus Disease 2019
ERP	Enterprise Resource Planning
Fintech	Financial Technology
FSC	Financial Services Commission
G20	Group of Twenty
G2G	Government to Government
GDP	Gross Domestic Product
HR	Human Resources
ICT	Information and Communications Technology
KAS	Konrad-Adenauer-Stiftung
KIP	Korea Investment Partners
KISED	Korea Institute of Startup & Entrepreneurship Development
KITA	Korea International Trade Association
KOTRA	Korea Trade-Investment Promotion Agency
KOWWA	Korea Venture Business Women's Association
KRW	Korean Won
KSF	Korea Startup Forum
KTBNetwork	KTB Network
KV	Kakao Ventures
KWDI	Korean Women's Development Institute
KWEA	Korean Women Entrepreneurs Association
ME	Medium Enterprise
MOGEF	Ministry of Gender Equality and Family
MSIP	Ministry of Science and ICT
MSS	Ministry of SMEs and Startups
MYSK	Merry Year Social Company
NGOs	Non-Governmental Organizations
OECD	Organisation for Economic Co-operation and Development

P2PLending	Peer-to-Peer Lending
R&D	Research and Development
SBA	Seoul Business Agency
SBDC	Small Business Development Centers
SE	Small Enterprise
SEMAS	Small Enterprise And Market Service
SFG	Shinhan Financial Group
SIWA	Seoul International Women's Association
SME	Small & Medium Enterprise(s)
SNS	Social Networking Services
STEM	Science, Technology, Engineering, and Mathematics
SWIK	Startup Women in Korea
SWIK	Startup Women in Korea
SWU	Seoul Women Up
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UX	User Experience
VC	Venture Capital
WCIP	Women's Corporate Information Portal
WESC	Women Enterprise Supporting Center
WFUNA	World Federation of United Nations Associations
WSME	Women-owned Small & Medium Enterprise(s)
5G	Fifth Generation Cellular Network

Executive Summary

Purpose of the Study

In this case study, we explore the present and future new opportunities of digitalization for South Korean women-owned small and medium-sized enterprises (WSMEs) and provide insights to address the challenges for all ecosystem stakeholders.

Key Findings

Pillar 1: Access to Financing

Nineteen out of 20 WSME participants in this study used a combination of external and internal sources of financing. These WSMEs used various financing sources, mainly government support schemes and reward-based crowdfunding. Interestingly, the interviewed owners of MEs were more inclined to take traditional financing approaches, such as bank loans. The WSME participants also accessed other financing models, such as VC and angel investments. In South Korea, the VC industry was found to be backed by policy money. The interviewed experts suggested that digitalization has democratized access to financing for WSMEs. However, the WSMEs still reported experiencing challenges in exploring various financial services, such as awareness, gender-related challenges, risk aversion, and government regulations. Therefore, well-designed support is needed to incentivize more WSMEs to use other financial services.

Pillar 2: Access to Mentoring, Networking, and Skills

All interviewed WSME participants acknowledged the importance of mentoring, networking, and skill-building. However, the lack of high-quality (i.e., up-to-date and relevant) content, mentors, and traditional networking style of male-dominated activities were highlighted as top challenges. The participants emphasized the scarcity of female mentors who can serve as role models and the need to optimize the available platforms to build and strengthen women-in-business communities. For example, WSME success stories and regular knowledge-sharing sessions can be popularized through local apps, especially since COVID-19 has pushed more activities online.

Pillar 3: Business Processes and Management

Business process management is an essential part of WSME digitalization. In the present study, we found that the popularity and availability of local digital solutions helped to reduce barriers in digitalization for WSMEs in South Korea. As digitalization skills do not come naturally to everybody, localized content offered in the native language (e.g., Naver, Kakao, JANDI, Kmong, Miso) can facilitate the digital adoption process. However, resistance in adoption by the team (both leaders and employees), lack of digital adoption skills, and lack of human resources still emerged as the top four most-cited challenges in business processes and management. WSMEs need to understand that digitalization is not an option, but a necessity.

Pillar 4: Crisis Management (COVID-19)

All interviewed WSME participants believed that government support and digitalization were critical factors in minimizing the negative effect of the COVID-19 pandemic. Fifteen out of 20 WSMEs had already started the digitalization journey before the crisis, and this trend was further enhanced by the pandemic. With consumers converting from physical store visits to online shopping in South Korea, the WSMEs were urged to change how they operate. However, our results revealed that more conventional WSMEs were slower in adopting digital tools due to the limited access to information and talent, which highlights a need for digitalization assistance.

Key Recommendations Specific to Government Institutions

First, the government plays a critical role in supporting WSMEs in various ways, such as providing credit guarantee schemes, creating WSME-specific financial support programs, and investing in small businesses. The government should partner with private banks, financial institutions, and digital financial solutions providers to build a centralized platform to provide SMEs with information and access to available financing options. By giving WSMEs the opportunity to learn more about the different benefits and risks of these financing options, WSME owners can make more informed decisions about their financial plans. Second, creating global networking events (e.g., business matching, trade fairs, business conferences) would also help WSMEs to connect with local and international mentors, with added digital Korean interpretation support to overcome language barriers. Third, the support provided by the government should match each WSME's needs and digital maturity level. The corresponding policy should also cover the implementation process of digital tools and services by extending the support duration (beyond the 6-month standard) for WSMEs to retain skillful young employees.

Key Recommendations Specific to Institutions Providing Assistance to WSMEs

First, private banks, financial institutions, and digital financial solution providers should support the government in providing WSMEs with more practical assistance by educating them on the benefits of accessing financial services. For example, crowdfunding platforms can be used to fundraise and forecast market demand, which, in turn, would help WSMEs to create products that fit the market. Second, all key stakeholders should popularize success stories of digitally-enabled WSMEs—showcasing role models to fellow women entrepreneurs. Korea Venture Business Women's Association (KOVWA) is one recommended institution to collaborate with. Third, the digitalization of WSMEs could also be supported by establishing a community of practice facilitated by business networks and associations. Finally, business associations, communities, and networks should promote relevant government programs that address specific problems faced by WSMEs in South Korea.

1 Country Background

Digitalization and Economic Growth

Despite the financial crises in the mid-1990s and 2000s, the growth of South Korea's economy has been exemplary. According to the World Bank, the "Miracle on the Han River" summarized the rapid growth in real gross domestic product (GDP), averaging 7.3% annually between 1960 and 2019.¹ Ranking the tenth largest economy in the world in terms of nominal GDP, the Republic of Korea has been at the forefront of the leading economies in the Group of Twenty (G20). Although the COVID-19 pandemic has had a dramatic adverse impact on the global economy, South Korea reported a relatively small decline in its GDP of -1%² and has reached pre-pandemic per capita income levels after about 18 months of the pandemic.³

Digitalization is indeed a key driver of South Korean development. The South Korean government is further driving this trend to position the country as a global innovation and technology hub by investing approximately USD 62 billion into the Digital New Deal and Green New Deal. While the Green New Deal focuses on achieving net-zero emissions, the Digital New Deal aims to build foundations for a digital economy through 5G, Big Data, and artificial intelligence (AI).⁴ Furthermore, the effort to foster more innovation continued during the COVID-19 crisis with the establishment of a Regulatory Sandbox Support Center in 2020, run by the Korean Chamber of Commerce and Industry, which helped startups to run innovative practices previously banned by outdated regulations.⁵

Digitalization and Women-Owned Small- and Medium-Sized Enterprises (WSMEs)

Small- and Medium-Sized Enterprises Classification and Gender Proportion

To be classified as a small- and medium-sized enterprise (SME) in South Korea, a firm's average sales during the past three years must not surpass a certain threshold of the industry in which they operate.⁶ An SME denotes an establishment whose total assets amount to up to KRW 500 billion (approximately USD 463 million),⁷ with sales ranging from KRW 1 billion (approximately USD 0.9 million) to KRW 150 billion (approximately USD 135 million), depending on the industry (see Appendix A for SME classification).⁶

In 2020, SMEs constituted 99.92% of the total number of South Korean firms, while large enterprises comprised 0.08%, as shown in Figure 1.1.⁸ The SMEs' share of employment was 84% in 2018⁹, and the number of SMEs steadily grew from 3,122,332 in 2010 to 4,019,872 in 2017.^{10,11} In terms of value added, SMEs generated almost 50% of all business sector GDP.¹²

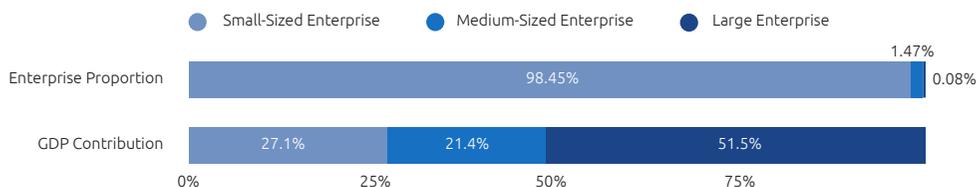


Figure 1.1 South Korean enterprise proportion breakdown by company size and GDP contribution

As of 2020, women-owned businesses made up only 27.1% of the total SMEs in South Korea (see Figure 1.2).¹³ The 5-year survival rate for these businesses was 6.7 percentage points lower than that of men-owned businesses, and women entrepreneurs voiced dissatisfaction with entrepreneurship policies and initiatives.¹⁴

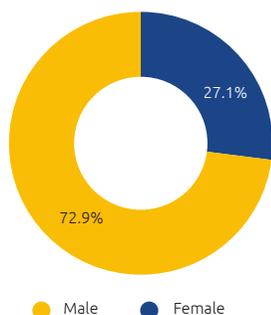


Figure 1.2 SME owner proportions in South Korea based on gender

The cultural context of South Korea is important in understanding the challenges confronted by women entrepreneurs. Confucianism, the leading philosophy for value systems and social structures in South Korea, deeply influences the nation by imposing the principles of accepting hierarchy, strong male dominance, collectivism, and gendered family structure.¹⁵ This philosophy has deeply influenced South Korean women to fulfill gendered family roles and sustain the view that their primary role is that of caretakers.¹⁶ South Korea was ranked the 102nd among 156 countries on the Global Gender Gap Index.¹⁷

Government Support for SME Digitalization

The government supports the growth of women in business by creating various programs, including a women-focused initiative that can be found in the “Stepping Stone Project” by the Korea Technology and Information Promotion Agency for SME. Within the framework of this initiative, selected women entrepreneurs can obtain technology development funds up to KRW 100 million (approximately USD 85,800) for a year.¹⁴ In 2016, 180 women-owned businesses benefited from KRW 198 billion (approximately USD 16.8 million).¹⁴ The government of South Korea started to promote virtual or “untact”¹⁸ working for SMEs and job-matching support to connect more STEM graduates to work for SMEs since 2020.

These are designed to boost the SME recovery from the COVID-19 pandemic and accelerate digitalization.¹⁹

New Opportunities in Alternative Financing for WSMEs

WSMEs in South Korea have benefited from both traditional and alternative financing options. For traditional financing options, the government has provided support for grants, bank loans, and venture capital (VC) investments. Government-backed loan guarantees alone stand at about 3.8% of the nation’s GDP and are regulated by the Korea Credit Guarantee Fund Act²⁰ (see Appendix B for SME regulations and laws). Along with bank loans, the government also supports VC investments, as seen in “The Innovation Venture Capital Funds” program launched in 2018, which has contributed an additional KRW 10 trillion (approximately USD 8.5 billion) in financial support for SMEs until 2020.¹¹

In addition to traditional financing options, emerging alternative financing solutions have also recently gained popularity in South Korea. For instance, the government launched an open banking platform where digital financing solutions providers, such as Kakao, Toss, or Finda, can offer their solutions to borrowers (businesses) with lower credit ratings.^{21,22} Similarly, various crowdfunding platforms, from reward-based to P2P lending, have experienced growing adoption. In 2020, P2P lending became regulated through the enactment of the P2P Act.²³ The corresponding regulation includes a cap limit on the lending interest rate and imposes a minimum capital requirement of KRW 500 million (approximately USD 414,000) on P2P firms.

Digitalization has provided another way of doing businesses for WSMEs, enabling them to tap into a large pool of consumers at a relatively low cost. Digitalization has also enabled remote working, which helps women in both domestic and professional settings. However, gender-disaggregated data on South Korean WSMEs’ experience with digital transformation are still largely unavailable. Therefore, this research aimed to investigate how digitalization offers new opportunities for WSMEs to overcome their gender-related challenges at varying degrees, depending on the maturity of their businesses.

2 Methodology

The purpose of this research is to shed light on present and future digitalization opportunities and provide insights to all stakeholders in the South Korean WSME ecosystem to address the identified challenges.

To conduct this research, the authors conducted in-depth qualitative interviews with South Korean WSMEs and experts in the digitalization and entrepreneurship field to identify the issues framed in the following four pillars: 1) access to financing, 2) access to mentoring, networking, and skills, 3) access to business processes and management, and 4) crisis management (COVID-19). An advisory panel session was also set up to provide a deeper perspective on the underlying issues surrounding digital adoption amongst WSMEs, as well as formulate policy and practical recommendations. The recommendations aimed to help South Korea's government and other key ecosystem stakeholders optimize new opportunities for WSMEs to overcome gender-related challenges at varying degrees, depending on the maturity of the business (small and medium enterprises).

The data collection process for the South Korean case study was carried out in the procedural steps as presented below:



Table 2.1 Research methodology

Participant Selection Criteria

WSME Participation

Twenty WSMEs comprising 13 small enterprises (SEs) and seven medium enterprises (MEs) were selected from diverse sectors and business sizes (see Figure 2.1). To maintain anonymity, each participating WSME was coded using their country and business maturity identifiers, as well as corresponding numbers. For example, SK_SE01 means the first small enterprise that the researchers interviewed in South Korea, while SK_ME03 means the third medium enterprise that the researchers interviewed in South Korea, and so forth. See Appendix A to see the SME classification in South Korea.

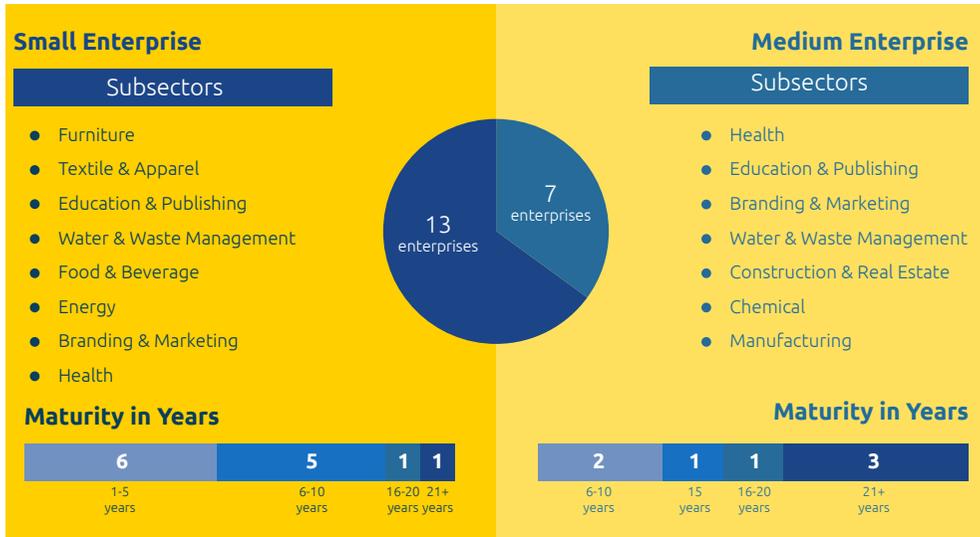


Figure 2.1 WSME participants overview

Expert Participation and Advisory Panel

Four experts in the fields of digitalization, women-in-business associations, and/or entrepreneurship were chosen to provide insights into the findings from the WSMEs interviews. These experts were also tasked with helping the authors formulate problem statements to be discussed in the advisory panel session at the last stage of data collection process.

The advisory panel was formed from a diverse spectrum of leaders and experts in the ecosystem to provide essential depth and context to the authors' research and WSME interview findings. The panelists included stakeholders from the public and private sector, ranging from the fields of impact investment, SME digital transformation, women business associations, digital tool solutions providers, and entrepreneurship. See Appendix C for profiles of experts and advisory panelists.

Data Analysis

The WSME interviews, expert interviews, and advisory panel discussions were structured into four pillars, as seen in Figure 2.2. All interviews and discussions were conducted in Korean (the participants' first language), except for one (conducted in English), and were digitally recorded. Notes were written

during the interviews and discussions were reviewed throughout the analysis. In addition, all government-backed SME voucher-related programs are categorized/coded as grants in this study to make the concept easier to understand. See Appendix D for a detailed elaboration of the data analysis process.



Figure 2.2 Research pillars

Limitations

The authors aimed to have an equal number of SE and ME participants. However, the authors encountered significant challenges during the ME recruitment process. The MEs were harder to identify and generally had very little capacity to participate in our interview. Most importantly, the ever-changing COVID-19 restrictions and vaccination programs slowed the interview scheduling process. Moreover, all interviews and panel discussions had to be done remotely (online), making it challenging to observe nonverbal behavior.

Although 1.6 million new businesses were created after the COVID-19 pandemic, there were 1.5 million businesses that withdrew from the market in 2020.²⁴ This research was conducted more than a year into the COVID-19 pandemic, so there may be a survivorship bias since the sample only represented those who fared relatively well during COVID-19. In future research, including some businesses that went bankrupt because of the pandemic might minimize the research bias.

3 WSME Interview Findings

All WSME participants demonstrated openness and acknowledged the importance of digitalization for the growth of their businesses. In this chapter, we discuss the dynamics between digitalization and WSMEs to understand whether this openness translates into the adoption of digital technologies in various aspects of these businesses.

Pillar 1: Access to Financing

The majority of interviewed WSMEs (19/20) mentioned using internal financing to run their businesses in combination with external financing, such as government grants, schemes, or loans. Only one ME ran entirely on its own cash resources (Figure 3.1). Two of the interviewees specifically mentioned having benefited from regional government support schemes, which provided annual grants up to USD 44,000 per grant.²⁵ Those who heavily relied on self-financing focused most of their efforts on managing a healthy cash flow.

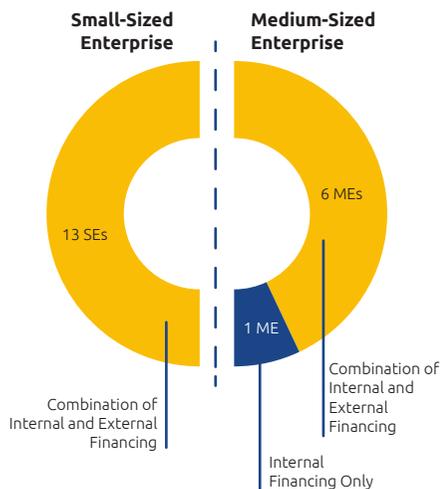


Figure 3.1 Breakdown of WSME financing sources

None of the participants mentioned having family members and inner circles supporting their business financially, except for one SE and one ME. As the husbands of these two women were involved in the companies, the capital was secured from their joint efforts.

Reward-based crowdfunding and government SME funding schemes were identified as the top two external funding sources for both SE and ME participants, followed by venture capital (VC) funding, bank loans, and angel investing, as shown in Figure 3.2. We found a far higher proportion of SEs using reward-based crowdfunding (13/13) as compared to MEs (2/7).

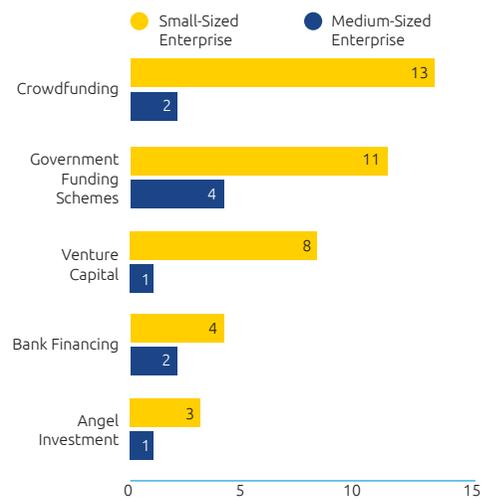


Figure 3.2 Top five funding sources adopted by WSME participants

The Popularity of Reward-Based Crowdfunding Among WSMEs

Crowdfunding in South Korea can be accessed through numerous, specialized platforms, such as Wadiz, Tumbbug, and Kakao Makers. Each platform offers different crowdfunding schemes. The comparison between each crowdfunding scheme is presented in Figure 3.3. Most notably, Wadiz offers both reward funding and equity funding, and is planning to expand its business models to offer more opportunities for SMEs. Wadiz has successfully attracted a total of 3 million members, 10 million visitors per month, and raised a cumulative of KRW 330 billion (approximately USD 282.7 million) in funding between 2016–2021.²⁶

Figure 3.3 Different crowdfunding models²⁷

Other platforms, such as Tumbbug, Kakaomakers, Naver Happy Bean Fund, and BPlus, offer a combination of reward-, equity-, donation-, and debt-based crowdfunding, providing a wide range of financing options that can be used according to risk preference and financing needs. This is demonstrated by the 13 SEs and two MEs that used reward-based crowdfunding to raise funds, validate the product, and build a customer base.



I have raised USD 1.8 million from Kickstarter and USD 2.7 million from Wadiz. Crowdfunding is useful for forecasting market demand.

(SK_SE06)



I used Kickstarter, Indiegogo, JD.com, and Wadiz for different purposes, not just fundraising. Kickstarter is good if you use technology in your product, Indiegogo is great for storytelling. Crowdfunding helps us promote our products globally, and it's important because there's a limit to the domestic market.

(SK_ME05)

The Popularity of Government-Backed Support Among WSMEs

Many WSME participants (15/20) preferred to use government grants because the government provides special programs for WSMEs and young entrepreneurs. Moreover, the due diligence process of government grants is less stringent, making it a preferable option for WSMEs. On the other hand, six WSMEs used bank loans because of the low interest rate and more manageable repayment plan, especially for loans backed by government agencies.²⁸ Bank loans have also become more attractive through digital innovation. For instance, one state-owned bank has built a Blockchain-based loan management platform, which has streamlined the verification processes to reduce funding time from 22 to 10 days.²⁸



We got financial support from the government, and it's helpful.

(Namhee Kim, Breezm)

Other Financing Options Adopted by WSMEs

In addition to crowdfunding and government-backed support schemes, WSMEs in this study also accessed other financing models, such as VC and angel investments. The VC landscape in South Korea is unique as the government is heavily involved, contributing to 45% of VC funding.²⁹ Backed by policy money, domestic VC funds have grown in size over the past few years. In 2020, South Korean VC funds raised KRW 4 trillion (approximately USD 3.36 billion).³⁰ From the interview, it was found that two SEs who raised funding from a VC plan to raise more VC funding rounds in the future. On the other hand, angel investing was obtained by three WSME participants through their personal networks and from investor associations. All three also mentioned obtaining additional benefits from the investment, such as mentorship and industry-relevant knowledge.

Key Challenges Faced by WSMEs in Accessing External Financing

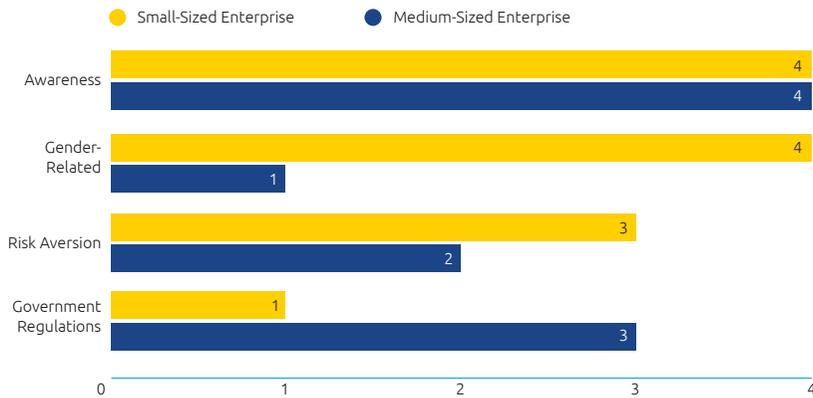


Figure 3.4 Top challenges faced by WSME participants in accessing external financing

Limited Awareness of and Trust Towards Available External Financing Options

There was still limited awareness of the available external financing options, as shown in Figure 3.4. Eight participants showed reluctance to adopt alternative financing models such as P2P lending, because they were unaware of the regulations, making them feel cautious about adopting it. In addition, an ME participant expressed that she had little knowledge about reward- and debt-based crowdfunding solutions when she started her business.

On top of awareness issues, two SE participants also experienced confusion related to the types of financing options they would need. While WSME participants showed curiosity and motivation to find financing information, they were mostly overwhelmed about what they should consider in obtaining funding and when they should start looking for it. An SE participant admitted that she really needed some advice on investments and marketing. The responses indicated a need for assistance that would help WSMEs navigate the growth of their businesses and keep up with digital advancements.

Gender-Related Challenges in Accessing Financing

Although most of the interviewees mentioned not having experienced any gender-related challenges when accessing financing, six WSMEs did view their gender as a challenge. For example, one WSME shared their experience of

being doubted as a woman entrepreneur when accessing government-backed support schemes. She was often asked questions that indicated underestimation of her capability, merely due to her gender.



I sometimes feel discomfort when trying to access government grants. The officials would often ask if I understood technology because I am a woman.

(SK_MES)

Moreover, in order to get special grants for women entrepreneurs, WSMEs must provide formal evidence of female ownership of the business in the form of a “women-enterprise certification.” This means certification paperwork, unexpected visits to the WSMEs’ office, and lengthy interviews. Despite its controversy, the WSME participants mentioned that this policy had given them significant benefits, such as a granted privilege to secure private contracts up to KRW 50 million (approximately USD 42,549) instead of KRW 20 million (approximately USD 17,019), available only for women-led businesses.³¹

Risk Aversion

Five WSME participants reported risk aversion to using various available sources of funding, including government-guaranteed bank loans and other non-public financing options.

One SE attributed her reluctance to approach newer financing methods to the lack of policy and regulations, which might result in uncertainties that could then put the business at risk. One SE participant shared that her first company went bankrupt due to bad financing decisions. Since then, she lost her risk appetite to seek future external funding for her company.



After my first company collapsed because of wrong investment and wrong decision making, I had the prejudice that getting investments could be risky, so I have not focused on raising funds.

(SK_SE7)



There is a lot of uncertainty in P2P lending in terms of government policies and regulations, so I feel it's risky [to adopt it now].

(SK_ME3)

Limitations of Government Regulations

Despite the exemplary support provided by the South Korean government through various grants, schemes, and loans, four WSME participants still faced challenges in using them. Government support schemes tend to focus on the number of businesses supported rather than the quality of the businesses, resulting in the funds being dispatched in multiple small grants, which were claimed to be insufficient for the needs of SMEs. In addition, government grants can only be received through designated public institutions, creating a barrier to WSMEs that have no preexisting relationship with such organizations. The lack of government regulations is also a reason behind the reluctance of three WSMEs to explore alternative financing options, such as P2P lending.

WSME Spotlight I: Jeonga Kim



Jeonga Kim (far left) and Her Family (Cacao Family Team)

Jeonga Kim is the co-founder and CEO of Cacao Family, a small-sized enterprise aiming to discover local resources and create a sustainable community. Together with her husband, they opened Cacao Family in 2017. The company offers healthy and fairtrade cacao using Guatemalan cacao to create healthy food for conscious consumers.

Jeonga explained how digitalization has helped her kick-off the business. The Cacao Family have benefited from reward-based crowdfunding campaigns, not just to raise money, but also to introduce their products to a wider audience and identify potential consumers more strategically.

Digitalization has also helped the Cacao Family reduce the negative impact of the COVID-19 crisis. Prior to COVID-19, their business relied on a brick-and-mortar store to serve customers, and their revenue decreased drastically for the first two months of the lockdown. They quickly pivoted to an e-commerce platform to provide their products online and also used Live Commerce as another way to increase sales, which was really effective for their business. Through Live Commerce, which combines instant purchasing and audience participation through

chat or reaction buttons, Cacao Family continues to connect with customers, building strong trust and reliability of the brand and subsequently improving their sales.

Jeonga continues to explore new opportunities using digital tools and platforms. For example, she connects with cocoa farmers in Guatemala over video streaming to provide real-time education content and creates virtual tour programs. Furthermore, she is actively implementing an enterprise resource planning (ERP) system to improve the company's production.



Digitalization has helped me as a business owner and a mother of five children. It has really helped me in many aspects of my venture, from fundraising to crisis management, during the pandemic. I believe that, through digitalization, if I can run the business of my dreams, anyone can do it, too.

Pillar 2: Access to Mentoring, Networking, and Skills

All the WSME participants understood the importance of mentoring, networking, and skill-building, and the COVID-19 pandemic had accelerated the process. Most of the WSME participants (15/20) had sought learning opportunities through non-conventional online courses (both paid and free) and joined virtual events to build a more global network. They used Facebook to connect with prominent figures in the industry and stay on top of trends. They also used KakaoTalk (local app) to engage in discussion forums. LinkedIn was not found to be popular among the participants and was used only for international networking.

Mentoring

All WSME participants preferred to receive one-on-one mentoring from people they could trust—either through inner circles or professional networks. Six ME owners mentioned seeking advice and recommendations through personal connections. Twelve SE owners, on the other hand, accessed mentorship through various routes, such as personal connections, networking events, and government mentorship programs.



I sought mentorship from people I met through networking events, but I also utilized my connections with people that I had worked with before. I need to learn from people I can trust. I need their advice to help me make more informed decisions for my business.

(SK_ME01)

Although all the participants actively sought mentorship, they struggled to find female mentors. The WSME participants believed that female mentors could serve as a role model for more junior WSMEs.



I do feel that women have more business empathy. [It's a pity that] there aren't many female experts that we can learn from in this country.

(SK_SE5)

Networking

Four WSME participants mentioned feeling specifically uncomfortable with South Korean networking culture, because they considered it to be a male-dominated activity. On the other hand, they believed that meaningful business connections should be built through personal connections, and that these are best maintained through face-to-face interactions.



[Networking] is important, and it's important to meet people in person and find opportunities. Online [interactions] are not enough.

(Hawon Kim, Haenyo's Kitchen)

Despite the limitations, digitalization was reported to play an important role in improving their networking experiences. Digital tools offered WSMEs opportunities to reach prominent business figures and fellow entrepreneurs remotely without the pressure of engaging in uncomfortable activities, such as going out for drinks with male colleagues. For example, KakaoTalk provided a platform for WSMEs to network with fellow entrepreneurs in group or private chats. Additionally, two WSMEs mentioned LinkedIn as a tool to connect them with potential partners and communities abroad.

Skill-Building

All WSME participants reported having a good experience with the use of digital technology for skill-building purposes. However, their main sources of knowledge have been limited to free resources, as opposed to paid online courses.

The majority of the WSME participants (18/20) indicated a desire to seek further knowledge to support their business' growth, as illustrated in Figure 3.5. The most popular learning topic mentioned was how to adopt advanced digital technology, followed by human resources (HR) and management—confirming the openness to digitalization highlighted at the beginning of this chapter.



Figure 3.5 Learning topics suggested by WSME participants

Advanced digital adoption skills were considered necessary to help the WSMEs integrate complex tools into their business processes. This was demonstrated by five WSMEs who mentioned that they wanted to adopt more digital tools. This appetite for learning about digital technology in WSMEs indicates an existing awareness that prompted them to improve their skills.



When I read about many different technologies, I need to think about where my company is and what we can achieve. [The technologies] I read about might not be relevant for us. I study [them in theory], but I can't actually put it to practice.

(SK_SE3)

Key Challenges Faced by WSMEs in Mentoring, Networking, and Skill-Building

As depicted in Figure 3.6, the key challenges in accessing mentoring, networking, and skills for WSME participants were the lack of high-quality content and mentors, their experiences as women, and the limited face-to-face interactions posed by learning/networking via digital means.

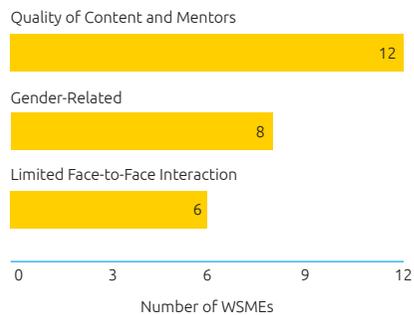


Figure 3.6 Key challenges faced by WSME participants in accessing mentoring, networking, and skills

Limited Availability of High-Quality Content and Mentors

All WSME participants indicated awareness of the government-funded learning and mentoring programs. However, 12 WSMEs expressed concerns about the low quality of these programs, demonstrated by irrelevant content and disengaged mentors who did not meet the WSMEs' expectations. Furthermore, the participants highlighted the outdated curriculum as a concern, emphasizing that the focus on theory rather than practice in these programs (both online and offline) did not reflect the rapidly changing business environment, including the new COVID-19 reality.



I feel that the government-funded learning programs can be very boring. I feel like [they are] wasting my time sometimes.

(SK_SE13)

As compared to the previous year, the South Korean government increased its annual budget for SME support by 26% to KRW 16.8 trillion (approximately USD 14.3 billion) in 2021.³² Nine WSME participants wished for the government to evaluate the current mentoring and learning programs by leveraging public-private partnerships to improve the offerings and better suit WSMEs' needs.



There are many places for me to learn about entrepreneurship these days, such as through YouTube, Google, or webinars. If you search for a topic online, many things come up easily.

(Jenny Lee, Zenny Closet)

Gender-Related Challenges

Eight WSME participants explained that they had experienced discomfort during certain networking events. Commonly in South Korea, networking involves activities such as going out for drinks after work, dinner, golfing, or sauna spas, which often put women in uncomfortable situations. Since business in South Korea is generally considered to be dominated by men,³³ digitalization has helped to reduce this uneasiness.



I was not comfortable drinking with men for networking purposes. I gave up.

(SK_ME03)

Due to these challenges, four WSME participants wished to find more female mentors who could not only provide industry insights but also serve as role models. The participants pointed out that having more female mentors could help WSME ecosystems in South Korea thrive.



I wish to find more women mentors in my field to share insights and expertise.

(SK_ME7)

Limited Face-to-Face Interaction

Despite the important role of digital communication in overcoming gender-related barriers in networking, six WSME participants still believed that face-to-face interactions are essential. Two WSME participants recognized that combining two approaches worked for them. They utilized LinkedIn for online networking and leveraged conventional government institutions, such as Korea Trade-Investment Promotion Agency (KOTRA) and Korea International Trade Agency (KITA), for offline networking.

Pillar 3: Business Processes and Management

All participants had adopted at least one digital tool across various functions within the company structure, as shown in Figure 3.7. There was also a visible preference for local applications among the WSME participants because of their Korean language functionality and localized user experience.

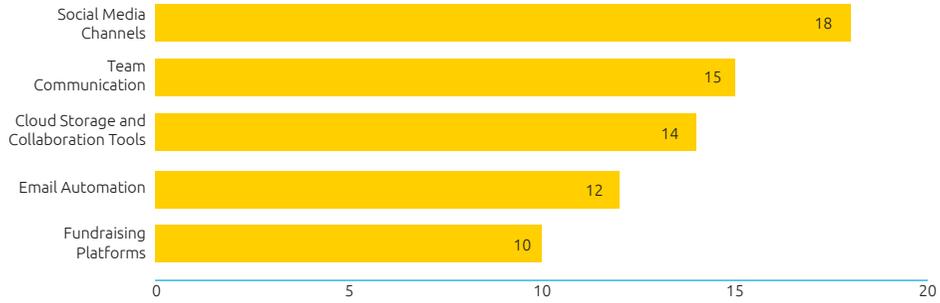


Figure 3.7 Top five areas of digital adoption among WSME participants

Popularity of Local Applications Among WSME Participants

Local platforms and applications are increasingly popular in South Korea, with Naver and Kakao becoming tech giants. Kakao, founded in 2010, has expanded its businesses in the banking, entertainment, games, beauty, mobility, media, content, and e-commerce sectors.³⁴ Naver, founded in 1999, offers additional services, including news aggregation, community forums, the community networking service app BAND, the e-commerce platform SmartStore, as well as global services like the messenger app LINE and video messenger SNOW.³⁴ Kakao and Naver were closely competing as the third largest firms in South Korea as of June 2021, after Samsung Electronics and SK Hynix.³⁵

As shown in Figure 3.8, various local tools were utilized by the 19 WSME participants in conjunction with non-local tools. This strong preference was mainly due to the specific Korean language functionality and user experience (UX) that understand how South Korean users behave when using software applications.



We used to use Slack [for team communication], but we changed to JANDI, because Slack was only available in English, so it’s hard to learn how to use it.

(SK_SE9)

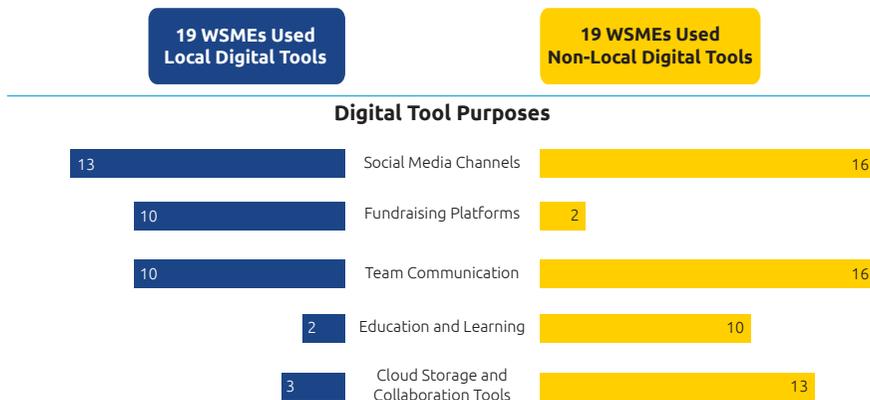


Figure 3.8 Use of local and non-local digital tools among WSME participants

There appears to be a local application for every part of a company’s business process. Naver is the company most widely utilized by the WSME participants (11/20) for team communication and collaboration, cloud storage, marketing, loan applications, open banking, crowdfunding, and payment systems. Other popular choices included Kakao’s and Naver’s products which were also used in various business areas. Applications such as Kmong for HR, Miso for inventory management, and HelpM and ModuSign to help in the cybersecurity department, among other choices, were also adopted by the interviewed participants.



Having digital capabilities has helped us reach customers more efficiently. For example, we implemented a digital payment system such as KakaoPay and NaverPay.
(Claudia Hyun, LivingD)



We’ve been exploring various local e-commerce platforms on top of optimizing our online shop.
(Junghee Kim, Uwell Deco)

Key Challenges Faced by WSMEs in Digital Technology Adoption

As shown in Figure 3.9, the WSME participants reported that their biggest challenge was the willingness of leaders and/or employees to actively support and participate in the digitalization process. The WSME participants indicated that they need support in improving their digital adoption skills and talent management.



Figure 3.9 Key challenges faced by WSME participants in digital adoption for business processes and management



I’m not good at digital technology. We have many analog-based projects and most of the work is based on manual labor. We don’t fully take advantage of technology. We only use Microsoft Excel for accounting/tax issues, Facebook Messenger app for communications, and Google Drive.
(SK_ME7)

Low Adoption by Leaders and/or Employees

Sixteen WSME participants pointed out that their team showed reluctance in adopting new tools, as technology adoption would cause changes in a company's business processes. Ten participants mentioned that some of the employees viewed technology as a burden, while six others mentioned that leaders viewed technology as a disruption to workflow. Two participants mentioned that age could also pose a challenge, as older employees tend to resist adopting new tools and processes. This highlights the need to implement change management to be part of the digital transformation process. Change management should include redirecting and redefining human resources, business processes, and budget allocations.



Until last year, it was difficult for the older staff to adapt to new digital tools. But, they have left the company and now we're working with people in their 30s who don't have the same problem.

(SK_SE6)



Internally, it took over a year to make my team adopt the technology. They were hesitant because they thought it would have given them more work to do. Initially, I encouraged two key people to start doing it, but it was tough for me to explain how to use it and why we have to use it. It takes time for people to understand digital technology. Employee adoption is challenging.

(SK_ME02)

Lack of Digital Adoption Skills

Twelve WSME participants suggested that choosing the right applications to address the business needs can be challenging. Therefore, digital literacy and skills become essential enablers of digital transformation. Four WSMEs specifically said their educational background did not help them understand technology-related work. They struggled to hire the right talent that understand technology, and they found it challenging to implement new technologies themselves. Local apps helped them to overcome this challenge by incorporating the South Korean context into user experience.



I wish I knew how to integrate all these exciting technologies. We need developers and internal people who can communicate with developers.

(SK_ME02)

Lack of Human Resources

Nine WSME participants experienced difficulties in adopting technology because they lacked existing talent and technical knowledge. They struggled to hire people with technical skills, and, at the same time, the team was not ready to adopt the tools themselves. To improve readiness, the team needed digital adoption training. However, training is time- and resource-intensive.



We know how important it is to integrate advanced technologies with our fashion business nowadays. We have been thinking about developing AI-based offerings for our customers, but it's not an easy task. We need a reliable team of developers who can do that for us.

(SK_SE02)

WSME Spotlight II: Hyo Sook Yang



Hyo Sook Yang (right) with her husband (4D Land Inc.)

Hyo Sook Yang is the chief executive officer of 4D Land Inc., a medium-sized enterprise that develops educational tools and programs. 4D Land Inc. offers services specializing in creative education and possesses some 60 patents and utility models. 4D Land Inc. aims to nurture future talents equipped with creative, scientific, and technological minds. The company provides diverse creative education programs based on science, technology, engineering, arts, and mathematics (STEAM) for all age groups. Since its foundation in 2003, the company has grown into a global supplier of teaching materials with 38 branches worldwide.

Hyo Sook started her career as a kindergarten teacher before she formed the company, which was initially a project that was created by her husband—designer of the 4D frame modules. Hyo Sook explained that they started it with simple tools to provide educational materials that integrate various fields, such as traditional schooling areas, science, technology, engineering, and arts. In order to make their product more practical and useful, they decided to complement their product with a coding education program. This integration helped 4D Land Inc. to leap forward with their success, with thousands of students participating in the events and competitions.

After the outbreak of the COVID-19 pandemic, the company faced its biggest challenge yet: reaching their customers who were mostly conventional educational institutions. They were no longer able to host international events or sell their products to schools. Fortunately, Hyo Sook was able to reach out to her support networks, such as Korea Venture Business Women's Association (KOVWA), from which she received advice on digitalizing her content and business processes.



We built a coding program, incorporating technology into our product to enhance the experience of our customers when they are developing toys. By allowing customers to code, they can realize their imagination and create a moving toy using various kinds of materials. This process allows us to create customized education for each one of our students. Ever since we started this coding program, our revenue has increased. We are confident that we can build a better product by adopting advanced technologies.

Pillar 4: Crisis Management (COVID-19)

Since 2020, on top of support in the form of employee tax waivers and other emergency aids, the government of South Korea has also been delivering a stimulus package. The support, amounting to KRW 215.75 trillion (approximately USD 183.6 billion), was designed to minimize the negative impact of COVID-19 and support SMEs' digital transformation journey.³⁶ Fourteen WSME participants in this study indicated that they had benefited from the government support, and it helped them to survive the pandemic.

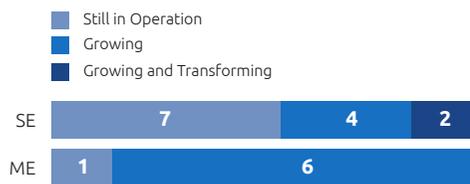


Figure 3.10 The state of the participating WSMEs' businesses during the COVID-19 pandemic

As shown in Figure 3.10, 12 WSME participants were growing and transforming. Two SEs even indicated that their businesses continued to thrive and transform after the COVID-19 crisis. The authors observed that these two entrepreneurs leveraged their position as small businesses (leaner than medium-sized enterprises) to be more agile during the pandemic. Due to their business agility, a crucial ingredient to staying competitive in today's volatile and disruptive environment, and due to their optimal digital adoption, these two SEs responded faster to fast-changing market conditions and grew their revenue more quickly than the other participants.

Digitalization Enabled WSMEs' Recovery Amid Global Uncertainty

Fifteen WSMEs had already started the digitalization journey and were at various degrees of maturity before the COVID-19 crisis, and this was even further enhanced during the pandemic (see Figure 3.11). WSMEs had to embrace the new reality and started adopting digital solutions to pivot their businesses. As consumers shifted from visiting physical stores to online stores in South Korea, the WSME owners also felt encouraged to adapt and boost their online presence.

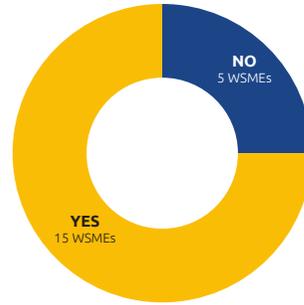


Figure 3.11 Number of WSMEs that experienced digitalization enhancement due to COVID-19



Overall, we became more adaptable during COVID-19, and we quickly embraced digitalization because we knew that it could help us survive and thrive. Gradually, we increased our social media presence, utilized Facebook ads, and joined Naver Smart Store, as well as other e-commerce platforms.

(Jenny Lee, Zenny Closet)

Nevertheless, eight participants (four SEs and four MEs) admitted that surviving did not come without challenges and they had suffered drastic negative impacts at the beginning of the pandemic. While their operational expenses remained the same, their revenue decreased. As they adapted to the situation, they regained their pre-pandemic revenue.



Our business is highly dependent on export (~98% of sales). So, when COVID-19 hit, it was difficult to maintain our revenue, because, to secure sales, we usually needed to physically visit our markets.

(SK_SE06)



[COVID-19] has definitely impacted the export industry. I was struggling to go back and forth between factory inspections [and in between the ever-changing COVID-19 restrictions]. We needed to develop a new product, but it was almost impossible to do it because, naturally, for our business, people would want to come and visit to check the products.

(SK_ME05)

Digital Maturity Index for WSMEs

The Digital Maturity Index for WSMEs was adopted from the Digital Maturity Index proposed by Cisco (2020) with some modifications to better suit the research framework in this study.³⁷ As depicted in Figure 3.12, the rubrics were made up of three dimensions: namely, digital strategy and implementation in 1) financing; 2) mentoring, networking, and skill-building; and 3) business processes and management. Each dimension assessed an essential aspect of WSMEs' growth. The index categorizes the participating WSMEs into four levels of maturity: Indifferent, Basic Adopter, Intermediate Adopter, and Advanced Adopter (see Appendix E for a more detailed explanation of the calculation).

Digital Maturity Index	Indifferent	Basic Adopter	Intermediate Adopter	Advanced Adopter
Pillar 1: Financing	Company did not use any digital financing sources	Company started to use digital financing sources	Company used multiple digital financing sources	Company used digital financing to leverage competitiveness
	Rate: 0%	0 < Rate ≤ 33%	33% < Rate ≤ 66%	66% < Rate ≤ 100%
Pillar 2: Mentoring, Networking, and Skills	Company did not use any digital mentoring, networking, or upskilling platforms	Company started to use digital mentoring, networking, or upskilling platforms	Company used multiple methods of digital mentoring, networking, or upskilling platforms	Company adeptly used a digital mentoring, networking, or upskilling platform to increase competitiveness
	Rate: 0%	0 < Rate ≤ 33%	33% < Rate ≤ 66%	66% < Rate ≤ 100%
Pillar 3: Business Processes and Management	Company only used digital communication tools and/or social media	Company started to use basic digital solutions in its business processes and management	Company used multiple basic or intermediate digital solutions in its business processes and management	Company used multiple basic, intermediate, or advanced digital solutions in its business processes and management
	Rate: 0%	0 < Rate ≤ 33%	33% < Rate ≤ 66%	66% < Rate ≤ 100%
Final Score	20 x Pillar 1 Rate + 20 x Pillar 2 Rate + 60 x Pillar 3 Rate			
	0–15 points	16–30 points	31–45 points	> 46 points

Figure 3.12 Digital Maturity Index rubric

The index is illustrated in Figure 3.13 below, where each participating WSME is represented by a colored bubble, with large bubbles indicating MEs and small bubbles representing SEs. The results showed that the majority of participating WSMEs (18/20) made more progress in their digitalization journeys, while two WSMEs remained uninterested in the digital transformation journey. The most digitally mature participants were an SE in the textile and apparel industry and an ME in the health industry, followed by five SEs and three MEs in the Intermediate Adopter stage. All companies in the Intermediate and Advanced Adopter stages focused on digitalizing their business to improve their general operations and service delivery, deliver better customer experiences, and expand their market.

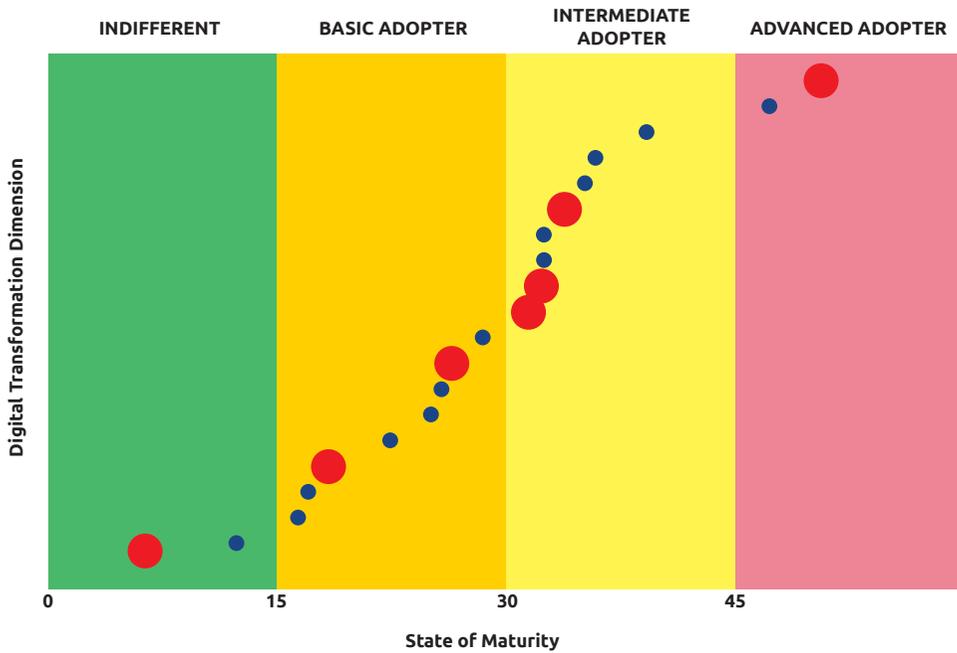


Figure 3.13 Digital Maturity Index result for the participating WSMEs (large bubble = ME, small bubble = SE)

Furthermore, six SEs and two MEs categorized under the Basic Adopter stage faced more challenges in their digital transformation journey than those in the Intermediate and Advanced Adopter stages. The lack of digital skills and talents were the top challenges, followed by cultural resistance to change, as discussed in the previous sections. Whereas for one ME and one SE in the Indifferent stage, their mindset and outlook on digital transformation hindered their digital transformation. WSMEs need support in understanding why digitalization is no longer an option, but rather a necessity. They need reliable sources to learn about what it is, and how to start adopting it.

4 The Future of Digital Transformation for WSMEs

Expert Interview Findings

A series of interviews with four experts in investment, women-in-business association, startup community accelerator, and digital transformation were conducted (see Appendix C for list of experts). While WSME interviews helped us to understand the current situation, pain points, and hopes of the participating female entrepreneurs, the expert interviews were carried out to gain more insight into the WSME ecosystem in South Korea.

Pillar 1: Access to Financing

Digitalization Improved Access to Financing for WSMEs

The experts suggested that digitalization streamlines the funding application process—making it more efficient, especially for small businesses. As found in the WSME interviews, gender-related issues were only present in accessing government-backed grants, as business owners needed to meet directly with the evaluators. Thus, the reduced need for face-to-face encounters helped to ensure objectivity in the funding application and evaluation process. This was consistent with the findings from WSME participants, where the online application approach has enabled their businesses to be evaluated more objectively by the financial service providers.



Digitalization ensures fairness in the financing application process because an application can be judged more objectively. Nobody knows who's behind the application. As long as the company shows traction and customers love the product, [gender] shouldn't become a challenge anymore.

(Eunielle Yi, The Ventures)

WSMEs Required More Ecosystem Support

The experts highlighted that WSMEs needed more support from the public sector and the ecosystem, such as accelerators and investment organizations. They also needed help with accessing the stock market (i.e., becoming a listed company), gaining more financial independence, and focusing on growing their businesses. One expert specifically highlighted the need to prioritize funding distribution to SEs to give more foundation support to start their businesses.



More funding should be distributed to early stage companies with structured guidelines [to help them start their business].

(Mikyung Park, FORCS)

Pillar 2: Access to Mentoring, Network, and Skills

Safe and Inclusive Environment for WSMEs to Network and Learn

One of the interviewed experts suggested that female entrepreneurs' low rate of participation in attending networking events before COVID-19 could be due to discomfort. In South Korea, networking involves activities such as golfing, drinking alcohol, or sauna spas, which often put women in uncomfortable situations. However, not participating in informal social gatherings and networking events could hinder WSMEs from gaining and nurturing important connections. The experts expressed the opportunity presented by COVID-19 to reduce these gender-related issues, as it increases the number of diverse online events and gatherings. The experts believed that they would see more and more women in online learning and networking events in the future.

Systemic Support and Community Events for Skill-Building

One of the interviewed experts suggested that support for skills development needed to be conducted systematically. Necessary programs for WSMEs should include: 1) gender lens leadership training and coaching; 2) digital adoption skill programs; or 3) specialized coding schools that teach programming. These solutions exist, but they work in silos, and since key ecosystem stakeholders are not coordinating their efforts, the impact may not be as significant. Another expert suggested community-based events to develop the capacity in entrepreneurship and push for digital transformation. Startup contests aimed at women or other women-centered events can be presented as catalysts to drive more women into the SME and startup ecosystem and to provide more support from the community.



We need to improve the quality of programs offered by women-in-business associations to [help WSMEs] keep up with the latest trends and era. More importantly, the programs should match WSMEs' needs.

(Ji Young Kim, Startup Women in Korea)

Pillar 3: Business Processes and Management

Digitalization is a Necessity

The interviewed experts highlighted that digitalization was once considered a way for companies to gain a competitive advantage, but after the COVID-19 pandemic, it has become a matter of survival and an integral part of operating and managing a business. Moreover, experts mentioned that the government had offered digitalization and remote work grants, giving access to tools that otherwise would not be accessible to WSMEs. All participating experts agreed that the government needs to create a more long-term vision and a clear supporting guideline, especially for early-stage WSMEs, to reduce problems in the adoption process.



South Korean WSMEs must leverage digitalization to catch up with the world.

(Mikyung Park, FORCS)

The Popularity of Local Digital Tools

During the interviews, each expert mentioned at least one local digital tool to describe the digitalization process for SMEs in South Korea. Aligned with the WSME interview findings, this result confirms the popularity of local software applications and platforms. For instance, Naver and Kakao were adopted by entrepreneurs in the fisheries and farming industries to reach consumers during the COVID-19 crisis. This high rate of penetration and adoption of these apps is partly due to the customized user experience for South Korean users. These local products offer more opportunities for conventional businesses in South Korea to embrace digitalization, preventing foreign languages from becoming a barrier.

Pillar 4: Crisis Management (COVID-19)

Digitalization for Business Resiliency

Despite negatively impacting nearly all aspects of society, experts agreed that the COVID-19 pandemic had also offered new opportunities to businesses. Aligned with the WSME interview findings, one expert mentioned that most had already begun their digitalization journey before the pandemic. The COVID-19 crisis accelerated the adoption—forcing a shift towards virtual collaboration and communication. The expert shared that not only were the WSMEs implementing digital tools faster as a means of survival, but companies also adopted tools that they had not previously used before that have proven critical in building business resilience.



COVID-19 has provided many new opportunities to existing and new businesses through digitalization.

(Janice Han, the Korea Institute of Startup & Entrepreneurship Development)

South Korea Ecosystem Map

The stakeholders within the South Korea WSME ecosystem can be categorized into four groups: (1) government entities; (2) capital providers; (3) network/skill-building associations and platforms; and (4) NPO/NGOs and research/development organizations. Government entities include various ministries such as the Ministry of Gender Equality and Family, the Ministry of Science and ICT, and the Ministry of Startups. There are also entities that specifically focus on women entrepreneurs, such as the Korean Women Entrepreneurs Association, Korean Women’s Development Institute, and Seoul Women Up. There are several types of capital providers in South Korea, including venture funds such as Sopoong, TheVentures, Yellowdog, and Kakao Ventures. Digital platforms are also on the rise, with companies such as Wadiz, Tumbbug, and Kakao Makers offering reward-based crowdfunding as alternative financing. Other ventures also provide development and acceleration programs beside funding, with examples that include Krypton, Sparklabs, and Shinhan Financial Group. For the purposes of network/skill-building, WSMEs can participate in organizations such as Chamber of Commerce, Korea Startup Forum, Korea Venture Business Women’s Association, Startup Women in Korea, and WE-network. Various local and NGOs/NPOs and R&D organizations that support WSMEs can also be found in South Korea: Asia Foundation, UNDP Korea Office, Seoul NPO Support Center, The Asan Nanum Foundation, and Shinhan Financial Group Hope Foundation. Finally, the Women’s News was identified as a South Korean media that focuses on women entrepreneurs and WSMEs, a platform that could showcase role models and success stories to inspire women entrepreneurs.



Figure 4.1 South Korea ecosystem map

*Please refer to the Acronyms and Abbreviations section.

Advisory Panel

The advisory panelists included representatives from WSME associations, a social-impact accelerator, and digital transformation experts (see Appendix C for the list of panelists). The findings from WSME and expert interviews were presented to and discussed by the panelists as a series of problem statements grouped under the four pillars. The panelists used their experiences and knowledge as a basis to propose both practical and policy recommendations.



Figure 4.2 Advisory panel methodology with South Korean panelists

Pillar 1: Access to Financing

WSMEs Received Short-Term Financial Support, but Lacked Long-Term Support

The panel agreed that the growth of female entrepreneurs needed to be continuously supported. However, this task is not easy, as it requires long-term investment and planning, and it is limited by time and resources. The panel acknowledged the limitations in government-backed SME support schemes, arguing that it is nearly impossible to set up detailed, continuous plans beyond the 5-year mark due to the rapid pace of innovation. Therefore, the dependence of WSMEs on government support was argued to be not sustainable, as the government has a shorter (5-year term) focus. As the government's main agenda is employment/job creation, private service providers, business associations, and other organizations providing SMEs with support should take more initiative to assist WSMEs in growing their businesses.

Pillar 2: Access to Mentoring, Networking, and Skills

WSMEs Faced Gender-Related Challenges in Accessing Mentorship and Learning Programs

The panel confirmed the gender-related challenges faced by WSMEs in mentoring and networking. At the same time, it was acknowledged that it is hard to find female mentors in specific industries who are willing or have the capacity to guide their juniors. The panel assumed that a generational gap causes differences in perception and understanding of the industry, challenging the building of meaningful and successful mentor-mentee relationships. The panel concurred that government and key ecosystem stakeholders

should work together to connect WSMEs with local and global mentors. Moreover, while government programs are considered outdated and old-fashioned, online private education platforms have a very high potential to offer more flexible and competitive learning content tailored to entrepreneurs' needs.

Pillar 3: Business Processes and Management

Mismatch Between WSMEs' Needs and Available Government Support

The panel suggested that the government should consider WSMEs' digital maturity level when designing support programs. The panel indicated that there was a mismatch between WSMEs' needs and available government support programs. For example, MEs can only redeem grants for manufacturing and product development activities when, in fact, they might still need basic digital tools, such as software for administration. The study confirmed that in the Digital Maturity Index, the majority of the ME participants (6/7) were at the Indifferent or Basic Adopter stage.

WSMEs Faced Issues with Talent and Team Adoption in Integrating Digital Technology into Their Business Processes

The panel highlighted that, in South Korea, employees seek stability and job security, so promising young professionals want to go to big firms and not to smaller ones. At the same time, WSMEs faced internal team conflicts when trying to implement new technology. The panel also commented that the government-supported programs offer only short-lived (circa 6 months) security, after which the SME job becomes very volatile.

The panel agreed that this issue can be solved by a good implementation of change management. First, the executive-level management in the WSME should understand that digitalization is now essential for operational efficiency. Second, the decision to adopt certain digital tools must not be forced upon the team but decided together. Lastly, adoption can only happen through a continuous feedback and communication loop with all stakeholders.

Pillar 4: Crisis Management (COVID-19)

WSMEs Need Practical Digitalization Assistance to Become More Resilient

The panel agreed that the government has a critical role in helping WSMEs survive and thrive during the pandemic by providing digitalization grants. The fund can not only compensate for the declining revenues caused by the COVID-19 crisis, but also be used by WSMEs to accelerate their digital adoption and build resilience. However, the panel agreed that more conventional WSMEs were slower in adopting digital tools due to limited access to information and talent. Therefore, and considering that implementing digital change in business processes can be complicated and expensive, WSMEs need practical assistance throughout their digitalization journey.



We have a wide range of policies and programs for SMEs in South Korea, but they are not well-designed to suit the needs of the businesses. We need to leverage data, so we can redesign these policies and programs and make them more meaningful for WSMEs.

(Won Hee Kim, Merry Year Social Company)

Policy and Practical Recommendations

Based on the synthesis of the findings from the WSME and expert interviews, we formulated several recommendations for the South Korean government and other key ecosystem stakeholders. Direct input from the panelists was combined with insights from WSMEs, expert interviews, and a literature review. All recommendations to address the issues faced by WSMEs in South Korea were structured according to the four pillars.

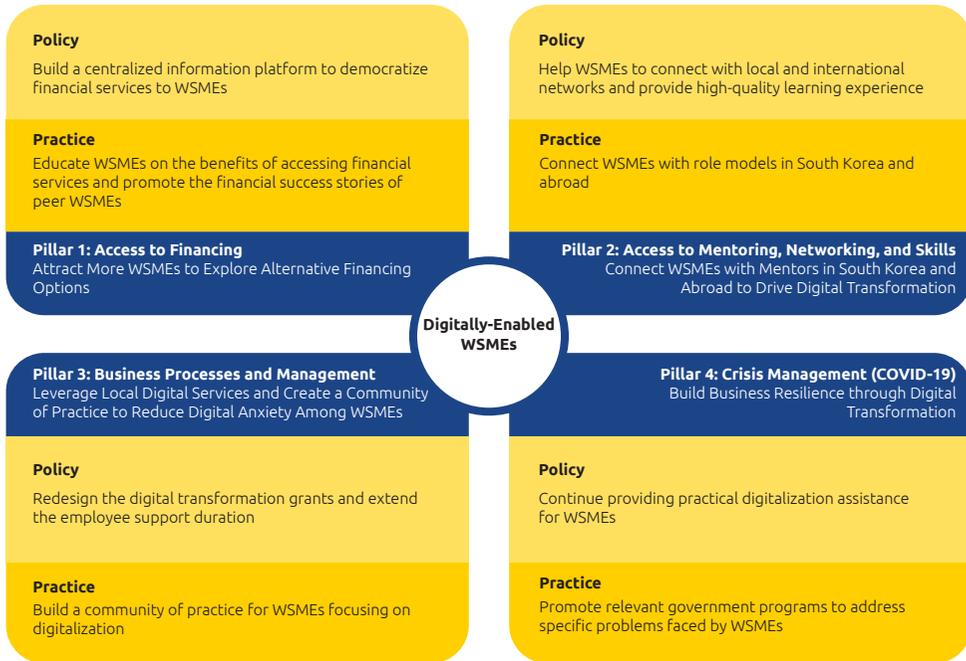


Figure 4.3 Recommendation summary

Attract More WSMEs to Explore Alternative Financing Options

Policy

The government should partner with private banks, financial institutions, and digital financial solutions providers to build a centralized platform to provide SMEs with more information and better access to available financing options. By giving the WSMEs opportunities to learn more about the different benefits and risks of these financing options, WSMEs can make more informed decisions about their financial plans.

The Financial Services Commission (FSC) of South Korea should enforce the Online Investment-linked Finance Act to protect funders and beneficiaries. The government also needs to be more firm in monitoring and evaluating financing services to encourage more WSMEs to explore available options.

Practical

Private banks, financial institutions, and digital financial solutions providers should collaborate with business associations, such as Korea Venture Business Women's Association (KOVWA) or Women Enterprise Supporting Center (WESC), to educate WSMEs on the benefits of accessing financial services for fundraising and business growth. For example, crowdfunding platforms can be used to fundraise and forecast market demand, which, in turn, would help WSMEs create products that fit the market. They should also promote the success stories of WSME that have obtained monetary gains and other benefits, such as identifying target markets and increasing product traction.

Connect WSMEs with Mentors in South Korea and Abroad to Drive Digital Transformation

Policy

The government should create more meaningful and targeted global networking events to connect WSMEs with local and global mentors. This goal can be achieved through government to government (G2G) partnerships via non-governmental organizations (NGOs). These efforts should be supplemented by providing grants for real-time digital interpretation to overcome language barriers with international networks. Additionally, the government should partner with local education platforms, such as FastCampus and Kmong, to provide targeted high-quality learning content and experience.

Practical

Business associations and networks such as Startup Women in Korea (SWIK) and We-Net should support the government in connecting WSMEs with role models in South Korea and abroad. More importantly, all key ecosystem stakeholders should jointly work towards promoting success stories of digitally-enabled WSMEs to fulfill the need for female representation in the business ecosystem.

Leverage Local Digital Services and Create a Community of Practice to Reduce Digital Anxiety Among WSMEs

Policy

The government should closely work with digital service providers to redesign the digital transformation voucher system so it aligns more with the needs and digital maturity levels of WSMEs. The corresponding policy should also cover the implementation process of digital tools and services by extending the support duration (beyond the 6-month standard), helping WSMEs to retain skillful young employees.

Practical

Business associations and networks should be encouraged to build a community of practice for WSMEs that focuses on digitalization and encourages WSMEs to learn from each other and solve issues surrounding digital technology implementation. Business associations and

networks should also create digital bootcamps and competitions (e.g., business competitions, hackathons) to train WSMEs and their teams in software implementation, thus supporting digital transformation. Additionally, WSMEs should be encouraged to leverage women-in-STEM communities, such as Women in Tech or Girls in Tech, to assist them in adopting digital technologies.

Build Business Resilience Through Digital Transformation

Policy

The government should continue implementing, monitoring, and evaluating practical digitalization assistance for WSMEs to manage the impact of COVID-19 through institutions such as the Small and Medium Business Distribution Centers (SBDC). For example, SBDC created a marketplace for SMEs to sell their products online.

Practical

Business associations, communities, and networks should promote relevant government programs that address the particular problems faced by WSMEs. They should provide digital assistance that can help WSMEs to efficiently identify the appropriate solutions to their problems, especially in times of crisis, to make their business more resilient.

5 Conclusions

This study concludes that digitalization does offer new opportunities for South Korean WSMEs to overcome gender-related challenges at varying degrees, depending on the maturity of their business. South Korea's exemplary economic development can be attributed to its focus on technology development and digitalization, positioning the country as one of the leading tech leaders in Asia. Similar to other countries, the COVID-19 crisis was also a critical driver behind WSMEs' accelerated digitalization in South Korea. Government support and digitalization were also key to the survival of WSMEs.

Pillar 1: Access to Financing

This study found that participating WSMEs were open to and adopted various financing sources. The WSMEs preferred extensive government support as there is an abundance of programs for the WSMEs to choose from. Crowdfunding rose in popularity due to the flexibility of its schemes (i.e., reward-, donation-, equity-, and debt-based) and the non-financial advantages that the businesses could obtain (e.g., marketing, campaign, promotional support, product research). Findings suggested that digitalization has improved access to financing for WSMEs and democratized its access. There is a need for more collaboration between the government and other ecosystem stakeholders to promote available financing solutions to WSMEs, while ensuring their safety through policy and regulations.

Pillar 2: Access to Mentoring, Networking, and Skills

All WSME participants acknowledged the importance of mentoring, networking, and skill-building. COVID-19 has forced the shift from offline to online activities, accelerating digitalization in the learning and networking of WSMEs through online courses and virtual events. To enhance the quality of content available through online access, there are opportunities for the government to partner with local education platforms focused on business.

Moreover, digitalization addressed the discomfort of South Korean women who had to participate in informal business networking

that mostly revolved around male-dominated activities, providing a more convenient way of finding business connections. The findings highlighted the need to leverage business associations and networks such as SWIK and SIWA to improve networking and mentoring quality inside women's networks.

Pillar 3: Business Processes and Management

The availability of local digital applications and platforms helped reduce barriers to digitalization for WSMEs in South Korea. In South Korea, digitalization has covered every component of the business process and management, indicated by the presence of a local application for every part of a company's business processes. As digitalization skills do not come naturally to everybody, localized content offered in the native language can ease the digital adoption process. To improve further adoption, the government should partner with local digital service providers to redesign the digital transformation system to align more with the needs and digital maturity level of WSMEs. In addition, policies should also cover the implementation process of digital tools and services.

Pillar 4: Crisis Management (COVID-19)

COVID-19 accelerated digitalization, which transformed WSMEs in South Korea. This was enabled by the extensive support provided by the government. The government did not only provide employee tax waivers and emergency aids, but also stimulus packages. Despite the negative impacts of the pandemic on businesses, the surviving WSME participants learned to become more agile and resilient by adopting digital technologies in financing, accessing mentoring, networking and skill-building, and business processes and management. However, it was found that more conventional WSMEs were slower in adopting digital tools due to limited access to information and talent, highlighting a need for digitalization assistance.

The Digital Maturity Index is a tool that can help stakeholders in diagnosing WSMEs and providing them with the appropriate support and a digitalization roadmap. The findings indicated that SEs in this study were more eager to leverage digitalization for their growth compared to their ME counterparts. To help WSMEs thrive, there is an opportunity for the government to partner with other institutions in the business ecosystem to assist their digitalization process, such as with KOVWA.

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Appendices

Appendix A: Criteria for Selecting SEs and MEs

Main Businesses		Medium-Sized Enterprise (Average Sales)	Small-Sized Enterprise (Average Sales)
Manufacturing (six business types)	Manufacturing of clothing, clothing accessories, and fur products	USD 135M or less	USD 10.8M or less
	Manufacturing of leather, bags, and shoes		
	Manufacturing of pulp, paper, and paper products		USD 10.8M or less
	Primary metal manufacturing		
	Electrical equipment manufacturing		USD 7.2M or less
	Furniture manufacturing		
Agriculture, forestry, and fisheries			USD 7.2M or less
Mining			
Manufacturing (12 business types)	Food manufacturing	USD 90M or less	USD 10.8M or less
	Tobacco manufacturing		
	Textile product manufacturing (excluding clothing manufacturing)		USD 7.2M or less
	Timber and wood product manufacturing (excluding furniture manufacturing)		
	Manufacturing of coke, briquettes, and refined petroleum products		
	Chemicals and chemical product manufacturing (excluding medicine manufacturing)		USD 10.8M or less
	Rubber and plastic product manufacturing		USD 7.2M or less

Criteria for Selecting SEs and MEs in South Korea

Main Businesses		Medium-Sized Enterprise (Average Sales)	Small-Sized Enterprise (Average Sales)
	Metalwork product manufacturing (excluding machine and furniture manufacturing)		USD 10.8M or less
	Manufacturing of electronic parts, computers, video, audio, and communications equipment		
	Manufacturing of other machines and equipment		
	Automobile and trailer manufacturing		
	Manufacturing of other transportation equipment		
Supply of electricity, gas, steam, and air conditioning	USD 10.8M or less		
Waterworks	USD 7.2M or less		
Construction	USD 4.5M or less		
Wholesale and retail businesses	USD 10.8M or less		
Manufacturing (six business types)	Beverage manufacturing		USD 7.2M or less
	Printing and recording media duplication	USD 10.8M or less	
	Manufacturing of medical materials and pharmaceuticals	USD 7.2M or less	
	Manufacturing of nonmetallic mineral products		
	Manufacturing of medical, precision, optics and clocks		
	Manufacturing of other products		
Water, sewage, and waste disposal, raw material recycling (excluding waterworks)	USD 2.7M or less		
Transportation and warehousing	USD 7.2M or less		
Information and communications	USD 4.5M or less		

Criteria for Selecting SEs and MEs in South Korea

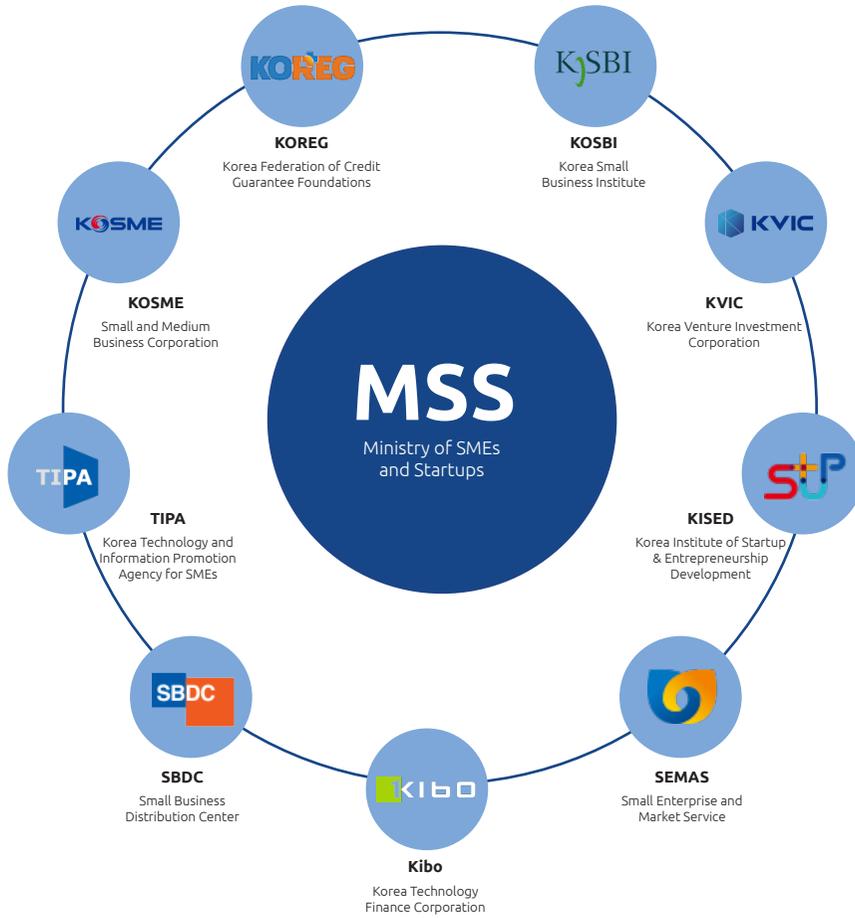
Main Businesses	Medium-Sized Enterprise (Average Sales)	Small-Sized Enterprise (Average Sales)
Repair of industrial machinery and equipment	USD 54M or less	USD 0.9M or less
Professional, scientific, and technical services		USD 2.7M or less
Business facility management, business support, and rental services (excluding rental businesses)		USD 2.7M or less
Health and social welfare services		USD 0.9M or less
Arts, sports and leisure services		USD 2.7M or less
Repair and other personal services		USD 0.9M or less
Accommodations and restaurants	USD 36M or less	USD 0.9M or less
Finance and insurance		USD 7.2M or less
Real estate businesses		USD 2.7M or less
Leasing businesses		USD 2.7M or less
Education services		USD 0.9M or less
<p>Note: The below businesses follow the same standard as before the amendment, according to the Korean Standard Industrial Classification (revised in July 2017)</p>		
Manufacturing of new seats for automobiles	Average sales less than USD 135M	Average sales less than USD 10.8M
Manufacturing of rail vehicle seats among manufacturers of rail vehicle parts and related devices		
Manufacturing of aircraft seats among aircraft part manufacturers		

Source: Ministry of SMEs and Startups <https://www.mss.go.kr/site/eng/02/2020100000002019110604.jsp>

Appendix B: Relevant Government Laws and Regulations

Table B.1 Relevant South Korean Government's Laws and Regulations

Title	Outline
Act on Support for Female-owned Businesses	Seek actual gender equality in the economic realm by actively supporting the activities of female-owned businesses and women's establishment of businesses and contribute to the development of the national economy by facilitating women's economic activities and elevating the status of businesswomen.
Article 2 of the Framework Act on Small and Medium-sized Enterprises Article 3 of the Enforcement Decree of the Framework Act on Small and Medium-Sized Enterprises	Size classification by business type: The 3-year average sales of a company's main business should meet the criteria.
MSS's SMILE Program	The Ministry of SMEs & Startups (MSS) established a "Women's Business Brand" under its SMILE program brand, which stands for "Supporting Women into Leading Entrepreneurs". The MSS built 11 national support centers and assigned one center per region to provide free consulting services for women entrepreneurs, encouraging them to take advantage of the right information at the right time.
Korean New Deal (2020)	<ul style="list-style-type: none"> • The Digital New Deal lays down the foundations for a digital economy that will spur economic growth and innovation. • The Green New Deal aims to transition South Korea to a net-zero emissions economy.
Korea Credit Guarantee Fund Act	Korea Credit Guarantee Fund's objective is to lead the balanced development of the national economy by extending credit guarantees for the liabilities of promising SMEs that lack tangible collateral.
Article 30 of the Enforcement Decree of the Act on Contracts to which the State is a Party and Article 30 of the Enforcement Decree of the Act on Contracts to which a Local Government is a Contracting Party	Based on the Women's Business Certification, public institutions prioritize WSMES when signing a purchase contract with the Women's Business Products Public Purchase System. WSMES can account for up to KRW 50 million in private contracts with the public institutions, which is a big benefit compared to the general criteria of up to KRW 20 million.



Ministry of SME & Startups Affiliated Organizations

Appendix C: Advisory Panelists & Experts' Profiles

	<p>Jiyun Jung (Advisory Panelist) Vice-President, Merry Year Social Company (MYSC)</p> <p>Merry Year Social Company (MYSC) offers social innovation consulting, social venture acceleration and impact investment. MYSC conducts project planning and consulting for solving social issues via business and fosters companies in this methodology. The aim is to create benefits for society, by connecting corporations and public institutions with SMEs' implementations and ideas.</p>
	<p>Won Hee Kim (Advisory Panelist) Chairman, Internal Gender Commission and Senior Researcher, Merry Year Social Company (MYSC)</p> <p>As the Senior Researcher and Chairman of the Internal Gender Commission at MYSC, Won Hee designs structures to capture social issues that are in a blind spot (gender, local) and creates solutions with stakeholders—spreading the methodology of finding sustainable solutions to social problems via manuals, brochures, and workshops.</p>
	<p>Hyunsung Kim (Advisory Panelist) Director of Small Business Digital Division, Small & Medium Business Distribution Center</p> <p>Previously Director of Digital Transformation for the city of Seoul and member of the Presidential Committee for Social Innovation and Social Economy. The Small and Medium Business Distribution Center is a public institution established in 1995 to support small and medium-sized enterprises' market. As director of the Small Business Digital Division, he operates a department store dedicated to small and medium-sized companies.</p>
	<p>Sungyong Kwon (Advisory Panelist) Secretary General of Korea Venture Business Women's Association</p> <p>Previously head of the Policy Planning Office at Korea Venture Business Women's Association. The Korea Venture Business Women's Association's purpose is to foster a better business environment for female entrepreneurs in Korea.</p>
	<p>Hyekyung Ko (Advisory Panelist) FASTFIVE Office Solution Lead</p> <p>Currently working at FASTFIVE, a leading serviced office/co-working space in Korea, as Head of Product.</p> <p>Previously freelanced as an independent consultant regarding management, operations, and research. Worked at Foodfly (www.foodfly.co.kr), an online food ordering and delivery service startup located in Seoul, Korea. Developed new business and was mainly in charge of overall business operations, including mobile and web service design.</p> <p>Previously worked at Samsung's headquarters, developing sales for mobile services. Presented and introduced new services from headquarters to local subsidiaries. Also involved in localizing mobile services for Latin America.</p>
	<p>Jongho Lee (Advisory Panelist) Azure Specialist, APAC Diversity and Inclusion Champion at Microsoft Korea</p> <p>Jongho is a Cloud Specialist at Microsoft. He is a member of Microsoft's Diversity and Inclusion (D&I) Asia Pacific Council, which helps women, children, and those with disabilities. He believes that IT technology can empower every person on the planet to achieve a greater social impact. As a network engineer, after strategic and planning careers in telecommunications, he is now focused on digital transformation and the social impact of IT on businesses.</p>



Eunielle Yi (Advisory Panelist and Expert)

Co-founder and CBDO of CAN Lab and Partner at TheVentures

Eunielle is an investor and entrepreneur with over 12 years of experience in the digital ecosystem. She is the co-founder of CAN Lab, which helps community-based service SMEs with digital strategy and execution. Prior to TheVentures and CAN Lab, she oversaw business strategy and digital transformation for various sectors, such as mobile gaming, consumer brands, and blockchain technology, after her first professional experience in Paprika Lab, a Korean gaming startup acquired by GREE, a global mobile gaming giant, in 2012. Eunielle's business interests are collective services, open innovation, and social impact.



Jiyong Kim (Expert)

Community Leader of Startup Women in Korea's Community Accelerator and Head of Korea's Facebook Community Leadership Program

Jiyong has been heading Startup Women in Korea (SWIK) since 2017. Now a 5,000+ member community, SWIK aims to empower women in startups in order to foster a healthy entrepreneurial ecosystem.



Mikyung Park (Expert)

Founder & CEO of FORCS

Established in 1995, FORCS is recognized as the leading enterprise e-form and reporting solutions provider in Korea. Today, it's operations span across Asia and Europe, with offices in Korea (HQ), the UK, Japan, and Singapore.

Janice Han (Expert)

Deputy General Director, Global Startup Division of the Korea Institute of Startup & Entrepreneurship Development

Specialized in managing global acceleration programs and supporting Korean startups, utilizing five years' experience in sourcing 400+ talented startups.

Korea Institute of Startup & Entrepreneurship Development contributes to the development of the national economy through the growth of startup businesses and job opportunities and promotes the technology-based startups of future entrepreneurs by cultivating entrepreneurial spirit.

Appendix D: Data Analysis Procedure

Interview & Transcription

The authors conducted the interviews in Korean and transcribed them using Naver's Clovernote tool.

Coding

Based on interview transcriptions and interview notes, the authors coded the data using the four-pillar category guideline, applying it to all country research. The tool used was Airtable.

Frameworking

The authors compared and cross-checked the codes for each interview transcript and made sure no relevant data was ignored. Several models were used to better interpret the data.

Charting

Verified data was summarized by category and pillar, with relevant quotes and notes used for context.

Interpreting

The authors generated typologies and models, then mapped relevant connections between categories to explore correlations.

Direct Quotations

The authors selected relevant quotes from the transcripts and translated them before putting them into the report.

Appendix E: Digital Maturity Index Calculation

In order to calculate the final score of each WSME, we evaluated the extent of digital adoption by the company in Pillar 1, Pillar 2, and Pillar 3 of the study. We calculated the scores for Pillar 1 and Pillar 2 according to the simple formula below:

Rate for Pillar 1 & 2 (%) = *Sum of verticals with digital adoption / Sum of total verticals*. For Pillar 3, we used a weighted approach to calculate the rate because the verticals can be categorized into three categories, each indicating the varying degree of technical expertise it requires to adopt the solution.

Table E.1 Weighting for Pillar 3 verticals

Category (Weight)	Verticals	Criteria
Basic (Weight: 1)	<ul style="list-style-type: none"> • Booking systems • Cloud Storage & Collaborative Documents • Digital Marketing - Design Tools • Digital Marketing - Scheduling (e.g., Buffer) • Digital Marketing - Social Media Channels • Digital Team Communications / Chat 	Outside-of-the-box solutions that can be used without any integration
Intermediate (Weight: 3)	<ul style="list-style-type: none"> • Customer Relationship Management (CRM) • Digital Marketing - E-mail Automation • Financial & Accounting Tools • Human Resources • Inventory Management • Marketplace Tools (e.g., Shopify) • Payments & Digital Transactions (POS) • Software Development Tools (Website Builders) 	Platform solutions requiring varying degrees of integration to the business processes
Advanced (Weight: 6)	<ul style="list-style-type: none"> • Cybersecurity • Data Analytics Software • Enterprise Resource Planning (ERP) • Machine Learning / AI • Regulatory Compliance • Vendor Management (Procurement & Supply chain) 	Custom solutions requiring advanced engineering capability to implement

The weighted formula used to calculate the rate for Pillar 3 was as follows:

$$\text{Rate for Pillar 3 (\%)} = (1 \times \text{Sum of basic verticals with digital adoption} + 3 \times \text{Sum of intermediate verticals with digital adoption} + 7 \times \text{Sum of advanced verticals with digital adoption}) / \text{Sum of total verticals}$$

Lastly, to combine each of the rates to final scoring, the following formula was used:

$$\text{Final Score} = ((20 \times \text{Pillar 1 Rate}) + (20 \times \text{Pillar 2 Rate}) + (60 \times \text{Pillar 3 Rate}))$$

Each of the companies was categorized into (1) Indifferent; (2) Basic Adopter; (3) Intermediate Adopter; or (4) Advanced Adopter according to the final score (see Table A.2).

Table E.2 Final score category for Digital Maturity Index

Final Score	Category
0 - 15	Indifferent
16 - 30	Basic Adopter
31 - 45	Intermediate Adopter
> 46	Advanced Adopter



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