Accelerating and Promoting Digitalization and Innovation among Micro, Small and Medium Enterprises (MSMEs) in APEC Economies

APEC Small and Medium Enterprises Working Group

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Asia-Pacific
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Table of Content

List of Figures

List of Tables

Glossary

Abbreviations	Definitions
AED	Agency for Enterprise Development
AI	Artificial Intelligence
APEC	Asia-Pacific Economic Cooperation
BARBCO	Biao Agrarian Reform Beneficiaries Cooperative
BDAI	Business Digitalization Adoption Index
BNPL	Buy Now Pay Later
BSF	Black Soldier Fly
BSFL	Black Soldier Fly Larvae
BSMED	Bureau of SME Development
CRM	Customer Relationship Management
DALIA	Digital Acceleration for Learning and Industry Adoption
DARe	Darussalam Enterprise
DDoS	Distributed Denial-of-Service
DEPA	Digital Economy Promotion Agency
DFTZ	Digital Free Trade Zone
DPN	Digital Productivity Nexus
DPN	Digital Productivity Nexus
DTI	Department of Trade and Industry
ECEM	eCommerce Expo Malaysia
ERP	enterprise resource planning
ESG	Environmental, Social, and Governance
ESP	Enterprise Sustainability Program
GDP	Gross Domestic Product
ICT	Information and communication technology
IoT	Internet of Things
IPEF	Indo-Pacific Economic Framework for Prosperity
ISGRIC	Security Governance Risk and Compliance
MCSS	Malaysia Cyber Security Strategy
MDEC	Malaysia Digital Economy Corporation
MPC	Malaysia Productivity Corporation
MRANTI	Malaysian Research Accelerator for Technology & Innovation
MSME	Micro, Small, and Medium Enterprises

NCSP	National Cybersecurity Policy
NPL	Non-performing loan
NRI	Network Readiness Index
NTIS	National Technology and Innovation Sandbox
OSMEP	The Office of SMEs Promotion
PDPD	Personal Data Protection Decree
PGPKS	*Program Galakan Pemerkasaan Keselamatan Siber*
PPU	*Program Pembangunan Usahawan*
R&D	research and development
REC	Russian Export Centre
RIICs	Regional Inclusive Innovation Centres
SDG	Sustainable Development Goal
SETUP 4.0	Small Enterprise Technology Upgrading Program
TAFIS	Treasury Accounting and Financial Information System

1. Project Background

The COVID-19 pandemic has strongly accelerated the need for business to operate digitally. The APEC Global Supply Chain Surveys conducted in 2021 amongst 911 SMEs, reported that for SMEs to expand their global footprint, SMEs recognize that they need to upskill their digital capabilities and get support in niche and developing areas for support and training in digital transformation. These needs include software platforms such as Customer Relationship Management (CRM) systems, E-Commerce, cybersecurity, ERP systems, Data Management, e-payments, and automation of production.

Thus, this project focuses on sharing of knowledge and best practices for MSMEs to develop digital solutions and innovate their products/ processes. This would close the information, skill and knowledge gap among the MSMEs in APEC economies with regards to digitalization and innovation. This project will also contribute to the APEC Putrajaya Vision 2040 vision to accelerate digitalization and innovation among MSMEs through:

(i) Customized Competency development seminar with updated sub-program themes based on market trends in digitalization and innovation;

(ii) Organizing Innovation Challenge (case studies) among participants to learn about their readiness level using Innovation Assessment, how to innovate audit digital innovative projects; and

(iii) To develop MSME Digital Compass and Innovation Report through engagement with experts and participants.

1.1. Project Objective

The overall project objectives are listed below:

(i) To encourage participation in digital innovation and transformation among the policy makers and MSMEs for MSMEs internationalization and business sustainability;

(ii) Enhance digital and innovation skill and competency of policy makers and MSMEs employees to be on par with the global digital and innovation standard; and

(iii) To gain a deeper understanding of the current situation in relation to the digitalization and innovation and identification of key barriers preventing adoption and adaptation as well as assessment methodology for MSMEs in APEC economies.

A Pre-Research Survey was conducted as pre-requisite for competency development seminar. The objective of conducting the pre-research survey is listed as below:

a) To have preliminary understanding of the current level in digitalization and innovation in each APEC economies;

b) To access the MSMEs readiness level in each APEC economies; and

c) To understand the government's support in assisting MSMEs in respective economies

The survey result was shared with participants during the competency development seminar as a background information and better understanding of the current landscape pertaining to digitalization and innovation among APEC economies.

1.2. Project Scope

1. Project Planning and Coordination

I. Develop a detailed project plan outlining timelines, milestones, and key deliverables.

II. Coordinate with SME Corp. Malaysia to align survey objectives with the overall goals of the digitalization and innovation program and digital compass development.

Details:

- Stock-take on related Government digitalization and innovation policies and initiatives/programs in specified APEC economies.
- Outline specific tasks, responsibilities, and deadlines, emphasizing the project's focus on assessing the readiness level for digital transformation and innovation.
- Define the scope of the pre-research survey project, highlighting its role in gathering information on digitalization and innovation within specified APEC economies.
- Identify key milestones and deliverables, with a particular emphasis on measuring the readiness level for digital transformation and innovation.
- Align survey objectives with the broader goals of the capacity development program and digital compass development.

2. Survey Methodology Design

I. Design an online questionnaire that includes both open and closed-ended questions.

II. Define the criteria for selecting participants from the specified APEC economies.

Details:

- Create questions that strategically capture information on digitalization and innovation across various aspects.
- Ensure a balance of open-ended and closed-ended questions to comprehensively assess the readiness level for digital transformation and innovation.
- Specify criteria for participants from specified APEC economies based on their significance in the landscape of digitalization and innovation.
- Outline how participant responses will contribute to measure the readiness level for digital transformation and innovation.
- To conduct one-on-one interviews during the capacity building program.

3. Survey Implementation

I. Oversee the distribution of the online questionnaire to all identified participants.

II. Ensure timely completion of the survey, tentatively scheduled 3 months before the APEC Program.

III. Monitor and manage the collection of survey responses.

Details:

- Coordinate the distribution of the online questionnaire, emphasizing on digitalization and innovation program and the importance of participant insights in understanding the readiness level for digital transformation and innovation.
- Establish a system for collecting, organizing, and storing survey responses, ensuring a comprehensive representation of digitalization and innovation program across specified APEC economies.
- Address any issues or challenges that arise during the survey implementation period.

4. Ex-ante Evaluation Integration

I. Ex-ante evaluation integration.

II. Ensure that participants understand the mandatory to submit the survey as part of the pre-requirement for the APEC Program.

Details:

- Ensure that the ex-ante evaluation is integrated into the pre-research survey process.
- Communicate the mandatory to submit the survey as part of the pre-requirement for the APEC Program and provide clear instructions on the submission process.

5. Data Analysis and Benchmarking

I. Conduct a thorough analysis of survey results and consolidating key findings.

II. Benchmark digitalization and innovation levels among participants within specified APEC economies.

III. Prepare a comprehensive report on the survey results for inclusion in the Completion Report.

Details:

- Utilize statistical methods to analyze quantitative data, extracting insights into the digitalization and innovation landscape.
- Apply qualitative analysis techniques for open-ended responses related to aspects of the readiness level for digital transformation and innovation.
- Compare and analyze digitalization and innovation levels among participants within specified APEC economies, providing a comprehensive overview of their readiness levels for digital transformation and innovation.
- Identify trends, patterns, and areas for improvement in terms of digitalization and innovation readiness.

6. Documentation and Reporting

I. Develop background information and details for the APEC Program based on survey findings.

II. Consolidate survey data, key findings, and analysis into documents for dissemination to APEC Program participants.

III. Collaborate with the Event Manager to ensure participants comply with the mandatory submission of survey responses.

Details:

- Develop comprehensive documents based on survey findings, highlighting key insights into digitalization and innovation and the readiness level for digital transformation and innovation.
- Compile survey data, key findings, and analysis into presentation and report documents, emphasizing the implications related to the readiness level for digital transformation and innovation within specified APEC economies.
- Draft MSME Digital Compass and Innovation Report with project owner.

7. Communication and Follow-Up, Timeline Management and Quality Assurance

Details:

- Communicate survey progress and updates to SME Corp. Malaysia.
- Collaborate with the Event Manager for participant follow-up, ensuring compliance with survey submission requirements.
- Adhere to the timeline for conducting the pre-research survey and analysis, aligning with the overall project schedule.
- Implement quality control measures to ensure the accuracy and reliability of survey data.
- Review and refine survey instruments as needed to improve data collection and analysis.
- To develop, propose and implement a communication plan to disseminate the report to relevant parties including SME Corp. Malaysia.

1.3. Project Approach

The following 5-step approach was conducted to ensure a holistic assessment of MSMEs in the APEC economies.

DISCOVER	UNCOVER			STRATEGIZE
Context Setting with Client	**Current State Analysis**	**Digitalization and Innovation Assessment**	**Comparative Assessment**	**Strategic Recommendation**
• Understand SME Corp.Malaysia's specific needs and issues. • Clarify on existing information available • Understand preliminary hypotheses that need to be verified during the study	• Understand SME Corp. Malaysia's specific needs and issues. • Clarify on existing information available • Understand preliminary hypotheses that need to be verified during the study	• Identifying and analyzing key digitalization and innovation readiness levels in each APEC economy based on trends, patterns and areas of improvements	• Comparing digitalization and innovation readiness levels, program and various other indicators in other APEC economies with Malaysia to identify key gaps.	• Comparing digitalization and innovation readiness levels, program and various other indicators in other APEC economies with Malaysia to identify key gaps.
METHODOLOGY				
• Client consultation • Secondary research	• Secondary research • Online survey • Ipsos analysis	• Secondary research • Online survey • Ipsos analysis	• Secondary research • Online survey • Ipsos analysis	• Ipsos analysis

1.4. Project Methodology

The study employed a multi-faceted methodology comprising secondary research, online surveys, and workshop insights to gather comprehensive data on MSME digitalization and innovation across APEC economies. The secondary research phase involved leveraging Ipsos's Knowledge Centre, utilizing diverse sources such as government publications, industry reports, online resources, and internal databases to establish a foundational knowledge base. This phase ensured relevant insights were captured to benchmark MSME digital transformation efforts. Next, an online survey was conducted, targeting key members of APEC economies, with a targeted sample size of 22 participants. Ipsos collaborated with SME Corp. Malaysia to develop a questionnaire aimed at identifying digitalization trends, government policies, and MSME readiness. The final phase involved the competency workshop conducted with SME Corp. Malaysia and representatives from APEC economies. Ipsos facilitated breakout sessions to extract key insights regarding digitalization trends, policy interventions, and innovation challenges.

Methodology	Objective	Stakeholders	Sample Size
Consultation with SME Corp. Malaysia stakeholders	Knowledge exchange and sharing of existing information with client.	SME Corp. Malaysia	
Secondary Research	Exhaustive review of all available secondary information company annual reports, policies and any relevant documentation that deems helpful to lay foundation for the study including analyzing digitalization and innovation in other APEC economies	SME Corp. Malaysia	
Quantitative: Survey	Gather structured and numerical data from key target respondents from the APEC economies to analyze and derive statistically significant insights about digitalization and innovation state and readiness in their respective economies	Workshop Members / Participants	Target n = 22 Achieved n = 17
Workshop Findings	Facilitation of breakout sessions to extract key insights regarding digitalization trends, policy interventions, and innovation challenges	Workshop Members / Participants	n = 25

Table 1: Summary of Methodology

2. Pre-Research Survey

The Pre-Research Survey was conducted from 15-25 July as part of the preparatory activities for the competency development seminar. The survey aimed to gather early insights into the digitalization and innovation landscape within APEC economies, with a particular focus on MSMEs (Micro, Small, and Medium Enterprises). This initiative was crucial in building a foundation for later discussions and assessments during the seminar. By integrating quantitative and qualitative perspectives, the survey acted as a diagnostic tool, highlighting where economies are excelling or struggling in their digital transformation journeys.

Objectives of the Survey

1. To have preliminary understanding of the current level in digitalization and innovation in each APEC economy
2. To access the MSMEs readiness level in each APEC economy
3. To understand the government's support in assisting MSMEs in respective economies

2.1. Survey Demographics

The survey collected responses from 16 participants across 7 economies. These participants held various roles within their organizations[1], offering insights into the state of digitalization and innovation among MSMEs. The participants included government officials, policy makers, R&I officials, and experts involved in digital transformation, developing innovation ecosystems, and providing strategic support to MSMEs through initiatives and financial assistance. Below is a breakdown of the respondents' backgrounds and their reported levels of digitalization[2] adoption within their economies:

[1] A2. Kindly indicate your role in your economy
A3. Kindly describe your job scope/responsibility in the digitalization and/or innovation initiatives in your economy
[2] B1. How would you rate the overall level of digitalization among MSMEs in your economy?

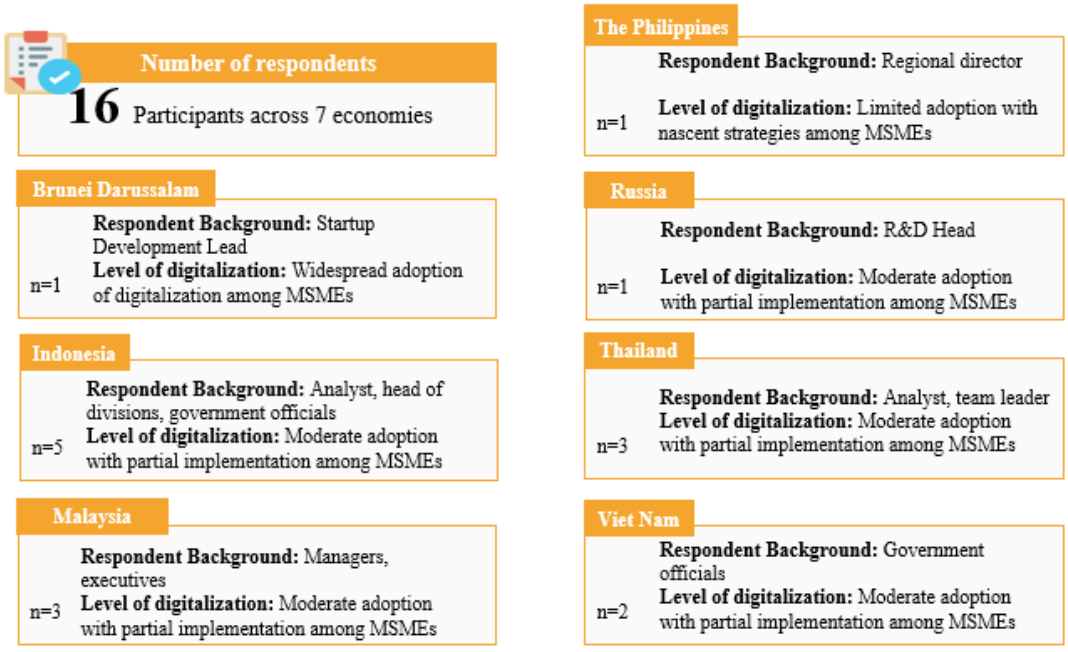

Figure 1: Survey Demographics

2.2. Digital Transformation of MSMEs

The digital transformation of MSMEs was evaluated across seven key areas, focusing on different aspects critical to leveraging technology for business growth. Each area highlights a unique dimension of digitalization ensuring a comprehensive assessment of MSMEs' readiness for digitalization.

- **Strategy:** Assesses the implementation of digital transformation strategies and business models to leverage digital technologies for competitive advantage.
- **Operations:** Evaluates integration of digital technologies into all aspects of business processes including marketing, operations, customer experience and management etc.
- **People:** Evaluates the digital literacy and capabilities of the workforce including the availability of talent and training programs to support digital transformation.
- **Culture:** Focuses on the presence of a culture that supports the adoption of new technologies, continuous improvements and the extent to which businesses are open to change.
- **Infrastructure:** Focuses on the technological foundations and infrastructure that supports digital transformation including the use of digital tools, IT infrastructure, cloud computing, cybersecurity measures and connectivity solutions.
- **Products:** Covers the digitalization of products and services that are offered to consumers such as the integration of IoT and the use of data collection to improve the overall experience of consumers.
- **Consumers:** Assesses the use of digital channels to engage with customers including e-commerce platforms and digital strategies to enhance customer experience and drive sales.

The analysis of the seven key areas was structured into four clusters, in line with their interdependencies to ensure a comprehensive and coherent evaluation of digital transformation among MSMEs. This structure allows for a holistic approach, capturing overlaps between strategic planning and execution, product offerings and customer interaction, as well as internal human resources and technological infrastructure.

Strategy & Operations

The digital transformation among MSMEs has significantly impacted their business models. A majority of MSMEs (88%) have shifted towards online sales channels, while 75% have expanded into new digital markets, demonstrating their ability to explore new opportunities. Additionally, 69% of respondents reported improved flexibility and scalability in their operations. In terms of strategies, 75% of respondents found businesses to be expanding into new digital markets where 94% of MSMEs use social media marketing to enhance their outreach, and 56% have adopted influencer marketing as part of their business processes. These developments highlight the growing importance of leveraging digital tools to optimize business operations and engage with customers effectively.

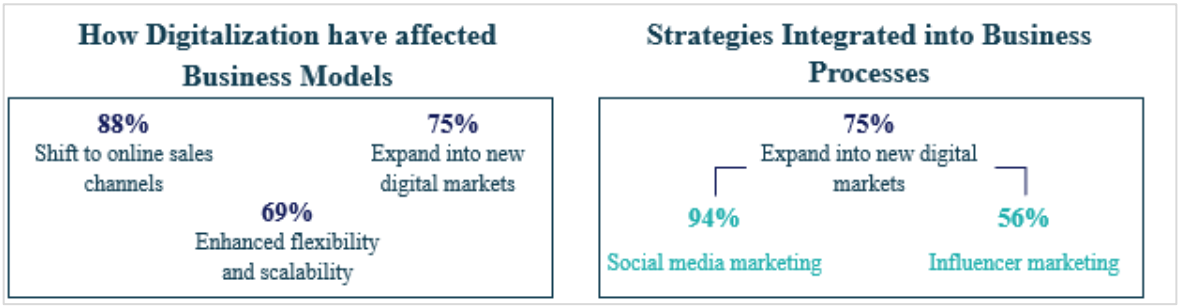

Figure 2: Digitalization Current State (1/4)[3]

Despite the progress, several barriers hinder the digital transformation of MSMEs. High implementation costs present a significant challenge, with 94% of respondents identifying it as a primary obstacle to adopting new technologies. Furthermore, 75% of participants reported a lack of skilled experts to facilitate digitalization, which complicates the integration of digital strategies and limits the effectiveness of these efforts.

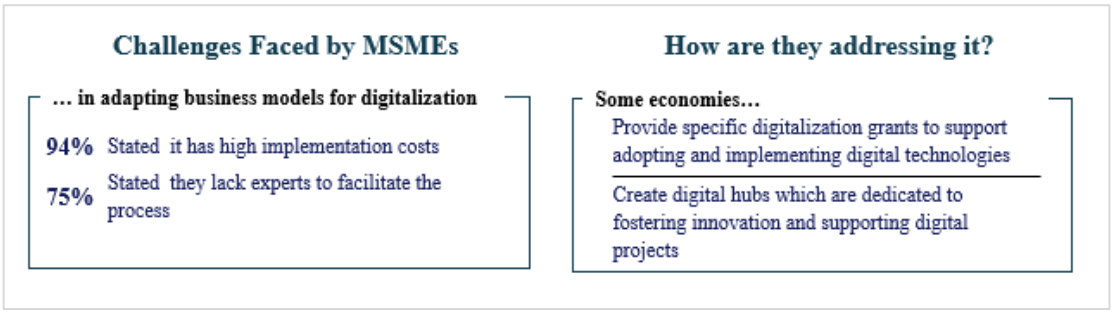

Figure 3: Digitalization Implementation Barriers (1/4)[4]

[3] B4. How has digitalization affected the business models of MSMEs in your economy?
B17. What new marketing strategies has MSMEs adopted in the last year in your economy? Select all applicable options.
[4] B5. What are the main challenges MSMEs face in adapting their business models for digitalization?
B6a. What steps has your economy implemented to support MSMEs in overcoming challenges related to digital transformation?

To mitigate these challenges, some economies have implemented best practices to facilitate MSME digitalization. Many MSMEs have transitioned to subscription-based business models[5], which allow them to generate recurring revenue and retain customers more effectively. They also test proof of concepts before scaling their solutions to minimize risks. Building a strong online presence through SEO and social media marketing has become a priority, with businesses optimizing their websites for user experience and responsive customer service. Additionally, MSMEs have adopted digital payment systems and cashless solutions to streamline transactions and reduce costs[6]. Many enterprises have also expanded into e-commerce and delivery services, providing greater convenience to customers while enhancing their competitiveness in the market.

People & Culture

The survey revealed that businesses generally have a positive attitude toward adopting new technologies, indicating strong readiness for digital transformation. Specifically, 44% of respondents rated businesses as "open" to adopting new technologies, while 31% rated them as "very open." Furthermore, 75% of businesses offer occasional training programs to enhance workforce capabilities, focusing on digital marketing and e-commerce skills. These findings suggest a favorable environment for digital transformation, although there is still room for improvement in providing consistent and comprehensive training.

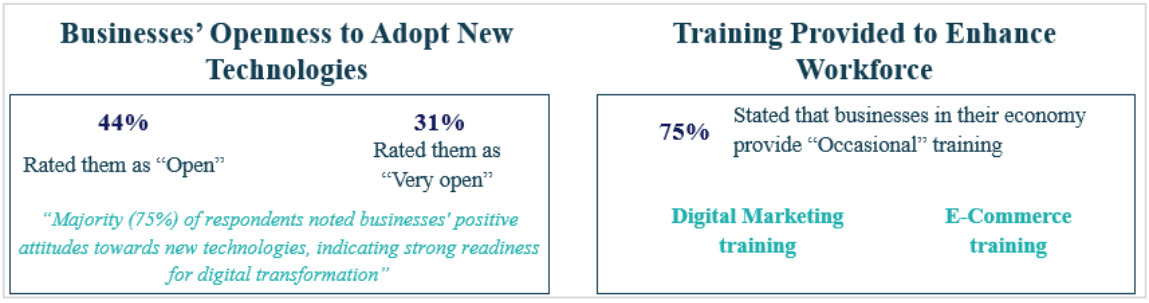

Figure 4: Digitalization Current State (2/4)[7]

Despite the positive outlook, MSMEs face several barriers in fostering digital skills and overcoming cultural resistance. One of the primary challenges identified is resistance to learning new skills, with 63% of respondents citing it as a significant issue. MSMEs also struggle with providing consistent access to digital resources and tools. However, many businesses have taken proactive steps to address these barriers, such as launching digital mindset awareness campaigns (75%) and enhancing access to digital tools (75%). These initiatives aim to foster a culture that embraces change and supports continuous learning.

[5] B7. Please describe best practices observed among MSMEs in adapting business models and strategies to cater to the implementing digitalization.
[6] B20. Please share best practices for promoting the integration digital technologies into business processes among MSMEs.
[7] B8. How would you rate the openness of businesses in your economy to adopting new technologies?
B27a. What steps has your economy taken to overcome challenges in using digital channels for customer engagement in MSMEs?

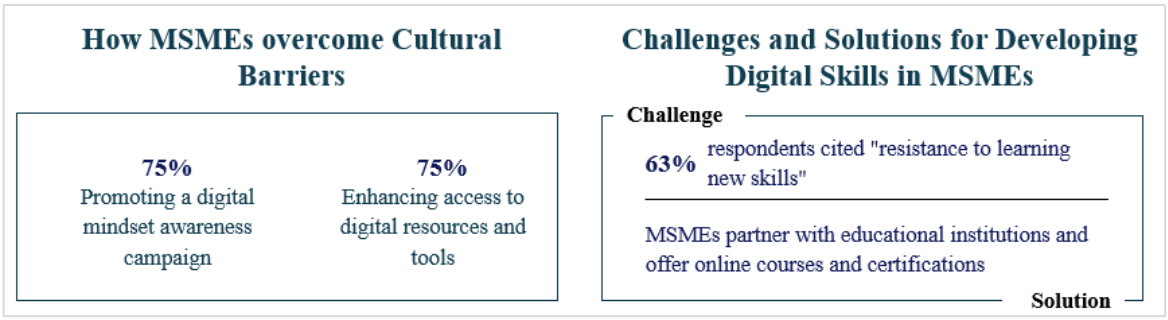

Figure 5: Digitalization Implementation Barriers (2/4)[8]

Best practices observed include prioritizing leadership buy-in to inspire employees to adopt digital tools and mindsets[9]. Effective leadership plays a crucial role in driving digital transformation by setting an example and promoting employee engagement. Encouraging open communication and collaboration also helps create an agile work environment that is conducive to innovation. Additionally, many MSMEs are integrating digital platforms into their workflows to promote a paperless office[10], streamline operations, and unlock new business opportunities.

Infrastructure

The survey revealed significant progress among MSMEs in integrating digital technologies into their business operations. All respondents (100%) reported adopting digital payment systems, while 81% have incorporated e-commerce processes into their workflows. Additionally, 75% of MSMEs have embraced integrated digital marketing strategies, and 56% have implemented data analytics tools to enhance decision-making. The primary factors influencing MSMEs to invest in digital technologies include cost savings, customer demand, market expansion, and efficiency improvements.

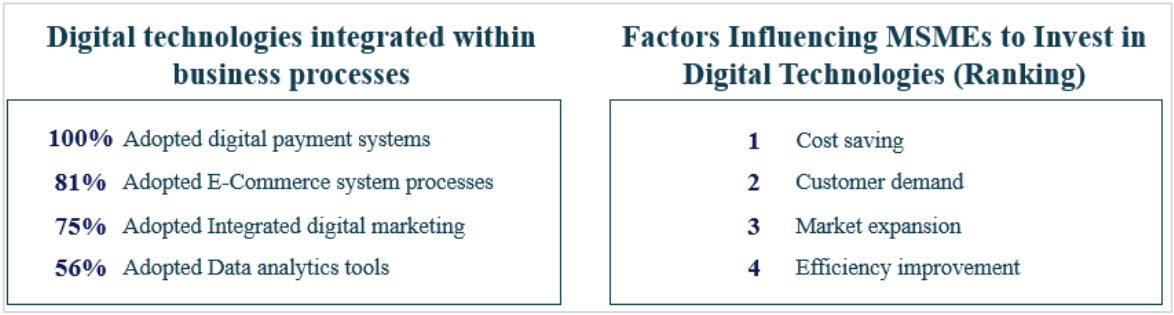

Figure 6: Digitalization Current State (3/4)[11]

However, MSMEs continue to face several technological barriers in their digital transformation efforts. A significant challenge is the lack of technical expertise, cited by 81% of respondents, which limits the effective implementation of new technologies. High implementation costs are another major obstacle, with 69% of participants identifying it as a critical issue. These challenges highlight the need for additional support to help MSMEs overcome financial and talent-related constraints.

[8] B8. What steps has your economy taken to overcome cultural barriers to digital transformation in MSMEs?
B14. What are the main challenges in developing digital skills within MSMEs?
[9] B15b. Kindly elaborate the steps and best practices conducted based on your response selected by listing down all program, incentives or initiatives conducted.
[10] B10. Please share best practices for fostering a digital culture within businesses in your economy.
[11] B16. Which of the following are effectively integrated into business processes in your economy?
B31. Rank the key factors influencing MSMEs' decision to invest in digital technologies.

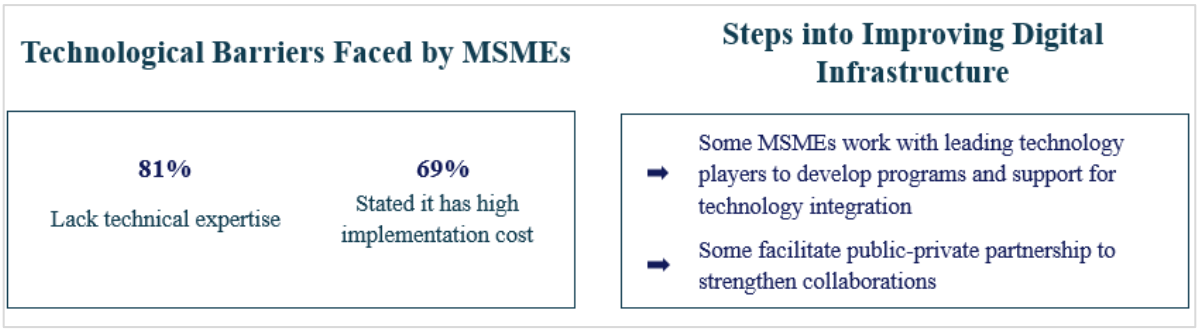

Figure 7: Digitalization Implementation Barriers (3/4)[12]

To address these challenges, some best practices have emerged across economies. Thorough assessments, strategic planning, and financial support combined with investments in employee training are essential for effective technology integration[13]. Simplifying technology adoption through low-code or no-code solutions has also been identified as a practical approach to building a digital culture. Additionally, enhancing cybersecurity measures and participating in digital acceleration programs are vital steps to ensure successful digital transformation.

Products & Consumers

The rise of e-commerce has driven MSMEs to adopt more interactive and personalized solutions to remain competitive. Many MSMEs (81%) prioritize facilitating market access, while 56% have established innovation hubs to foster creativity and technological advancement. Half of the surveyed MSMEs provide R&D grants and subsidies to encourage product development, and 44% offer technical training and support. Effective digital strategies for customer engagement include using e-commerce platforms, engaging actively on social media, utilizing personalized marketing through data analytics, and implementing loyalty programs to retain customers.

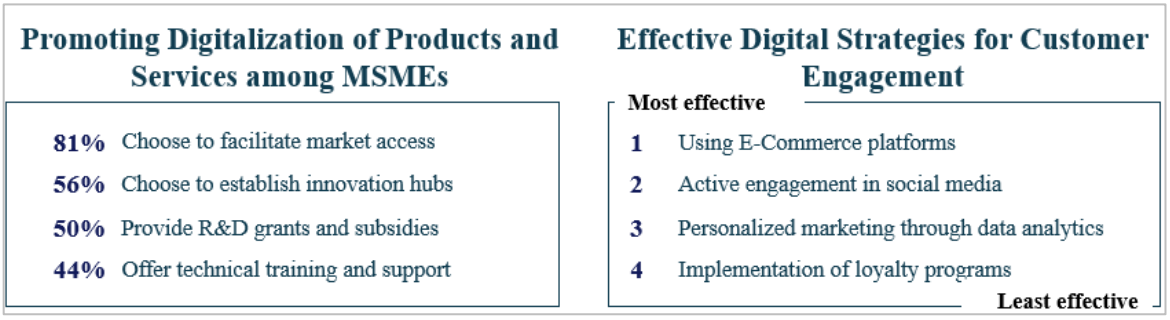

Figure 8: Digitalization Current State (4/4)[14]

However, MSMEs face several challenges in engaging customers through digital channels. A lack of digital marketing skills is a common issue, with 56% of respondents identifying it as a barrier. Additionally, 56% reported that intense competition in the digital space presents a challenge, while 44% pointed to inadequate digital infrastructure. These barriers highlight the need for improved skills and resources to help MSMEs leverage digital channels effectively.

[12] B32. What are the main technological barriers faced by MSMEs in digital transformation?
B33a. What steps have been taken to improve digital infrastructure for MSMEs?
[13] B34. Please describe which digital infrastructure improvement made the most impact towards MSMEs in your economy and how it was implemented.
[14] B22a. What steps has your economy taken to promote digitalization and/or innovation of products and services among MSMEs?
B24. What digital strategies are most effective in customer engagement in your economy?

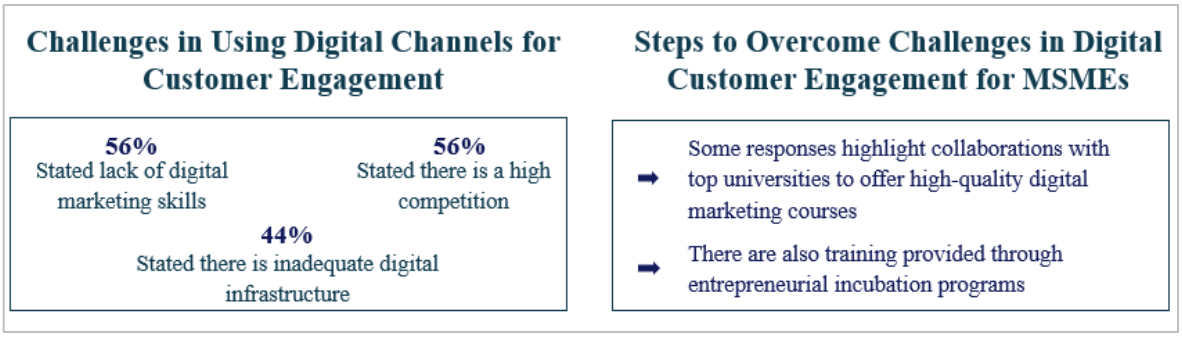

Figure 9: Digitalization Implementation Barriers (4/4)[15]

Some MSMEs collaborate with universities to offer high-quality digital marketing courses. Entrepreneurial incubation programs also provide training and mentorship, equipping businesses with the necessary tools[16] to engage customers effectively. Best practices observed include using data analytics to deliver personalized recommendations and targeted promotions, which enhances customer satisfaction by tailoring experiences to individual preferences[17]. Furthermore, MSMEs are increasingly leveraging live streaming and interactive content on platforms like TikTok and Facebook Marketplace to foster direct interaction with customers and enhance brand visibility.

[15] B26. What are the main challenges in using digital channels for customer engagement?
B27a. What steps has your economy taken to overcome challenges in using digital channels for customer engagement in MSMEs?
[16] B23. Please describe an example of best practices in the digitalization of products and services in your economy.
[17] B28. Please share an example of best practices for engaging customers through digital channels in your economy.

2.3. Innovation Landscape of MSMEs

The survey assessed the innovation landscape among MSMEs across six key areas to uncover several best practices in innovation across the seven APEC economies. The best practices highlight how MSMEs leverage innovative approaches to stay competitive and foster growth. These practices reflect how businesses across different sectors adopt new technologies, sustainable practices, and collaborative models to adapt to changing market demands.

Innovation Areas	Definitions	Best Practices
Organizational Innovation	Focuses on how businesses restructure their organizational frameworks and develop innovative business models to enhance efficiency, adaptability, and competitiveness, including new revenue streams and value propositions.	MSMEs are adopting agile organizational structures with lean operations and enhanced autonomy to increase efficiency. Cross-functional teams collaborate on technology-driven projects using digital tools for remote work, promoting seamless collaboration. Partnerships between the government and private sector play a vital role in scaling these innovations and ensuring long-term success.
Product Innovation	Focuses on the creation and enhancement of products and services to meet changing customer needs and market demands, including the development of new features, the introduction of cutting-edge technologies, and improvements in design and functionality.	Product innovation among MSMEs involves utilizing local crops in production processes, transforming food waste into energy, and integrating advanced technologies such as robotics and 3D printing. These approaches enable businesses to enhance operational efficiency while focusing on consumer-centric branding to meet evolving market demands and customer expectations.
Sustainable Innovation	Focuses on the development and implementation of environmentally sustainable practices and technologies that reduce ecological footprints, promote resource efficiency, and support sustainable development goals.	Sustainability is a key focus, with MSMEs developing eco-friendly products that incorporate sustainable materials and adopting waste management systems to promote recycling. These initiatives align with ESG policies and demonstrate businesses' commitment to environmental stewardship. Collaboration with NGOs and institutions strengthens these efforts, emphasizing the importance of sustainable and ethical practices across the supply chain.
Finance Innovation	Focuses on the use and introduction of new financial products, services, and business	MSMEs are driving financial inclusion by integrating digital payment systems such as Buy Now, Pay Later (BNPL) solutions and e-wallets.

	models that enhance financial performance and accessibility, including fintech solutions and innovative financing mechanisms.	Partnerships between MSMEs and financial institutions further enhance accessibility to financial services. Additionally, cashless society policies introduced by governments support the transition to paperless transactions and digital banking, reinforcing the digital economy.
Social Innovation	Focuses on addressing social challenges and improve community well-being through innovative solutions, including social inclusion programs, community development projects, and partnerships that drive social impact.	Social innovation efforts focus on addressing environmental and social challenges through models like the "Wastepreneur" initiative, which involves upcycling waste into valuable products. These projects raise awareness of environmental issues while promoting sustainable solutions. Collaboration with institutions also plays a crucial role in driving social innovation and adapting to emerging market needs.
Technology Innovation	Focuses on the adoption and integration of advanced technologies to drive innovation across various business areas, including the use of AI, IoT, blockchain, and other emerging technologies to create competitive advantages.	Technological innovations, including mobile applications and data analytics, are integrated into areas such as agritech, e-commerce, and smart manufacturing to boost productivity and collaboration. MSMEs are also increasingly adopting AI and IoT technologies, particularly in rural areas, to expand their market reach and operational capabilities. These innovations enable businesses to stay competitive and respond effectively to the challenges of a dynamic market landscape.

Table 2: Innovation Areas and Best Practices[18]

[18] C2. Please share an example of best practices in organizational innovation among MSMEs in your economy.
C5. Please describe an example of best practices in sustainable innovation among MSMEs in your economy.
C7. Please share an example of best practices in the implementation of social innovation among MSMEs in your economy.
C9. Please share an example of best practices in product innovation among MSMEs in your economy.
C12. Please describe an example of best practices in promoting the use of financial innovation among MSMEs in your economy.
C14. Please share an example of best practices in technology innovation among MSMEs in your economy.

Innovation Trends Observed Across APEC Economies

MSMEs across APEC economies are actively adopting various innovative solutions to promote growth and sustainability. A major trend in organizational innovation involves the use of digital tools for remote collaboration, with 69%[19] of respondents identifying it as the leading practice. Social innovation efforts are also prominent, with 56%[20] of respondents reporting community development projects as the most common social initiatives undertaken by MSMEs.

In terms of sustainable innovation, 39%[21] of MSMEs have adopted environmentally friendly practices such as recycling, waste reduction, and the development of eco-friendly products. The Philippines leads this effort, with 75%[22] of MSMEs engaging in sustainable practices, while Indonesia lags behind with a participation rate of 28%. For product innovation[23], MSMEs focus on customer-driven product development and market analysis to uncover new business opportunities.

Collaboration with tech startups[24] is becoming increasingly common, with MSMEs adopting IoT solutions for smart applications, such as production monitoring and automation, which helps businesses enhance efficiency. Financial innovation is also evolving, with 81%[25] of respondents pointing to digital payment systems—such as digital wallets, mobile payments, and online banking—as the most effective financial solutions. In addition, respondents from Indonesia; Malaysia; and Thailand reported using crowdfunding and peer-to-peer lending to address funding gaps[26]. However, only 19%[27] of respondents reported investments in R&D for technology innovation, suggesting that more focus is needed in this area.

The survey identified several digital innovations widely adopted[28] by APEC economies. Smart sensors play a crucial role in monitoring various production parameters, such as temperature, pressure, humidity, liquid levels, flow, timers, and location. These sensors allow for continuous and uninterrupted operations by providing data for enhanced task performance and maintenance. Additive manufacturing is another key trend, enabling MSMEs to create prototypes and innovative products in a cost-efficient manner, with access to different types of printers to suit specific needs. Lastly, digital marketing platforms are increasingly being utilized by MSMEs to expand into larger markets. These platforms allow businesses to engage directly with consumers, accept payments through multiple payment methods, and boost overall productivity. Together, these innovations reflect the diverse approaches taken by MSMEs to adapt to technological advancements and remain competitive in an evolving marketplace.

[19] C1. What are the current trends in organizational innovation among MSMEs in your economy?
[20] C6. What are the current trends in social innovation observed among MSMEs in your economy? Select all applicable options.
[21] C4. What are the current trends in sustainable innovation among MSMEs in your economy? Select all applicable options.
[22] C3. What is the approximate percentage of MSMEs in your economy have adopted environmentally sustainable practices?
[23] C8. What are the priorities of product innovation in your economy?
[24] C13. What technology innovation practices are common in your economy?
[25] C11. What types of digital financial services are most commonly used by MSMEs in your economy?
[26] C10. Which financial innovation practices are most effective in your economy? Select all applicable options.
[27] C13. What technology innovation practices are common in your economy?
[28] C9. Please share an example of best practices in product innovation among MSMEs in your economy.
C14. Please share an example of best practices in technology innovation among MSMEs in your economy.

Innovation Challenges Across APEC Economies

The successful launch of new products and solutions requires targeted support at every stage of the innovation process. However, MSMEs encounter distinct challenges[29] throughout this journey, from idea generation to scaling, with various forms of support available to address these obstacles.

1. Idea Generation

MSMEs struggle with limited resources, knowledge, and R&D capabilities, which restrict their ability to generate innovative ideas. Additionally, a lack of market knowledge further hinders their ability to create viable concepts.

Support Available: Financial and educational support through grants, loans, innovation hubs, and market research helps enhance the capacity of MSMEs at this stage, enabling them to explore and develop new ideas effectively.

2. Concept Development

A lack of technical expertise and market research impairs MSMEs' ability to design and validate their concepts. This prevents them from building well-defined, market-ready ideas.

Support Available: MSMEs receive financial assistance and expert resources, including access to consultants, grants, partnerships, mentorship programs, and networking opportunities. Labs and training facilities further help bridge the knowledge gap during concept development.

3. Prototyping

Many MSMEs face challenges due to limited access to prototyping tools and technical expertise, which impacts the validation of their ideas.

Support Available: To overcome these issues, MSMEs gain access to prototyping facilities, technology parks, R&D grants, and technical training that support the development and testing of prototypes effectively.

4. Commercialization

Market penetration and competition pose significant challenges, as MSMEs struggle to scale production, navigate regulations, and compete in the marketplace.

Support Available: Market access and marketing support are provided through market access programs, digital marketing grants, business matching, and mentorship programs. These initiatives help MSMEs establish a foothold in competitive markets.

5. Scaling and Growth

As MSMEs grow, they encounter challenges related to increased operational complexity, including managing quality control, market access, and operational efficiency.

Support Available: Support at this stage includes skills development, efficiency training, mentorship, scaling programs, and networking opportunities. These efforts equip MSMEs with the tools needed to manage growth and compete effectively on a larger scale.

[29] C8new. Kindly describe the primary challenges faced by MSMEs and the supports available for each stage of product innovation in your economy.

2.4. Existing Support Mechanisms

2.4.1. Brunei Darussalam

Key Elements of Government Blueprint/Strategies	Digitalization Support	Innovation Support	Best Practices Identified
Brunei Darussalam's digitalization efforts are guided by domestic digitalization roadmaps and innovation and technology development plans. The government prioritizes data protection and privacy laws, intellectual property protection, and data protection regulations to foster innovation among MSMEs.	Brunei Darussalam addresses the challenge of cultural resistance and immature technology standards by conducting awareness and capacity-building programs on key topics. The Brunei Innovation Lab plays a pivotal role in supporting the startup ecosystem, encouraging innovation and digital transformation through various capacity-building initiatives and programs.	Innovation in Brunei Darussalam faces barriers such as lack of awareness, cultural resistance, and limited availability of innovation advisors. Although no specific innovation initiatives have been launched to date, the government supports MSME innovation through financial incentives, including grants, subsidies, and business matching services. Additionally, public-private partnerships are fostered to enhance MSME innovation efforts.	**Digital Divide:** The Digital Economy Masterplan 2025 serves as the foundation of Brunei Darussalam's digitalization strategy, envisioning the development of a Smart Nation. This strategy includes investments in ICT infrastructure, public sector digitalization, and digital talent development. **Digital Transformation of MSMEs:** The government provides financial support to MSMEs to encourage the adoption of digital technologies, offering subsidies for digital training programs and grants. **Key Performance Indicators:** The KPIs outlined in the 2025 masterplan include increasing the digital sector's contribution to GDP growth, raising the number of people with broadband access, and enhancing the digital literacy rate across the population.

Table 3: Existing Support Mechanisms[30] – Brunei Darussalam

[30] Survey Section D: Government support, barriers, internal policies/strategies and KPIs across digitalization and innovation.

2.4.2. Indonesia

Key Elements of Government Blueprint/Strategies	Digitalization Support	Innovation Support	Best Practices Identified
Indonesia's digitalization strategy is built on regulatory and policy frameworks, alongside innovation and technology development plans. Key regulations include the Personal Data Protection Law (Law Number 27 of 2022) and the Cybersecurity Laws (Law No. 11 of 2008). The Entrepreneur Hub Program fosters collaboration between universities, government, and industry to drive competitiveness, enhance data security, and promote economic growth.	To address limited infrastructure, the Indonesian government is expanding internet access in rural areas to enhance connectivity for MSMEs and facilitate their participation in digital business. Additionally, the government supports MSMEs by providing loans and grants for digital investments and promoting alternative financing options such as crowdfunding and venture capital to support digital transformation.	The government promotes MSME innovation through financial incentives, including grants, tax incentives, and subsidized interest rates to ease financial barriers. Collaborations with incubator institutions further strengthen innovation efforts through comprehensive incubation programs that offer funding, mentorship, and networking opportunities.	**Digital Divide:** Indonesia addresses the digital divide by strengthening digital infrastructure, promoting affordable access, and enhancing digital literacy. These efforts aim to bridge infrastructure gaps, improve connectivity, and make digital services more accessible. **Digital Transformation of MSMEs:** MSME digitalization is supported through initiatives such as "Sayurbox" and "GO DIGITAL", with innovation efforts further driven by the National Innovation System. **Key Performance Indicators:** Indonesia tracks digitalization progress through metrics such as technology adoption, online growth, R&D efforts, and program participation to measure the impact of MSME innovation.

Table 4: Existing Support Mechanisms[31] - Indonesia

[31] Survey Section D: Government support, barriers, natio policies/strategies and KPIs across digitalization and innovation.

2.4.3. Malaysia

Key Elements of Government Blueprint/Strategies	Digitalization Support	Innovation Support	Best Practices Identified
Malaysia's strategic approach to digitalization is guided by the domestic digitalization roadmaps, sector-specific innovation strategies, and research and development plans. Key regulatory frameworks include the National Cybersecurity Policy (NCSP) and the Malaysia Cyber Security Strategy (MCSS), reflecting a focus on cybersecurity and safety. Additionally, the Payment Systems Act (2003) and Financial Services Act (2013) aim to streamline digital payment regulations.	The primary challenges for digitalization in Malaysia include limited infrastructure, a small talent pool, immature technology standards, cybersecurity concerns, and cultural resistance. To address these challenges, the government is strengthening digital infrastructure, enhancing cybersecurity frameworks, and providing training and workshops. Initiatives like "Go BIG with Digital" by the Malaysia Productivity Corporation support these efforts.	MSMEs face several barriers to innovation, such as high costs, limited access to R&D infrastructure, and low awareness about innovation. In response, the government offers financial grants, subsidies, and tax incentives, along with the establishment of innovation and technology parks to foster a supportive ecosystem for innovation.	**Digital Divide:** To bridge the digital divide, Malaysia collaborates with state governments, offering digital programs across cluster groups, upgrading digital infrastructure, and supporting rural development programs. **Digital Transformation of MSMEs:** Key digital transformation efforts include initiatives such as DALIA (Digital Acceleration for Learning and Industry Adoption) by the Malaysia Productivity Corporation (MPC), the Digital Free Trade Zone (DFTZ), the eCommerce Expo Malaysia (ECEM), and Program Pembangunan Usahawan (PPU). **Key Performance Indicators:** Malaysia measures the impact of its digitalization efforts through digital adoption rates, improvements in digital skills, innovation outputs, revenue growth, and financial impact.

Table 5: Existing Support Mechanisms[32] – Malaysia

[32] Survey Section D: Government support, barriers, internal policies/strategies and KPIs across digitalization and innovation.

2.4.4. The Philippines

Key Elements of Government Blueprint/Strategies	Digitalization Support	Innovation Support	Best Practices Identified
The Philippines' digital strategy is guided by its domestic digitalization roadmaps and regulatory frameworks. Key regulations include Republic Act No. 10173 (Data Privacy Act), Republic Act No. 10175 (Cybercrime Prevention Act), and the Tax Reform and Inclusion Law (TRAIN) for e-invoicing. Republic Act No. 8293 protects intellectual property, while domestic innovation policies support regional innovation clusters, fostering digital and economic growth.	To address limited infrastructure, the government collaborates with private companies to improve facilities and ensure MSMEs have access to reliable internet and modern technological resources. The Philippines also conducts training sessions, seminars, forums, and fairs to educate MSMEs on digital tools, bridging knowledge gaps, and promoting digital adoption.	MSME innovation is hindered by high costs, low awareness, and cultural resistance. To overcome these barriers, the government provides financial incentives, training, and promotional events. Support for MSME innovation includes product demonstrations, the establishment of incubators and R&D centers, regulatory strengthening, and the promotion of public-private partnerships.	**Digital Divide:** The Philippines addresses the digital divide by enhancing connectivity, improving digital literacy, ensuring affordable access, investing in digital education, and strengthening broadband. **Digital Transformation of MSMEs:** The government advances digitalization through e-health platforms like RxBoX, with additional support from health worker training and community backing. Notable innovations include Gigacover (insurtech), Edukasyon.ph (education), and GCash (financial assistance). **Key Performance Indicators:** The Philippines measures the success of digitalization through KPIs that assess business impact and ROI. Innovation KPIs track customer adoption and satisfaction, ensuring that efforts translate into tangible economic and social benefits.

Table 6: Existing Support Mechanisms[33] - The Philippines

[33] Survey Section D: Government support, barriers, internal policies/strategies and KPIs across digitalization and innovation.

2.4.5. Russia

Key Elements of Government Blueprint/Strategies	Digitalization Support	Innovation Support	Best Practices Identified
Russia's digital strategy is built on its domestic digitalization roadmaps and sector-specific digital strategies. Key elements include the National Digital Economy Program, the National Data Management System Concept, and the Artificial Intelligence Strategy, reflecting Russia's aspirations toward comprehensive digitalization.	MSMEs in Russia face challenges such as lack of awareness, limited access to finance, and insufficient technical skills. To address these barriers, the government offers financial incentives (grants and subsidies), training and capacity-building programs, and infrastructure development initiatives to facilitate digital transformation.	The primary obstacles to innovation include high costs, low awareness, and insufficient technical expertise. To mitigate these challenges, Russia supports MSMEs with financial incentives, innovation hubs, R&D centers, and training programs through federal initiatives like "Digital Technologies," "Data Economy," and "Digital Professions." .	**Digital Divide:** The National Digital Economy Program is Russia's flagship initiative for addressing the digital divide by promoting digitalization across the member economy government. **Digital Transformation of MSMEs:** Significant programs supporting MSME digital transformation include the establishment of My Business Centers, the SME Digital Platform, and the Digital Business Academy. **Key Performance Indicators:** The Business Digitalization Index is a key performance indicator used to measure the value and impact of Russia's digitalization efforts, helping to assess progress and identify areas for further development.

Table 7: Existing Support Mechanisms[34] - Russia

[34] Survey Section D: Government support, barriers, internal policies/strategies and KPIs across digitalization and innovation.

2.4.6. Thailand

Key Elements of Government Blueprint/Strategies	Digitalization Support	Innovation Support	Best Practices Identified
Thailand's digital strategy is built on its domestic digitalization roadmaps, e-invoicing, and digital payment regulations. The e-Business and e-Payment policy supports MSMEs by enhancing transaction efficiency. The Payment Systems Act B.E. 2017, under the Bank of Thailand, defines three main types of e-payment, further divided into eight subcategories.	MSMEs in Thailand face barriers such as high implementation costs, limited access to finance, and cultural resistance. To address these challenges, the government provides financial incentives (grants and subsidies), training and capacity-building programs, and regulatory support to ease the burden of digitalization.	The National Science, Research and Innovation Fund (NSRF) serves as a primary source of public research funding, allocating resources to universities, research institutes, funding agencies, and other entities. Additionally, workshops, online courses, and industry-specific training are provided to address the skills gap in technology sectors and improve workforce readiness.	**Digital Divide:** The government has launched the Net Pracharat program to bridge the rural-urban digital divide, expanding broadband network coverage to over 74,000 villages across the member economy government. **Digital Transformation of MSMEs:** Thailand promotes cashless transactions through a cashless society policy, with the goal of educating MSMEs about the benefits of digital payments to increase adoption and usage. **Key Performance Indicators:** KPIs under Thailand's National SRI Plan 2023–2027 vary based on specific initiatives. These indicators include the sales value of domestically developed digital technologies and the number of experts in R&D, among other metrics to assess the success of the member economy government's innovation efforts.

Table 8: Existing Support Mechanisms[35] - Thailand

[35] Survey Section D: Government support, barriers, internal policies/strategies and KPIs across digitalization and innovation.

2.4.7. Viet Nam

Key Elements of Government Blueprint/Strategies	Digitalization Support	Innovation Support	Best Practices Identified
Viet Nam's digital strategy is guided by domestic digitalization roadmaps, innovation and technology development plans, and regulatory and policy frameworks. Key policies include the Personal Data Protection Decree (PDPD) to safeguard data privacy, along with cybersecurity regulations. Additionally, the Indo-Pacific Economic Framework for Prosperity (IPEF) promotes digital trade and enhances trade activities.	To address challenges such as limited digital infrastructure and cultural resistance, Viet Nam is enhancing its infrastructure and promoting e-payment policies. The government conducts training sessions, seminars, forums, and fairs to educate MSMEs on digital tools and bridge the knowledge gap, ensuring stakeholders are familiarized with new technologies and encouraged to adopt digital practices.	Key barriers to innovation include high costs, regulatory challenges, low awareness, and cultural resistance. The government mitigates these challenges by prioritizing tax cuts for MSMEs and focusing on policy formation aimed at supporting digital transformation and innovation. The National Digital Transformation Program 2025 is a key initiative driving these efforts. .	**Digital Divide:** Viet Nam addresses the digital divide by building e-commerce platforms, strengthening support policies and standards, and digitalizing operational systems through standardized electronic contract management mechanisms. **Digital Transformation of MSMEs:** Innovation centers have been established to support startup systems in four critical areas: Agriculture, Service Industry, Industry, and Regional Development. **Key Performance Indicators:** The Digital Business Index (DBI), developed by the Ministry of Information and Communications and the Ministry of Planning and Investment, is used to measure and track the progress of MSME digital transformation efforts. This tool monitors business development and ensures alignment with digital transformation goals.

Table 9: Existing Support Mechanisms[36] - Viet Nam

[36] Survey Section D: Government support, barriers, internal policies/strategies and KPIs across digitalization and innovation.

3. Summary of Competency Development Seminar

3.1. Workshop Overview

The competency development workshop, held from 30 July to 1 August at The Gardens – A St. Giles Signature Hotel & Residences in Kuala Lumpur, aimed to enhance participants' understanding of the barriers hindering MSME digitalization and innovation, focusing on skills and capacity building. The seminar featured a variety of sessions, including expert presentations, case studies, and interactive workshops, designed to maximize learning and retention.

Participants included government officials, ESG experts, academics, and representatives from MSMEs across several APEC economies, such as Brunei Darussalam; Indonesia; Malaysia; The Philippines; Russia; Thailand; and Viet Nam. Active contributions and discussions throughout the workshop provided valuable insights, shaping the key findings and best practices incorporated into the Digital Compass and Innovation Report.

The competency development seminar was held with the aim to achieve three main objectives which are:

1. To encourage participation in digital innovation and transformation among the policy makers and MSMEs for MSMEs internationalization and business sustainability.
2. Enhance digital and innovation skill and competency of policy makers and MSMEs employees to be on par with the global digital and innovation standard.
3. To gain a deeper understanding of the current situation in relation to the digitalization and innovation and identification of key barriers preventing adoption and adaptation as well as assessment methodology for MSMEs in APEC economies.

3.1.1. Day 1 (Session 1): Catalysing MSMEs for Innovation and Digitalization

The objective of this presentation by MDEC Malaysia is to offer insights into MDEC's role and responsibilities in advancing digitalization and innovation among Micro, Small, and Medium Enterprises (MSMEs) in Malaysia, while showcasing key programs and initiatives launched to drive these efforts.

Key Takeaways:

The presentation underscored several key programs and initiatives spearheaded by MDEC to promote digitalization among MSMEs. One of the flagship programs is eUsahawan, which focuses on raising digital awareness among MSMEs while providing essential support such as profiling, upskilling, onboarding, mentoring, and monitoring in which MSMEs are encouraged to report the impact of digital adoption to their sales.

Additionally, the 100 Go Digital program actively collaborates with industry players, government agencies, and partners for coaching workshops and accelerator programs organized economy wide to help MSMEs adopt digitalization at an increased pace. The digitalization areas focused on in this program encompass various critical domains such as digital payments, digital marketing, e-signature implementation, and the adoption of IoT technologies. Some examples of the 100 Go Digital success story are the Serai Group and Masdora Jewellery.

The Sharing Economy program promotes digital inclusion through promoting the adoption of sharing economy solutions and platforms by citizens, locals, businesses, sectoral development through co-creation projects with key industry players in high potential sectors such as cold-chain logistics, and industry standards, while also focusing on governance with a task force to address operational issues and challenges faced by the market.

In addition to these programs, a National MSME Digital Roadmap 2030 has been established to strengthen the innovation and digitalization ecosystem for MSMEs. It aims to elevate their digital maturity by transitioning them from basic digital capabilities (levels 1 and 2) to more advanced stages (levels 3 to 5) by 2030.

3.1.2. Day 1 (Session 2): Conducive Innovation & Digitalization Ecosystem for Micro, Small and Medium Enterprises (MSMEs)

The objective of this presentation by Ministry of Science, Technology, and Innovation Malaysia (MOSTI) Malaysia is to offer insights into the conducive innovation and digitalization ecosystem provided to Micro, Small, and Medium Enterprises (MSMEs) encompassing key programs, policies, and roadmaps that support and promote their growth in this area.

Key Takeaways:

During the presentation, it was emphasized that Malaysia is striving to transform into a High-Tech Economy by 2030 through a series of strategic initiatives, including technology roadmaps, funding schemes, and policies designed to drive research and development (R&D), innovation, and commercialization. In line with this goal, MOSTI has launched various programs to increase adoption of local technologies by government and improve commercialization, such as adoption of local R&D Products and Services in Government Procurement (MySTI) and National Technology and Innovation Sandbox (NTIS). However, challenges identified in governance, talent, funding gaps and low private sector R&D participation remain obstacles that must be addressed to strengthen the ecosystem.

In addition to the above, the presentation highlighted key takeaways from success stories within the Malaysian MSME landscape. These include the importance of focusing on niche markets, seizing global opportunities, and leveraging strategic advantages such as earning in foreign currencies like the US dollar while spending in Ringgit and developing revenue models that offer better margins compared to competitors.

3.1.3. Day 1 (Session 3): Innovation Journey in Malaysia from Ideas to Commercialization

The objective of this presentation by Malaysian Research Accelerator for Technology & Innovation (MRANTI) Malaysia is to provide an overview of Malaysia's domestic innovation ecosystem and key initiatives by MRANTI to accelerate research commercialization and support the Malaysia's vision of becoming a high-tech, knowledge-based digital economy.

Key Takeaways:

MRANTI plays a pivotal role in bridging the gap between innovation and commercialization by fostering partnerships and supporting MSMEs in their digitalization journey. MRANTI addresses the "innovation valley of death" by providing crucial support and facilitation for the commercialization of innovation and R&D. Collaboration between academia and industry is essential, as partnerships, co-creation platforms, and industry involvement in R&D drive MSME digitalization by connecting them with technological expertise and solutions.

Moreover, MRANTI's R&D and Commercialization Blueprint emphasizes on increasing commercialization through venture-building partnerships with industry leaders like Sunway and Petronas, alongside investments from Sunway and MIDA, to support scalable and impactful innovations for MSMEs. This collaborative approach not only helps MSMEs adopt digital solutions but also transforms their operations, enabling them to compete effectively in the market.

Some examples of successful MSME case studies include, Billion Prima Sdn Bhd, iRadar Sdn Bhd, and Biogenes Technologies, in which all have successfully secured funding and stakeholder support through MRANTI's National Technology and Innovation Sandbox, enabling them to commercialize their innovations and scale their businesses.

3.1.4. Day 2 (Session 1): Strengthening Policies and Regulatory Frameworks of Digital Public Services for Small and Medium Enterprises (SMEs)

The objective of this presentation by Russia is to provide an overview of Russia's digital public services for SMEs, highlighting the Gosuslugi portal and MSP.RF platform. Moreover, to share insights and lessons learned in developing digital public services tailored for SMEs based on Russia's experience.

Key Takeaways:

The presentation highlighted key digital platforms provided for MSMEs in Russia, emphasizing their role in supporting the digitalization of MSMEs as well as provided insights pertaining digital public services to MSMEs.

Firstly, the Gosuslugi platform, a one-stop government services portal with over 110 million registered users. It features an AI assistant (Robot Max) which advises 1 million unique users daily, streamlining access to vital government services. Additionally, MSP.RF which is a dedicated platform for SME support, utilized by over 850,000 SMEs and entrepreneurs. This platform offers notifications about available services and facilitates access to a range of digital tools, including training programs, workforce resources, public procurement, and investment opportunities.

In addition to the initiatives and facilities provided, some insights on providing digital public services to MSMEs were also presented. To effectively provide digital public services to MSMEs, a comprehensive needs assessment is essential. This assessment should include identifying major stakeholders and evaluating the availability of existing services. Utilizing questionnaires for SMEs, experts, and civil servants can further help pinpoint gaps in the current digital offerings, allowing for targeted improvements. Furthermore, bundling services into "super services" can enhance accessibility and better support MSMEs. By consolidating related services into comprehensive packages, the government can create a more cohesive and effective service delivery model.

3.1.5. Day 2 (Session 2): Securing your Business – What a Business Owner Should Know

The objective of this presentation by Cybersecurity Malaysia is to highlight CyberSecurity Malaysia's role as the internal cybersecurity agency by detailing its services, functions, and achievements. This includes an overview of cybersecurity governance, internal initiatives, and insights into common cyber threats that impact organizations.

Key Takeaways:

CyberSecurity Malaysia, the domestic agency responsible for cybersecurity, provides a comprehensive range of services which includes, responsive and proactive support, outreach initiatives, and capacity building. Malaysia's current ranking of 5th in the ITU Cybersecurity Index reflects significant progress in legal, technical, and organizational cybersecurity implementations, underscoring the Malaysia's commitment to improving its cyber resilience.

However, the Information Security Governance Risk and Compliance (ISGRIC) indicates that 70% of SMEs still lack effective cybersecurity standard operating procedures (SOPs) and practices. This leaves these enterprises vulnerable to various common threats, including malware, phishing, Distributed Denial of Service (DDoS) attacks, and ransomware. Such vulnerabilities can potentially lead to severe financial losses and reputational damage.

One of the initiatives highlighted by Cybersecurity Malaysia is the *Program Galakan Pemerkasaan Keselamatan Siber (*PGPKS) program offers invaluable support to SMEs by providing free assessments and resources valued at MYR100,000. This initiative is tailored to help SMEs enhance their cybersecurity posture and includes services such as cybersecurity readiness assessments, awareness training, and malware scanning. Notably, over 200 SMEs have participated in the program, benefiting from targeted interventions that equip them with the necessary tools and knowledge to mitigate cybersecurity risks.

3.1.6. Day 2 (Session 3): Accelerating and Promoting Digitalization and Innovation among MSMEs under Small Enterprise Technology Upgrading Program (SETUP)

The objective of the presentation was to showcase how digitalization and innovation are essential for accelerating the growth and competitiveness of Micro, Small, and Medium Enterprises (MSMEs) in The Philippines and across other economies. By harnessing science, technology, and innovation, MSMEs can overcome structural barriers, enhance productivity, and achieve sustainable industrial transformation.

Key Takeaways:

The presentation outlines The Philippines' goals for encouraging businesses to engage in innovation and adopt new technologies to introduce new products to the market and improve production efficiency. Despite being considered an outperformer on the Global Innovation Index, excelling beyond expectations given its level of economic development, local MSMEs face several barriers with engaging technologies in their businesses including limited access to capital, lack of digital skills and awareness, infrastructure, and connectivity issues.

The speaker defined the innovation as a product, service, business model, or strategy that is both novel and useful, as well as explained the three stages of innovation in businesses – digitization, digitalization, and digital transformation.

To facilitate innovation among businesses, The Philippines has established the iSTRIKE Davao Regional Inclusive Innovation Centres (RIICs) to drive research commercialization and build institutional support system for innovation with harmonized programs. iSTRIKE Davao RIIC adopts the penta-helix model for collaboration. This model brings together the media, government, industry, civil society, and higher education institutions to foster cross-sector collaboration and ensure strategies to promote innovation in MSMEs are informed by diverse perspectives and expertise. The Small Enterprise Technology Upgrading Program (SETUP 4.0) was also launched to invigorate local R&D efforts and facilitate the acquisition of relevant technologies by Filipino companies.

Lastly, the presentation highlighted several examples of successful technologies adopted by MSMEs, including a smart post-harvest processing facility for cacao at the Biao Agrarian Reform Beneficiaries Cooperative (BARBCO), an AI-based non-invasive grading system for durians (AIDurian), a blockchain-based system for transparent traceability of Halal-and-Tayeb cacao products, and the digitalization and preservation of Inaul patterns from the Lingawasan Marsh.

3.1.7. Day 2 (Session 4): Facilitating SME Financing Through Digital Platforms

This presentation by Funding Societies highlighted how digital platforms are transforming SME financing by providing quicker, more accessible, and affordable funding solutions to underserved businesses, thereby driving economic growth across various sectors.

Key Takeaways:

Funding Societies provides fast, flexible, and tailored financing solutions to MSMEs, having disbursed over MYR18 billion across Southeast Asia while serving more than 100,000 SMEs with a low default rate of just 2%. The company is backed by reputable investors and has earned recognition through accolades such as the Fintech Frontiers Awards Malaysia and Brands for Good.

Between 2018 and 2019, customers of Funding Societies contributed USD1.3 billion to Malaysia's GDP and USD3.6 billion to Southeast Asia's GDP through the multiplier effect, while also supported 63,000 jobs in Malaysia and 350,000 jobs across the region. The company leverages data-driven credit approaches, including model underwriting and automation, to streamline the end-to-end digital application process via a web app. By partnering with government, corporates, financial institutions, and tech companies the company can conduct better risk assessment, improve non-performing loan (NPL) experience, and ensure efficient funding processes with lower default rates.

A key component of their offerings is the digital supply chain platform, SilkRoad, which digitalizes trade finance, enabling offline SMEs to go online. SilkRoad supports diverse user types, offers over 15 financial products, and provides features such as exposure monitoring, ERP integration, and regulatory-grade security, helping SMEs streamline their operations and boost competitiveness. Through these initiatives, Funding Societies continues to empower SMEs across the region, contributing to broader economic development.

3.1.8. Day 2 (Session 5): Sales Singularity: Harnessing the Infinite Potential of Generative AI

The presentation explored how generative AI can revolutionize sales processes by providing insights, automating workflows, and personalizing sales strategies to accelerate pipeline conversion and improve business outcomes.

Key Takeaways:

The presentation highlighted Malaysia's strong digital landscape, characterised by a digital population of 33 million and a 97% daily internet penetration rate among individuals aged 15 and above, who spend an average of 8 hours online each day. Additionally, Malaysia has high mobile penetration, with 96.1% of users accessing the internet via smartphones and spending an average of 4 hours and 38 minutes daily on mobile internet. This widespread adoption of mobile technology reflects Malaysia's deeply connected and digitally engaged society.

CelcomDigi's RAE is at the forefront of revolutionising sales capabilities by leveraging data and AI to optimise pipeline conversion. The platform uses insights to identify new opportunities, analytics to predict leads and sales trends, AI to personalise sales pitches and refine strategies, and automation to streamline processes while enforcing best practices. Within just two months, RAE has delivered significant improvements, tripling sales solution closures and increasing persona contacts by 2-3 times. Additionally, it has reduced the sales cycle by over 20 days and saved 14 hours per week on research, greatly enhancing overall efficiency and productivity.

3.1.9. Day 2 (Session 6): Introduction to Black Soldier Fly Technology for Organic Waste Management in Malaysia to Enhance Sustainability Practices

The presentation focused on the application of Black Soldier Fly (BSF) technology as a sustainable solution for managing organic waste while producing high-protein animal feed and nutrient-rich fertilizers. This technology provides an eco-friendly and scalable alternative to address food chain crises and reduce environmental impact.

Key Takeaways:

In Malaysia, 6.2 million tonnes of food are wasted annually, with 25% still edible, alongside 1.2 million tonnes of agricultural waste. The agricultural sector depends on 2.4 million tonnes of poultry feed, 60,000 tonnes of fish meal, and 1.5 million tonnes of fertilizer, 60% of which is imported, indicating significant strain on the food supply chain. Bioloop's mission is twofold: to provide nutritious, sustainable food solutions and to revolutionize organic waste management through BSF technology.

BSF larvae play a crucial role in this process by efficiently converting organic waste into protein-rich animal feed and nutrient-dense fertilizers. They are disease-resistant, have antibacterial properties, and offer a high protein content, making them ideal for sustainable agriculture. As voracious eaters, BSF larvae can grow up to 10,000 times their weight within 15 days, enabling rapid and effective waste conversion.

Bioloop's technology accelerates organic waste management by upcycling waste into valuable products. Through automation and innovation, including advanced mixing and harvesting machinery and the Bioloop Intelligent Feeding System, Bioloop has made this process scalable and cost-effective. BSF technology has been successfully implemented across various sectors in Malaysia, including poultry feed production, palm oil waste management, and shrimp farming, providing a sustainable alternative to imported feed and fertilizers.

3.1.10. Day 3 (Session 1): Promoting Digitalization and Innovation among MSMEs in APEC Economies: Overcoming Difficulties with Digital Adoption

The presentation focuses on promoting digitalization and innovation among MSMEs in APEC economies. The presentation addressed key challenges faced by MSMEs, such as limited IT infrastructure, difficulties accessing finance, and restricted opportunities for internationalisation, and explored practical digital solutions to overcome these barriers.

Key Takeaways:

MSMEs play a crucial role globally, contributing up to 70% of employment and GDP. However, 67% of MSMEs struggle to sustain themselves due to the low rate of technological adoption. Common obstacles in digitalization for these businesses include challenges in accessing finance, a lack of technological infrastructure, and insufficient investment in business R&D.

To tackle these issues, the session highlighted several solutions, such as providing training and education, outsourcing IT support, and leveraging fintech and crowdsourcing platforms. Additionally, the presentation recommended the adoption of various software, apps, and digital platforms to enhance MSME operations in areas like project management, accounting and finance, inventory management, marketing, manufacturing, and customer support. These initiatives aim to empower MSMEs to integrate digital tools into their businesses, thereby enhancing their competitiveness and sustainability.

3.1.11. Day 3 (Session 2): Promoting Digitalization with e-services by OSMEP

To promote the digital transformation of MSMEs in Thailand by introducing e-services provided by OSMEP, and important features such as SME One ID and SME CONNEXT Marketplace that aims to streamline processes and facilitate business growth among SMEs.

Key Takeaways:

To drive MSME growth and enhance global competitiveness, OSMEP has introduced four key e-services - SME ONE, SME Academy 365, SME CONNEXT, and SME Coach. SME ONE serves as a comprehensive information portal on SME development and relevant agencies, providing easy access to essential resources. SME Academy 365 is an eLearning platform tailored to SMEs, helping them acquire knowledge and skills for business development. SME CONNEXT, a mobile application, consolidates all online services for SMEs, while SME Coach connects businesses with a network of experts to assist in scaling their operations. Some notable features of OSMEP's four main e-Services include SME ONE ID, which allows SMEs to register once and have their information shared automatically with relevant development agencies, eliminating the need for multiple registrations. Additionally, the SME CONNEXT Marketplace enables SMEs to promote and showcase their products on a centralised platform, expanding their reach and visibility. Other than e-services, OSMEP, in collaboration with the Comptroller General’s Department also launched the Thai SME-GP program, which prioritises SMEs in government procurements, giving them priority for contracts under THB13,888 and offering benefits such as e-bidding access and free e-catalogue listings, ensuring SMEs have a competitive edge in government contracts.

3.2. Highlights from Each Economy

3.2.1. Brunei Darussalam

As of 2020, MSMEs represent 97.2% of all registered businesses in Brunei Darussalam, accounting for 30.1% of the total employed persons in Brunei Darussalam.[37] As the domestic agency responsible for MSME development, Darussalam Enterprise (DARe) is committed to cultivating dynamic and resilient MSMEs, with the goal of positioning them as key drivers of Brunei Darussalam's economic growth.

To support this vision, current initiatives are focused on fostering innovation and entrepreneurship. The Brunei Innovation Lab stands as a central platform aimed at developing a robust digital ecosystem that nurtures digital champions and technopreneurs. Through stakeholder engagement, ideation, prototyping, and commercialization, the lab brings innovative solutions to market, thereby contributing to Brunei Darussalam's broader digital transformation agenda. Another notable initiative is Startup673, a program designed to promote entrepreneurial innovation. This initiative follows a structured three-phase approach, guiding participants from the ideation stage through to validation, prototyping, and finally, growth and development, with the objective of transforming creative ideas into successful, sustainable businesses.

Looking ahead, DARe aims to strengthen collaboration by fostering communication and exploring opportunities for cross-border partnerships. This focus on building networks and sharing knowledge is expected to drive innovation and growth among local enterprises. Additionally, over the next few years, the Brunei Innovation Lab plans to develop more talent in the field of technology, supporting the growth of local startups through collaborations with tech experts and venture builders, both locally and regionally. These strategic efforts reflect Brunei Darussalam's commitment to creating a dynamic and innovative business environment that can compete on a global scale.

3.2.2. Indonesia

Indonesia's economy is heavily supported by its 64 million Micro, Small, and Medium Enterprises (MSMEs), which contribute 61% to the Indonesia's GDP and employ 97% of the domestic workforce. As of 2023, 27 million MSMEs have integrated into the digital economy, reflecting the economy's growing emphasis on digital transformation. The government has set an ambitious target to increase this number to 30 million by 2024, underscoring the crucial role that digitalization plays in driving economic growth and competitiveness.

To support this digital shift, the Ministry of Cooperatives and SMEs has implemented the Digital Transformation Roadmap, which focuses on enhancing digital literacy, integrating MSME data, and optimising digital transformation across various sectors. Additionally, the government's Medium-Term Development Plan (2020-2024) outlines initiatives aimed at developing ICT infrastructure, boosting digital skills, and harmonising policies and regulations to accelerate the Indonesia's digital transformation. These efforts are designed to strengthen Indonesia's economic competitiveness by fostering a more integrated and technologically advanced business environment.

[37] Kon, J. (2023, March 23) Empowering MSMEs towards Economic Growth. Borneo Bulletin. https://borneobulletin.com.bn/empowering-msmes-towards-economic-growth/

Looking to the future, Indonesia plans to continue its long-term digitalization journey through the Digital Vision 2030 and 2045. This vision is centred on building a robust digital economy, government, and society by 2030 and beyond. Indonesia's strategy will be anchored in a solid foundation of digital infrastructure, complemented by key enablers such as effective regulation, education and human resource development, investment, and alignment among stakeholders. Through these initiatives, Indonesia aims to create a comprehensive digital ecosystem that supports sustainable growth, innovation, and global competitiveness well into the future.

3.2.3. Malaysia

In Malaysia, SME Corporation Malaysia (SME Corp. Malaysia) is the agency that is responsible to promote and develop Micro, Small and Medium Enterprises (MSMEs). As of 2023, MSMEs accounted for 96.9% (1,101,725 firms) of overall establishments in Malaysia. This marks a growth of over 190,000 firms since 2015, when there were 907,065 MSMEs, reflecting an average annual growth rate of 2.5%.

In driving digitalization among MSMEs, Malaysia has done several current initiatives and that includes the Digital Productivity Nexus (DPN) which has four key pillars to its Digital Transformation initiative: Mindset, Tools, Talent, and Digital Regulatory. These pillars focus on fostering digital leadership, providing access to necessary digital tools, building a highly skilled workforce to drive digital transformation as well as have digital regulations to support digitalization.

Moreover, the DALIA Productivity Step-Up Program was established, in collaboration with training centers and digital solution providers, enhances MSME productivity and competitiveness by guiding firms through diagnostics, process analysis, and tailored digital interventions like Google Workspace, EasyStore, and Google Analytics, making technology accessible and affordable for targeted productivity improvements.

Moving forward, Malaysia is committed to driving MSME growth with a target of boosting economic expansion by up to 10% and generating MYR1 billion in revenue by 2030. Supporting this vision, the AI Sandbox aims to facilitate the launch of up to 900 AI startups by 2026 and to develop over 13,000 new AI talents. Additionally, Malaysia is set to expand 5G coverage to reach over 80% of populated areas, aiming to surpass the current adoption rate of 35.4%. Significant investments from tech giants like Google, Nvidia, and Microsoft are also positioning Johor Bahru as Southeast Asia’s fastest-growing data center market. Together, MSMEs and startups will drive Malaysia’s digital future by embracing technology, fuelling economic growth, and leveraging a supportive ecosystem to accelerate innovation.

3.2.4. The Philippines

In The Philippines, MSMEs represent 99.59% of all business establishments, with 1,105,143 out of 1,109,684 enterprises classified as MSMEs. The Department of Trade and Industry (DTI) – Bureau of SME Development (BSMED) is tasked with promoting and advancing these businesses by addressing their needs in areas such as technology transfer, financing, marketing, and training. Through public-private partnerships, the bureau aims to enhance MSMEs' digital skills, knowledge, and resources, positioning them for greater competitiveness in the digital economy.

The Philippines is accelerating MSME digitalization through initiatives such as the Tech Tools for MSMEs, a resource hub that provides micro, small, and medium enterprises with information on various technology tools, applications, platforms, resources that are available in the market. Complementing this is MSME DigiTalks, a program focused on accelerating digital adoption through information-sharing sessions, webinars, and podcasts that explore market tools while encouraging active participation from tech providers and enablers across both private and government sectors. Moreover, the MSME Client Profile Monitoring System, a cloud-based, centralized platform which enables the DTI to effectively monitor profiles and interventions for all clients, particularly MSMEs. This system assists in evaluating policy impact, directing specific initiatives, and is also the databank for the various forms of assistance provided by the DTI.

The Philippines has outlined several plans to accelerate MSME digitalization in the future. These plans include developing and implementing strategies especially for SETUP beneficiaries, as well as enhancing the digitalization module within the DTI's Kapatid Mentor Me program by drawing inspiration from Malaysia's KOMUNITI courses. Additionally, to develop a proposal that offers a complimentary cybersecurity assessment program to digitally prepared SMEs. The member economy government is also considering adopting SME Corp Malaysia's ESG Guidelines and explore the development of AI usage guidelines for MSMEs by benchmarking with CelcomDigi and engaging companies from various sectors to study AI adoption and customization based on MSMEs needs. Other plans for The Philippines also include enhance internet connectivity in The Philippines, improve MSMEs' digital competencies by focusing on the necessary skills, knowledge, and resources for effective operation, and foster Public-Private Partnerships to leverage strengths and resources from both sectors to achieve common goals.

3.2.5. Russia

Russia's economy is supported by over 6.35 million Micro, Small, and Medium Enterprises (MSMEs), which contribute 21% to the economy's GDP. These businesses operate across key sectors, including trade (36%), transport (20%), technology (10%), and IT (7%), highlighting their significant role in diversifying and driving the domestic economy. To enhance the growth and development of MSMEs, Russia has implemented several initiatives. A comprehensive digital platform has been developed to provide access to a wide range of support services, including financing, legal assistance, and property advice, enabling businesses to access essential tools and resources remotely. This initiative ensures that MSMEs can navigate regulatory landscapes and secure the support they need to thrive. Additionally, the government is actively supporting domestic and cross-border e-commerce through the Russian Export Centre (REC), which offers consultation services for potential exporters. The REC provides financing and regulatory assistance via the Single Window platform, simplifying the process for businesses looking to enter international markets. The Made in Russia program, under the REC, further promotes Russian products by facilitating their sale on foreign online stores, thus expanding their global reach. Moreover, Russia is fostering tech startup growth by establishing a supportive regulatory framework, which includes initiatives like "Going up – from startup to IPO" and the Federal Law on Development of Technological Companies, ensuring that tech startups receive statutory support and can scale successfully.

Looking ahead, Russia plans to continue advancing research on the application of Artificial Intelligence (AI) across various economic sectors. This effort focuses on developing tailored AI solutions that address the unique challenges faced by MSMEs, thus enabling them to enhance efficiency and innovation. Future plans also include strengthening existing initiatives by advancing MSME and startup infrastructure, expanding e-government services, and accelerating digital upskilling programs. Additionally, Russia aims to enhance its digital infrastructure to foster a more conducive environment for innovation, supporting sustainable economic growth and positioning the economy as a leader in the digital economy.

3.2.6. Thailand

In Thailand, MSMEs contribute 35% to the economy's GDP, making them the second-largest contributor after large enterprises. They represent approximately 28.36% of all businesses in Thailand, highlighting the economy's strong emphasis on the agriculture sector relative to other economies. The Digital Economy Promotion Agency (DEPA) is the agency which plays a crucial role in facilitating digitalization efforts, including providing support tailored to the digitalization needs of MSMEs. In accelerating digitalization among MSMEs, Thailand is currently actively enhancing its manpower capabilities and promoting digitalization among micro, small, and medium enterprises (MSMEs) through a range of initiatives. The government provides scholarships, startup funding, marketing support, and infrastructure development while the Board of Investment (BOI) offers substantial investment incentives, including exemptions on import duties and corporate income tax for up to 13 years.

To develop a skilled workforce, Thailand focuses on improving digital skills via training and certification programs, supported by platforms like Coding Thailand and ThaiDigizen, as well as support for EdTech startups and coding schools. Additionally, Thailand has established a digital catalog which facilitates access to government markets for businesses. Moreover, the Thailand Digital Valley fosters a vibrant digital ecosystem by providing corporate income tax exemptions, regulatory sandboxes for innovation, smart visas, one-stop services and DEPA's promotion scheme. Lastly, the establishment of the Digital Hub, Eastern Economic Corridor (EEC) to Korat, aims to drive regional growth and serve as a strategic gateway to ASEAN, China, and India through multimodal linkages and free trade areas.

To advance its digital agenda in the future, Thailand has launched the Digital Economy Master Plan 2023-2027, a strategic framework designed to strengthen the economy's digital transformation and enhance competitiveness across various sectors. In parallel, the Digital Economy Promotion Agency (DEPA) supports the digital startup ecosystem through its Startup Support Mechanism. Currently, DEPA is assisting 144 businesses via this program, which provides investment, market access, networking opportunities, capacity building, and aids startups with fostering international collaborations with entities such as Enterprise Singapore and MDEC. These efforts reflect Thailand's commitment to fostering a robust digital ecosystem that empowers businesses and drives economic growth.

3.2.7. Viet Nam

The Ministry of Planning and Investment of Viet Nam, through the Agency for Enterprise Development (AED), plays a crucial role in facilitating digitalization efforts, particularly for micro, small, and medium enterprises (MSMEs). The agency aims to increase the number of enterprises receiving support on building and implementing digital transformation roadmap, trained on digital transformation, self-assess readiness for digital transformation, thereby fostering a more resilient and competitive business environment in Viet Nam.

In supporting the digitalization of MSMEs, Viet Nam's government has implemented several support programs aimed at guiding the digital transformation of small and medium enterprises (SMEs). The Government Support Program, which provides legal framework and budget allocation to guide SME support such as the Decree 80/2021/ND-CP details and guides the implementation of the Law on Provision Support for SMEs, including supplementing the legal basis for digital transformation supporting activities and mechanisms for SMEs as well as the Circular 52/2023/TT-BTC dated 8 August 2023 of the Ministry of Finance guiding the mechanism for using the regular state budget to support SMEs according to the provisions of Decree No.80/2021/ ND-CP. The Digital Transformation Support Program 2021-2025 provides essential policy frameworks, financial incentives, training, consulting, and technological solutions to assist SMEs in integrating digital technologies, improving operational efficiency, and enhancing competitiveness. Complementing this initiative, the Enterprise Support Program 2021-2025 focuses on sharing knowledge about digital transformation and expanding networks of experts, offering advanced consulting services and solutions tailored for enterprises.

Viet Nam's future plans for digitalizing micro, small, and medium enterprises (MSMEs) focus on several strategic areas to foster economic growth. The government plans to target support by identifying key subsectors and prioritizing efforts to accelerate MSME digitalization, particularly in areas with the highest economic impact. To enhance the digital ecosystem, Viet Nam aims to establish a comprehensive mentor network, map existing digital platforms, and create a “Single Window” platform that streamlines MSME needs, covering everything from administrative processes to capacity building. Additionally, the government seeks to facilitate data-driven decisions by expanding shared data platforms and providing advanced training, consulting, and tailored support for digital transformation solutions. These concerted efforts are designed to empower MSMEs and strengthen their role in Viet Nam’s economic landscape.

3.3. Proposed Recommendations for APEC by Each Economy

Economies	Proposed Recommendations
Brunei Darussalam	Brunei Darussalam recommends fostering continuous engagement among economies, a collaborative platform should be established to encourage open communication and facilitate the sharing of best practices, policies, and economy market insights.
Indonesia	Indonesia has proposed several recommendations aimed at accelerating digitalization and innovation within APEC economies. These recommendations include: • Creating specific design modules and tools based on key findings to help APEC members accelerate digitalization and innovation within their economies. • Provide actionable recommendations for high-level decision-makers and stakeholders to integrate and improve existing digitalization and innovation programs effectively. • Advocating for the widespread integration of QR code payment systems across APEC economies to facilitate seamless border transactions for MSMEs, enhancing their access to digital payment solutions.
Malaysia	Malaysia proposed several recommendations for APEC economies, which includes: • Establishing a unified digital strategy for MSMEs that outlines common goals, standards, and best practices. • Fostering strategic partnerships to enhance digital infrastructure and set interoperability standards for cross-border services. • Enhancing the adoption of ESG principles and the implementation of SDGs using technology through corporate engagement and joint R&D initiatives. • Negotiating and implementing digital trade agreements to promote data flow and the exchange of digital goods and services. • Address the digital divide by implementing policies for equitable access and develop programs to make digital access affordable. • Developing joint training programs, certifications, and exchange initiatives to improve digital literacy across the region.
The Philippines	The Philippines recommends documenting or establishing a resource book of best practices on digitalization and innovation, specifically tailored for MSMEs in APEC economies. This will serve as a guide to support the adoption of these practices across different economies.
Russia	Russia proposed two key recommendations for APEC economies, which includes: • Continuing capacity building for MSMEs, focusing on key areas such as Industry 4.0 technologies, green initiatives, and empowering women and youth led MSMEs. • Strengthening connections between regional MSMEs and large companies to enhance their participation in regional value chains and supply chains.
Thailand	Thailand proposed several recommendations for APEC economies, which includes: • Encouraging APEC to conduct regular workshops to share best practices for MSME digital transformation, to share best practices for MSME digital transformation and develop a guidebook or toolkit for enhancing digitalization. • Creating designated areas within the APEC Sandbox to develop tailored digital and innovation models for MSMEs.

Viet Nam	Viet Nam proposes the following for APEC economies: • Organising themed meetings and training sessions for MSMEs, focusing on key topics such as data analysis and AI. • Sending experts to APEC economies to assist MSMEs with specific digitalization challenges and publishing a handbook on digital transformation for key sectors. • Creating shared online resources and the establishment of an APEC fund to support MSME digitalization and commercialization efforts.

Table 10: Proposed Recommendations for APEC by Each Economy

3.4. Key Takeaways from the Competency Development Workshop

1. Comprehensive Government Support
To support MSME digitalization, government initiatives should focus on providing thorough training in digital literacy and IT skills, coupled with technical assistance. Financial incentives such as subsidies, grants, and coordinated efforts across relevant agencies are essential to address the challenges MSMEs face. This approach can empower MSMEs to thrive in the digital economy by equipping them with the necessary skills and resources to adopt digital technologies effectively.

2. Ecosystem Development and Networking
Building a robust digital ecosystem requires restructuring support systems, including policies, program, and industry networks. Strengthening these elements is key to promoting collaboration and creating an environment conducive to innovation. Information sharing between stakeholders—such as SMEs, corporations, and trade offices—is vital for enhancing collaboration and fostering sustainable growth.

3. Global Perspectives and Best Practices
MSMEs can benefit significantly from learning and adopting global trends, best practices, and successful digitalization initiatives from other economies. This will help strengthen local digitalization efforts while keeping businesses aligned with international standards and technological advancements. Integrating global insights ensures that local MSMEs remain competitive and adaptable in the global marketplace.

4. Integrated Support for Digital Transformation
For MSMEs to embrace digital transformation, they must be equipped with advanced technologies such as AI, IoT, and blockchain. Financial incentives, consultancy services, and non-financial initiatives—such as raising awareness and building capacity—should be integrated into a holistic support strategy. This would enable MSMEs to leverage digital solutions effectively, leading to sustainable growth.

5. Tailored Support and Capacity Building
Providing tailored support for MSMEs involves adopting an assessment-driven approach that evaluates the specific needs and digital capabilities of each enterprise. Offering customised learning opportunities and raising cybersecurity awareness is crucial to helping MSMEs effectively integrate digital tools while safeguarding against cyber threats. A targeted strategy is essential for addressing the unique challenges that MSMEs face during digitalization.

6. Continuous Improvement and Validation
To ensure ongoing success in MSME digitalization, continuous validation of transformation efforts is necessary. Keeping up to date with the latest technologies, regularly assessing MSME needs, and refining support program are essential components of a sustainable digital transformation strategy. This will allow businesses to adapt to new developments and ensure long-term success.

3.5. Success Stories

Indonesia

Founded in 2020, Broiler X is an innovative startup that provides an end-to-end platform for poultry farm management. This platform provides farmers with a complete ecosystem, streamlining operations and enhancing access to procurement, distribution and planning tools. By leveraging data-driven insights, Broiler X optimizes farm management and decision-making, while IoT integration of IoT helps maximize farming experience and production. By connecting farmers with experts, suppliers, and essential services, the platform helps reduce costs, improve yields, and promote sustainable practices, ultimately driving greater profitability and operational efficiency for poultry farmers. Broiler X has gained recognition for its impact on the poultry industry, notably being selected as one of the top 10 startups in the Pahlawan Digital Program, where it received IDR 9 billion in funding to further its initiatives. This success story exemplifies how micro, small, and medium enterprises (MSMEs) can effectively scale and innovate through digitalization and government support, positioning themselves as industry leaders.

Malaysia

In Malaysia, companies like Funding Societies and Bioloop Sdn. Bhd. are pioneering SME growth and sustainability through innovative digital solutions. Established in 2015, Funding Societies has become Southeast Asia's largest digital financing platform for SMEs, disbursing over MYR18 billion to sectors such as retail, manufacturing, and agriculture. Utilising data-driven credit assessments and automation, the platform streamlines funding processes, reduces default rates, and offers tailored, flexible financing options to underserved businesses. Supporting Malaysia's digitalization goals, Funding Societies also facilitates access to the SME Digitalization Grant, encouraging digital tool adoption and enhancing SME competitiveness. Partnerships with agencies like MDEC and SME Corp. Malaysia further empower SMEs, aligning with the economy's digital and economic ambitions.

On the other hand, Bioloop Sdn. Bhd. drives sustainable agriculture by using black soldier fly larvae to convert agricultural waste into animal feed and organic fertilisers. Their technology enhances scalability and cost-efficiency through automated breeding, mixing, and feeding systems, offering sustainable alternatives across sectors like poultry feed production and palm oil waste management. Bioloop's growth has been supported by funding from initiatives like MAGIC, Yayasan Hasanah, and SME Corp. Malaysia, enabling further innovation in sustainable agriculture. Together, these companies demonstrate how Malaysian MSMEs are embracing technology to enhance operations, promote sustainability, and strengthen economic resilience.

Other notable success stories showcasing the impact of digitalization on micro, small, and medium enterprises (MSMEs) include Indonesia's Broiler X and The Philippines' Tropical Palm Herb Manufacturing. Both companies have effectively harnessed digital technologies to streamline their operations, significantly expand their market reach, and enhance profitability.

The Philippines

Similarly, Tropical Palm Herb Manufacturing, an MSME founded in 2013, has become a success story by leveraging digital technology to expand productivity and streamline its operations. Specializing in delivering export-quality herbal products, including Moringa and Virgin Coconut oil, the company has significantly broadened its market reach through digitalization. As of 2023, it utilizes digital tools across multiple areas including, 50% of its operations employ online communication platforms like Facebook, Viber, WhatsApp, and Google; 30% focuses on e-commerce and online advertising to enhance sales and customer engagement; and 20% integrates real-time data and online reporting to improve internal processes. To support MSMEs like Tropical Palm Herb in digital transformation, The Philippine government has established initiatives like The Philippines Securing Manufacturing Revitalization & Transformation (SMART) Program, investing PHP25-30 billion over three years to modernize manufacturing with Industry 4.0 technology and foster new business models. The SPEED (Strengthening Private Enterprises for the Digital Economy) Initiative further supports MSMEs by integrating logistics, e-commerce platforms and promoting e-payments and fintech, and enhancing consumer protection. In addition to these programs, the Department of Science and Technology (DOST) - Rizal provides grants to MSMEs, including a dehydrator machine to Tropical Palm Herb, helping enhance production capabilities. Tropical Palm Herb Manufacturing's story underscores the impact of digitalization and government support in scaling MSMEs, fostering innovation, and enhancing global competitiveness.

3.6. Breakout Session Insights

A breakout session was held on Day 2 of the workshop to explore the key pillars of digitalization and innovation among MSMEs, with discussions focused on three critical areas: *Digital Compass*, *Innovation Report*, and *Monitoring & Evaluation*. By breaking the participants into smaller groups based on these topics, the workshop aimed to gather deeper insights, identify challenges, and share best practices from different economies. This collaborative environment allowed for the exchange of ideas that could be applied to enhance MSME digitalization efforts across the region.

3.6.1. Digital Compass

Supports Available

Several key support mechanisms are in place to promote MSME digitalization, including financial grants, training, and shared services. Malaysia provides financial grants covering 50% of the costs for MSMEs to purchase equipment. This financial support is monitored to ensure proper utilization and effectiveness. This in turn ensures greater participation of MSMEs in the digital market. E-commerce training programs, such as those seen in Indonesia, provide MSMEs with essential knowledge to engage effectively with online marketplaces. These programs are often government-funded in collaboration with e-commerce platforms to offer targeted training program for MSMEs in Indonesia. Additionally, shared service facilities, like those in The Philippines, provide access to necessary equipment and technology to MSMEs, helping them optimize production and packaging processes. These facilities are performance-based, offering shared resources to enhance community outcomes.

Best Practices Observed

Several best practices have emerged to guide MSMEs toward successful digitalization efforts. Digital marketing and e-commerce platforms have become instrumental in helping MSMEs commercialize their products. Many MSMEs now leverage e-commerce to engage with both local and international markets, while utilizing AI for personalized marketing strategies. In agriculture, IoT integration has helped optimize operations through automated sensors and data-driven tools, enhancing both productivity and market access. Another key practice is MSME tender allocation, where the governments of some APEC economies reserve specific tender allocation for MSMEs. This strategy provides smaller enterprises access to larger projects and lucrative opportunities, helping them thrive in competitive markets.

Existing Challenges

Despite these supports, several challenges persist that hinder full digital adoption among MSMEs. Low digital literacy is a significant barrier, with many MSMEs lacking the basic skills needed to utilize digital platforms effectively. This gap limits their ability to leverage online tools for business growth. Limited digital adoption further complicates this issue, as MSMEs often use digital tools in isolation without integrating them into broader business processes. Additionally, many MSMEs face funding constraints, as they heavily depend on government subsidies and grants. This reliance creates challenges for sustainability, making it difficult for MSMEs to independently adopt and maintain digital solutions in the long term.

3.6.2. Innovation Report

Supports Available

The innovation landscape across several economies is bolstered by various forms of support, including financial grants, innovation hubs, and domestic innovation centers. In The Philippines, financial grants and funding programs are provided to MSMEs to purchase equipment and implement systems, with no collateral required, ensuring these resources are accessible to a broader range of small businesses. Viet Nam's National Innovation Centers meanwhile play a pivotal role in supporting MSMEs and larger companies, providing infrastructure, expert advice, and fostering advanced research and innovation efforts. Similarly, several other economies also emphasize the establishment of innovation hubs and incubators to facilitate commercialization. These hubs enable MSMEs to network with other entrepreneurs, access resources, and receive mentorship essential for scaling innovations effectively.

Best Practices Observed

Successful innovation practices include Techfest events and collaborative problem-solving initiatives. Viet Nam's Techfest events are designed to connect MSMEs with other innovators, share best practices, and foster a culture of continuous improvement through networking and collaboration. These events serve as a platform for showcasing innovative ideas and gaining valuable insights from different participants. In Brunei Darussalam, problem-solving collaborations are actively promoted, where MSMEs partner with universities to co-develop solutions tailored to their unique challenges. This approach ensures that intellectual property generated through these collaborations stays with the MSMEs, giving them competitive advantages. Additionally, the partnerships between MSMEs and universities foster tailored support to address specific business challenges, creating a cycle of innovation.

Existing Challenges

Despite the availability of grants and support programs, MSMEs across various economies still face significant hurdles in adopting and scaling innovations. Technical readiness and adoption remain a critical issue, as MSMEs often lack the resources and infrastructure required to implement advanced technological solutions effectively. Regulatory processes and complex application requirements can also be daunting, slowing down the rate of innovation. Another ongoing challenge is post-pandemic economic recovery, where MSMEs are grappling with limited financial resources, disrupted supply chains, and reduced market opportunities. While some governments have provided relief measures, many MSMEs are still struggling to stabilize their operations and take advantage of available innovation programs. This economic uncertainty adds another layer of complexity, making it difficult for smaller enterprises to pursue growth through innovation.

3.6.3. Monitoring & Evaluation

Business Digitalization Adoption Index (BDAI)

The Business Digitalization Adoption Index (BDAI) plays a crucial role in Malaysia's efforts to measure digital adoption among MSMEs. This KPI, monitored by a dedicated task force under the Malaysian Digital Economy Blueprint, ensures that the member economy government can track the digital maturity of its enterprises. Data is collected every four months, providing real-time insights that allow policymakers to adjust strategies effectively. This continuous evaluation helps foster a dynamic business environment, where adjustments can be made promptly to support MSMEs in their digital transformation efforts.

Enterprise Database

The Enterprise Database model, inspired by Viet Nam's approach, aggregates information from various government agencies into a centralized domestic repository. This includes critical data such as tax records, income data, GDP contributions, and financial reports. The goal of the database is to offer a transparent platform for MSMEs to assess their readiness and competitiveness. It also helps the government make informed decisions when allocating resources, ensuring that support is aligned with the specific needs of businesses.

Digital Economy Promotion Agency Surveys

Digital Economy Promotion Agency Surveys conducted by Thailand are another example of using comprehensive surveys to gauge technology adoption. These surveys provide in-depth insights into the adoption levels across industries and have already produced key findings, such as the 40% adoption rate among MSMEs following the COVID-19 pandemic. Such surveys allow governments to understand the gaps and challenges in digital adoption, thereby enabling the creation of targeted interventions to encourage further technology integration.

Roadmaps and Incubation Centers

Roadmaps and Incubation Centers in The Philippines exemplifies the importance of long-term planning in digital transformation. These centers not only support tech-related research and development but also offer government support to MSMEs in the form of financial assistance and regulatory guidance. The roadmap outlines clear KPIs, including adoption rates and financial capabilities, ensuring that the progress of digital transformation is regularly measured. This structured approach helps MSMEs stay on track and provides a pathway for sustainable growth and innovation in the digital economy.

4. Digital Compass: Findings and Analysis

4.1. Current State Analysis

4.1.1. Brunei Darussalam

As of 2020, MSMEs represent 97.2% of all registered businesses in Brunei Darussalam, accounting for 30.1% of the total employed persons in Brunei Darussalam.[38] Dominated by microenterprises involved in traditional trading activities, the MSME sector presents holds huge potential for digitalization. Brunei Darussalam's digitalization transformation focuses on enhancing digital public services and investing in essential infrastructure, aiming to streamline processes, boost operational efficiency, and support MSMEs in adapting to a more digitally integrated economy.

Brunei Darussalam's digital transformation is primarily driven by the Digital Economy Masterplan 2025,[39] which outlines a strategic plan to position the economy as a Smart Nation by integrating digital technologies across industries. The Masterplan focuses on four key strategic thrusts: Industry Digitalization, Government Digitalization, Thriving ICT Industry, and Digital Talent Development. This comprehensive approach aims to improve public service delivery, enhance the ICT sector's contribution to GDP, and foster a knowledge-based economy.

Moreover, significant investments have been made to improve digital infrastructure in Brunei Darussalam, such as undersea cable systems and cloud services, to enhance connectivity and data-sharing capabilities.[40] This infrastructure is vital for supporting the growth of Brunei Darussalam's digital economy, enabling faster, more reliable internet access for businesses and the public sector. Additionally, key initiatives such as the Digital Identity Project,[41] designed to provide secure digital identities for all citizens, and the Digital Payment Hub,[42] which aims to reduce cash reliance and promote the use of digital payments across the economy. These projects are part of Brunei Darussalam's effort to digitize public services and create a more efficient, technology-driven government.

[38] Kon, J. (2023, March 23) Empowering MSMEs towards Economic Growth. *Borneo Bulletin.* https://borneobulletin.com.bn/empowering-msmes-towards-economic-growth/
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[41] Government of Brunei Darussalam. (n.d.). Digital identity. Retrieved from https://www.gov.bn/SitePages/Digital%20Identity.aspx
[42] Brunei Darussalam Central Bank. (2021). The financial stability report 2021. Retrieved from https://cms.bdcb.gov.bn/storage/uploads/publications/17089420500944650.pdf

The ongoing digitalization trend in Brunei Darussalam encompasses a significant shift towards cashless transaction, the integration of digital public services and the adoption of cloud and smart solutions. This shift towards a cashless society is being accelerated by the Digital Payment Hub, which encourages the use of digital payments across public and private sectors, positioning Brunei Darussalam towards a cashless society. As mobile payments and digital wallets gain popularity, this trend is expected to continue growing. Moreover, the government is also focused on enhancing the digital delivery of public services, with projects such as the Treasury Accounting and Financial Information System (TAFIS), which aims to streamline financial processes in the public sector.[43] The integration of these services is part of a broader effort to make government operations more efficient through digital technologies. Additionally, cloud computing is becoming more prevalent in Brunei Darussalam, particularly within the public sector and large enterprises while smart solutions, such as the implementation of smart meters for utility management, are also being introduced to improve operational efficiency and service delivery across various sectors. Together, these trends and initiatives undertaken, illustrates the current state of digitalization in Brunei Darussalam, showcasing how the member economy government is advancing towards a more digitally integrated economy that supports the digitalization of MSMEs.

4.1.2. Indonesia

Indonesia has 64 million MSMEs, which plays a crucial role in the economy, contributing 61% to the economy's GDP and employing 97% of the domestic workforce.[44] As of 2023, approximately 27 million MSMEs have engaged with the digital economy, with a government goal of increasing this figure to 30 million by 2024.[45]Significant advancements in digitalization are being driven by government initiatives like the Making Indonesia 4.0 roadmap and the National Digital Transformation Strategy. These frameworks aim to integrate digital technologies across manufacturing, services, and public sector operations to boost productivity and competitiveness through AI, IoT, and cloud computing.[46] Additionally, the Medium-Term Development Plan (2020-2024) focuses on developing ICT infrastructure, improving digital literacy, and harmonizing policies across sectors.[47]

Despite the strides made, challenges persist, particularly regarding digital infrastructure. While urban areas enjoy access and fast internet access, rural regions lag behind, impacting the overall potential for digital transformation. As of 2022, internet penetration in Indonesia was at 73.7%, with substantial reliance on smartphones.[48] However, the concentration of broadband infrastructure in urban centres leaves many rural MSMEs disadvantaged.

[43] Ministry of Finance and Economy Brunei Darussalam. (n.d.). Treasury. Retrieved from https://www.mofe.gov.bn/Treasury/Home.aspx
[44] Coordinating Ministry for Economic Affairs. (2022, March 31). Coordinating Minister Airlangga: Government continues to encourage strengthening economic foundations by establishing digital transformation of MSMEs as one of the priorities. Retrieved from https://rb.gy/68r1aw
[45] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[46] Speeda. (2021, August 23). Software - Infrastructure industry overview - Indonesia.
[47] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[48] Adhiarna, N. (n.d.). *MSMEs digital technology intervention: Policy and strategies in Indonesia*. Universitas Indonesia.

The digitalization trend in Indonesia highlighted by the booming e-commerce sector, with platforms like Tokopedia, Bukalapak, and Shopee becoming vital for MSMEs seeking to expand their customer base. By 2025, Indonesia's digital economy is projected to reach USD146 billion, driven by its rapid growth across e-commerce and fintech.[49] This shift towards digital commerce complements the government's broader initiatives to integrate digital technologies across sectors. Furthermore, the adoption of cloud services is also gaining traction, particularly among larger enterprises, as cloud-based platforms facilitate improved efficiency, streamlined operations, and rapid scaling.[50] However, MSME adoption of these technologies remains limited, underscoring the need for continued efforts to enhance digital literacy and infrastructure, especially in rural areas.

4.1.3. Malaysia

Malaysia is advancing its digital transformation agenda through several key initiatives aimed at strengthening Malaysia's digital economy. As of 2023, MSMEs in Malaysia accounted for 96.9% of all business establishments in Malaysia, totalling 1,101,725 firms.[51] Most SMEs are microenterprises, making up 69.7% (767,421) of total MSMEs in Malaysia, while small enterprises constituted 28.5% (314,465) and medium enterprises the remaining 1.8% (19,839). MSMEs in Malaysia are highly concentrated in the services sector which accounted for 83.9%.[52]

To support the digitalization in Malaysia, the government has undertaken strategic efforts including the MyDigital Blueprint which sets specific targets for Malaysia's digital economy to contribute of 22.6% to GDP by 2025 and drive digital transformation by 2030.[53] The blueprint empowering individuals, businesses, and government entities to embrace digital technologies. The blueprint focuses on digital infrastructure development, enhancing digital literacy, and increasing the contribution of the digital economy to GDP. Key areas of focus include expanding 5G networks, rural area access, boosting e-commerce, and supporting fintech and digital government services.

In terms of government support the government is providing grants to MSMEs, with 2024 seeing an allocation of MYR100 million in digitalization grants benefiting over 20,000 MSMEs.[54] A MYR900 million loan fund through Bank Negara Malaysia also encourages MSMEs to enhance productivity through automation and digitization.[55] Furthermore, commercialization grants are also available for public universities and MSMEs to transform research and development into market-ready digital solutions.[56]

[49] Darmawan, R., Wijaya, H., & Soetoyo, H. (2021, December 21). Capturing the opportunity from digital transformation. Mirae Asset Sekuritas Indonesia Research.
[50] Darmawan, R., Wijaya, H., & Soetoyo, H. (2021, December 21). Capturing the opportunity from digital transformation. Mirae Asset Sekuritas Indonesia Research.
[51] SME Corporation Malaysia. (n.d.). Profile of MSMEs 2015-2023. SME Corp Malaysia. Retrieved from https://www.smecorp.gov.my/index.php/en/policies/2020-02-11-08-01-24/profile-and-importance-to-the-economy
[52] SME Corporation Malaysia. (n.d.). Profile of MSMEs 2015-2023. SME Corp Malaysia. Retrieved from https://www.smecorp.gov.my/index.php/en/policies/2020-02-11-08-01-24/profile-and-importance-to-the-economy
[53] Economic Planning Unit, Malaysia. (2021). Malaysia digital economy blueprint. Putrajaya, Malaysia: Prime Minister's Department. Retrieved from https://www.ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf
[54] Ministry of Finance Malaysia. (2023). *Belanjawan 2024 speech*. Putrajaya, Malaysia: Ministry of Finance. Retrieved from https://belanjawan.mof.gov.my/pdf/belanjawan2024/ucapan/ub24-BI.pdf
[55] Ministry of Finance Malaysia. (2023). *Belanjawan 2024 speech*. Putrajaya, Malaysia: Ministry of Finance. Retrieved from https://belanjawan.mof.gov.my/pdf/belanjawan2024/ucapan/ub24-BI.pdf
[56] HSBC. (n.d.). Malaysia Budget 2023: Summary - SME digitalisation grant and other subsidies. Retrieved from https://www.businessgo.hsbc.com/en/article/malaysia-budget-2023-summary-sme-digitalisation-grant-and-other-subsidies

Infrastructure investments are also focused on, in which Malaysia is committed to investing in digital infrastructure, including broadband and 5G networks, to bolster the digital economy. As of the second quarter of 2023, approximately around 8.03 million premises in Malaysia were equipped with fibre broadband access, while 97% of populated areas had coverage through the 4G network.[57] These efforts collectively aim to strengthen Malaysia's digital economy and ensure widespread access to digital resources across the member economy government.

Within this evolving landscape, Malaysia's digitalization trend is marked by advances in digital payments, fintech, cybersecurity, and e-commerce. Platforms like Touch 'n Go and Boost are facilitating cashless transactions, enabling micro, small, and medium enterprises (MSMEs) to enhance their operations, improve customer experiences, and broaden their market reach. Meanwhile, both businesses and the government are reinforcing cybersecurity frameworks through the adoption of advanced technologies, employee training, regulatory compliance, and public-private partnerships. Collectively, these trends are shaping a robust digital economy in Malaysia, fostering a dynamic environment that empowers MSMEs to drive growth, innovate, and enhance productivity.

By supporting MSMEs with improved digital infrastructure, grants, and access to digital tools like cashless payment platforms, these initiatives help smaller businesses expand their market reach and streamline operations, positioning them as key contributors to Malaysia's digital future.

4.1.4. The Philippines

In The Philippines, micro, small, and medium enterprises (MSMEs) play a pivotal role in the economy, constituting 99.59% of all businesses, which translates to 1,105,143 out of 1,109,684 establishments. Among these, micro enterprises make up 90.49% (1,004,195), small enterprises represent 8.69% (96,464), and medium enterprises account for 0.40% (4,484). The top five industry sectors for MSMEs in 2022 include Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; Accommodation and Food Service Activities; Manufacturing; and Other Service Activities, including Financial and Insurance Activities.[58]

The Philippines is enhancing digital infrastructure and improving digital literacy across sectors through The Philippine Digital Transformation Strategy 2022 which aims to enhance governance, socioeconomic development, and service delivery through the effective use of information and communications technology (ICT).[59] The member economy government has made strides in expanding broadband access and promoting digital payments, though infrastructure gaps remain, particularly in rural areas. While broadband penetration has improved in urban centres, many rural regions still struggle with slow internet speeds and unreliable connections. To address these issues, the government is investing in fibre-optic networks and 5G technology.[60]

[57] New Straits Times. (2023, September). Fahmi: Malaysia prioritises investments in digital infrastructure. New Straits Times. Retrieved from https://www.nst.com.my/news/nation/2023/09/952232/fahmi-malaysia-prioritises-investments-digital-infrastructure
[58] Department of Trade and Industry. (n.d.). *2022 Philippine MSME statistics*. Retrieved from https://www.dti.gov.ph/resources/msme-statistics/
[59] Philippine Digital Transformation Strategy 2022 | Digital Watch Observatory. (n.d.). Digital Watch Observatory. https://dig.watch/resource/philippine-digital-transformation-strategy-2022
[60] Verdejo, G. (2024, July 26). PH expands fiber backbone, cuts internet costs. The Manila Times. https://www.manilatimes.net/2024/07/27/supplements/ph-expands-fiber-backbone-cuts-internet-costs/1960033

The government has also launched several e-government initiatives through the e-Gov PH platform, enabling online business registrations and facilitating digital payments for government services. This initiative aims to enhance transparency, reduce bureaucratic hurdles, and improve access to public services.[61] Additionally, resources such as the Tech Tools for MSMEs hub provide valuable information on available market tools, while MSME Digi Talks offers podcasts and webinars to support MSMEs in their digitalization efforts.[62]

The digitalization trend in The Philippines is marked by a booming e-commerce sector, rapid growth in fintech, and the rise of cashless payment systems. With platforms like Shopee, Lazada, and Zalora, The Philippines has emerged as one of Southeast Asia's fastest-growing e-commerce markets, further accelerated by the pandemic's push towards online shopping. The fintech sector is evolving quickly, featuring innovations in digital banking, peer-to-peer lending, and blockchain technology, which enable MSMEs to access financing and manage transactions more efficiently. Mobile wallets like GCash and PayMaya lead the way in driving digital payment growth, supported by government initiatives that promote cashless transactions for enhanced financial inclusion.[63]

4.1.5. Russia

Russia has over 6.3 million micro, small and medium enterprises (MSMEs) which contributes 21% to their GDP. MSMEs in Russia mainly operate in key sectors including trade (36%), transport (20%), technology (10%), and IT (7%).[64] In Russia, micro enterprises primarily focus on trade and agriculture, while medium-sized enterprises specialize in manufacturing, construction, and wholesale trade, with most MSMEs serving the domestic market rather than pursuing international exports.[65]

Russia's digital transformation is led by the National Program "Digital Economy," which aims to enhance the economy's digital infrastructure, increase digital literacy, and promote the adoption of digital technologies across key industries.[66] The program seeks to boost the digital economy's contribution to GDP by improving access to high-speed internet, expanding 5G networks, and digitalizing public services.

Russia has a well-developed ICT sector, with significant investments in cloud computing, AI, and big data analytics. These technologies are widely used in sectors like manufacturing, energy, and transportation, although MSMEs are slower to adopt them due to financial and technical barriers. Additionally, The Russian government is digitalizing public services through the Gosuslugi platform, enabling online access to government services such as financing, legal assistance, training.[67] This initiative enhances efficiency and transparency, aligning with the member economy government's broader digitalization goals.

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[61] Philippine e-Government. (n.d.). *eGovPH*. Retrieved from https://e.gov.ph/
[62] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[63] Fintech News Philippines. (2024). *Philippines fintech report 2024*. Retrieved from https://fintechnews.ph/64007/fintechphilippines/philippines-fintech-report-2024/
[64] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[65] European Investment Bank. (n.d.). *Small and medium entrepreneurship in Russia*. https://www.eib.org/attachments/efs/econ_study_small_and_medium_entrepreneurship_in_russia_en.pdf
[66] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[67] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.

The digitalization trend in Russia shows rapid growth and adoption in several areas. This includes their e-commerce market, with platforms like Ozon, Wildberries, and Yandex. Market becoming crucial for MSMEs expanding their customer base and business online, especially following the pandemic.[68] Moreover, the adoption of AI and robotics in manufacturing and logistics is also increasing to automate processes, reduce costs, and improve productivity, though these technologies are less widely adopted among MSMEs.[69] Additionally, the use of digital payments has also increased where the share of digital payments in retail reached 70.3% in 2020, with platforms like SberPay and Yandex making transactions more accessible.[70] MSMEs are adopting these digital payment solutions to streamline operations and enhance customer convenience.

4.1.6. Thailand

In Thailand, micro, small, and medium enterprises (MSMEs) contribute 35% to the economy's GDP, totalling 3.2 million firms, and rank as the second-largest contributor after large enterprises. MSMEs represent approximately 28.36% of all enterprises in Thailand, with most of them being microenterprises or sole proprietorships focused on wholesale and retail trade. [71]

Thailand's digitalization efforts are guided by the Thailand 4.0 initiative, which aims to create a value-based economy through innovation and digital technologies by focusing on digital infrastructure, e-commerce promotion, and enhancing digital literacy.[72] Thailand is progressing with improvements in high-speed internet access, expanded 5G coverage, and the development of smart cities, digital hub to support its digital economy.[73]

Various digital government services have been introduced to enhance public service delivery, transparency, and efficiency. For example, GovTech and the Thailand National Digital ID (NDID)[74] have helped modernize public sector operations, making government services more accessible and effective.[75] Thailand has also developed a strong ICT sector, with investments in cloud computing, data centres, and AI-driven solutions. These technologies are being integrated into both the public and private sectors, enhancing the economy's overall digital readiness.

[68] ASEAN. (2023). *Digitalization of MSMEs in ASEAN and Russia: Trends and opportunities*. Retrieved from https://asean.org/wp-content/uploads/2023/07/Digitalization-of-MSMEs-in-ASEAN-and-Russia-Trends-Opportunities.pdf
[69] Yakov.Partners. (n.d.). Yakov and Partners - Artificial intelligence in Russia – 2023: trends and prospects. https://yakovpartners.com/publications/ai-future/
[70] ASEAN. (2023). *Digitalization of MSMEs in ASEAN and Russia: Trends and opportunities*. Retrieved from https://asean.org/wp-content/uploads/2023/07/Digitalization-of-MSMEs-in-ASEAN-and-Russia-Trends-Opportunities.pdf
[71] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[72] Ministry of Industry, Thailand. (2017). *Thailand 4.0: The Next Revolution*.
[73] AlphaBeta. (2021, November). *Unlocking Thailand's Digital Potential: The Economic Opportunities of Digital Transformation and Google's Contribution*.
[74] Wongwisit, N. (n.d.). NDID. NDID. https://ndid.co.th/about-us/ndid/
[75] ASEAN. (2023). Digitalization of MSMEs in ASEAN and Russia: Trends and opportunities. Retrieved from https://asean.org/wp-content/uploads/2023/07/Digitalization-of-MSMEs-in-ASEAN-and-Russia-Trends-Opportunities.pdf

Within this evolving landscape, Thailand's digitalization trend is marked by by the advancement in digital transformation through 5G deployment and smart city initiatives. The Eastern Economic Corridor (EEC) is a key example, where smart city technologies are being implemented to improve urban planning, transportation, and public services.[76] Moreover, Thailand's e-commerce sector is also experiencing rapid growth, driven by platforms like Lazada and Shopee. This trend accelerated during the COVID-19 pandemic, prompting many MSMEs to transition online to reach broader customer bases. Additionally, the adoption of digital payment platforms like PromptPay and TrueMoney is on the rise, reflecting Thailand's move towards a cashless society.[77] MSMEs are increasingly integrating these payment systems into their operations to improve customer convenience and drive sales.

4.1.7. Viet Nam

As of 2021, micro, small and medium enterprises (MSMEs) in Viet Nam accounted for 97% of all firms and employed up to 60% of the workforce.[78] An increasing number of MSMEs operate in traditional trade and low-tech industries, with numerous informal household businesses playing a significant role in the economy. One key policy objective is to integrate more of these informal businesses into the formal economy. Additionally, MSMEs in the manufacturing sector are a major source of jobs and promoting new and innovative startups is anticipated to further enhance employment opportunities.

Viet Nam is rapidly advancing its digital growth through the National Digital Transformation Strategy, aiming to become a leading digital economy in Southeast Asia by 2030, with a focus on enhancing digital government, economy, and society.[79] Viet Nam's digital economy reached USD23 billion in 2022 and is projected to grow to USD52 billion by 2025, driven by sectors such as e-commerce, digital finance, and telecommunication. In aligning with the goals targeted for digitalization in Viet Nam, several digital government initiatives, such as the National Public Service Portal and Smart City projects, have been implemented to enhance transparency and improve public service delivery. These initiatives are part of Viet Nam's broader digitalization agenda aimed at modernizing government operations. Moreover, with a 79% internet penetration rate and over 100% mobile penetration rate[80], Viet Nam has a solid foundation for expanding digital services. The government is also prioritizing the expansion of fiber-optic infrastructure in both urban and rural areas to enhance access to high-speed internet, further facilitating the growth of the digital economy.

[76] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[77] Thailand Board of Investment. (2019, September). *Digital, Creative and Startup Ecosystem.* Retrieved from https://www.boi.go.th/upload/content/BOI_Digital_Economy_Brochure.pdf
[78] Vietnam Plus. (2023, October 27). *Vietnam's digital economy to hit 52 billion USD by 2025*. Retrieved from https://en.vietnamplus.vn/vietnams-digital-economy-to-hit-52-billion-usd-by-2025-post200755.vnp
[79] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[80] VNETWORK Joint Stock Company. (2023, August 14). Internet Vietnam 2023: Latest figures and development trends. Internet Vietnam 2023: Latest Figures and Development Trends. https://www.vnetwork.vn/en-US/news/internet-viet-nam-2023-so-lieu-moi-nhat-va-xu-huong-phat-trien/

Viet Nam's e-commerce sector is experiencing rapid growth and is forecasted to continue expanding in 2024, driven by increasing internet and smartphone penetration. The economy's youthful population and strong consumer demand are boosting online retail. Government policies are supporting this growth by promoting digital transformation and non-cash payments to build a cashless economy.[81]The increased use of digital payment platforms such as MoMo, ZaloPay, and ViettelPay reflects Viet Nam's shift toward a cashless society, with digital payment services becoming essential for MSMEs engaged in e-commerce.[82] Additionally, Viet Nam is advancing its Smart City projects in Hanoi, Ho Chi Minh City, and Da Nang.[83] These initiatives focus on improving public services, transportation, and urban infrastructure using IoT, AI, and data analytics.

[81] Briefing, V. (2024, September 12). Vietnam E-Commerce Sector outlook: Key growth trends. Vietnam Briefing News. https://www.vietnam-briefing.com/news/vietnams-e-commerce-sector-outlook-in-2024.html/
[82] TechBiz. (2023, May 31). Vietnamese E-Wallets lead the way: embracing a cashless future. https://techbiz.network/vietnamese-e-wallets-lead-the-way-embracing-a-cashless-future/
[83] Vietnam Investment Review. (2023, October 27). Vietnam must follow smart city inclinations. Retrieved from https://vir.com.vn/vietnam-must-follow-smart-city-inclinations-108789.html

4.2. Readiness and Challenges

The analysis of the APEC economies demonstrates that most economies are still in the early stages of digital transformation, concentrating primarily on foundational technologies like e-commerce platforms and digital payments. Despite ongoing efforts, significant challenges remain, including low digital literacy, infrastructure gaps, and limited private sector participation. The Network Readiness Index (NRI) was used to evaluate the preparedness of economies to leverage digital technologies for economic and social development. It provides a comprehensive framework that looks beyond mere connectivity to assess the availability of digital infrastructure, the affordability of technology, and the digital skills present within a workforce. Addressing these barriers through targeted policies and regional cooperation will be essential for these economies to unlock the full potential of their MSMEs in a rapidly evolving digital landscape.

Currently not ranked

Network Readiness Index Ranking

Brunei Darussalam has experienced rapid growth in e-commerce, with 72%[84] of the population actively engaging in online shopping, yet MSME digitalization remains limited. The government has introduced several initiatives to improve digital literacy among businesses, focusing on the skills needed to adopt and use digital tools effectively. Despite these efforts, progress has been slow, with many businesses unable to fully integrate digital solutions into their operations. The government aims to bridge this gap through continuous literacy programs and private-sector collaboration.

59th

Network Readiness Index Ranking

Only 12%[85] of MSMEs in **Indonesia** have fully integrated into the digital economy, reflecting the economy's struggle with low digital literacy and the high cost of technology. Most MSMEs continue to rely on traditional business models, using digital platforms primarily for marketing rather than transforming core operations. Despite government-led efforts to improve digital literacy, particularly in rural areas, progress remains slow. Addressing this issue is key for Indonesia to unlock the full potential of its MSMEs in the broader digital economy.

40th

Network Readiness Index Ranking

Malaysia's high internet penetration has created a solid foundation for MSME digitalization. However, most Malaysian MSMEs still focus on basic digital tools, such as using e-commerce platforms and social media for marketing purposes. While MSMEs in urban areas benefit from better access to high-speed internet and digital infrastructure, businesses in rural regions struggle with connectivity issues. This urban-rural digital divide restricts the ability of rural enterprises to adopt more advanced technologies and participate effectively in the digital economy.

[84] ASEAN. (2023). Digitalization of MSMEs in ASEAN and Russia: Trends and opportunities. Retrieved from https://asean.org/wp-content/uploads/2023/07/Digitalization-of-MSMEs-in-ASEAN-and-Russia-Trends-Opportunities.pdf

[85] BMZ Digital.Global. (2024, October 28). Digital Transformation Center Indonesia | BMZ Digital.Global. https://www.bmz-digital.global/en/initiatives/digital-transformation-center-indonesia/

69th

Network Readiness Index Ranking

The Philippines is still in the early stages of MSME digitalization, with many businesses relying on social media platforms rather than e-commerce systems with integrated payments. Although the government has introduced training programs focused on digital remain reluctant to adopt these technologies. The broader MSME Development Plan aims to foster digital adoption and reduce reliance on cash-on-delivery models, promoting long-term economic competitiveness.

38th

Network Readiness Index Ranking

Russia's e-commerce sector continues to grow, with sales accounting for 13.8%[86] of retail in 2023, up from 11.6% the previous year. However, SMEs struggle to access the financial resources and technical expertise needed to adopt more advanced digital tools and technologies. The Russian government has committed to expanding rural connectivity through investments in broadband infrastructure and aims to complete these efforts by 2030, ensuring that SMEs in remote regions can also benefit from digitalization.

42nd

Network Readiness Index Ranking

Thailand's MSMEs are still in the early stages of digital adoption, with many relying on social media platforms for marketing rather than using advanced digital tools. To accelerate digital transformation, the government offers incentives and subsidies that encourage the adoption of cloud computing, AI, and cybersecurity solutions. However, the skills gap remains a significant challenge, limiting the ability of Thai businesses to fully integrate these technologies into their operations and compete in the digital economy.

56th

Network Readiness Index Ranking

Viet Nam's digital economy is expanding rapidly, but only a small percentage of MSMEs have moved beyond basic digital tools. The e-commerce sector offers businesses a gateway into digital markets, but many MSMEs lack the technical expertise needed to optimize these platforms effectively. Platforms like Shopee, Lazada, and Tiki have played an essential role in helping MSMEs establish an online presence, though adoption of more advanced tools remains limited. Improving digital literacy and technical capabilities will be crucial for long-term growth.

4.2.1. Summary of Challenges

Across the APEC region, micro, small, and medium enterprises (MSMEs) face several recurring challenges that hinder their adoption of digital tools and processes. These challenges span various key areas reflecting structural issues that require coordinated policy interventions. The following section explores six key themes that summarize the obstacles faced by MSMEs in their digitalization journeys across the region.

[86] Newsroom. (n.d.). https://interfax.com/newsroom/top-stories/99319/

1. Infrastructure Gaps and Digital Divide

A persistent digital divide between urban and rural areas is a critical obstacle, with rural regions often lacking access to high-speed internet and advanced infrastructure. This disparity restricts the ability of businesses in underserved areas to engage in the digital economy, limiting their competitiveness and growth. Reliable internet connectivity is essential for businesses to adopt digital tools effectively, yet uneven access across the region leaves many enterprises excluded from the benefits of digital transformation.

2. Limited Digital Skills and Literacy

Insufficient digital literacy and skills represent a major barrier for MSMEs in adopting digital technologies. Many businesses lack not only the basic knowledge required to use essential tools but also the advanced expertise needed for sophisticated systems such as data analytics, cybersecurity, and cloud platforms. Despite training programs being offered in several regions, adoption remains slow. Digital transformation demands skilled labor capable of integrating and managing new technologies, and addressing the skills gap is vital to enabling MSMEs to unlock the full potential of digital solutions.

3. Lack of Technical Expertise

MSMEs require technical expertise to implement advanced digital solutions effectively. Many businesses struggle with the complexity of emerging technologies like AI, the Internet of Things (IoT), and e-commerce platforms. Without access to specialized talent or consulting support, businesses find it difficult to manage and maintain digital systems. The absence of such expertise not only slows the adoption of these technologies but also limits innovation and the ability of MSMEs to compete in the global market. Developing accessible technical support networks is essential to addressing this barrier.

4. High Costs of Digital Tools and Technology

The financial burden associated with digital transformation is a key challenge for MSMEs. The cost of acquiring and implementing new technologies, software, and digital infrastructure can be prohibitive, especially for smaller businesses with limited budgets. Many MSMEs are hesitant to invest in digital tools due to the high upfront costs and uncertain short-term returns.

5. Cybersecurity Concerns

As businesses adopt more digital technologies, they also face increased risks from cyber threats. Many MSMEs lack the necessary cybersecurity infrastructure and awareness, making them vulnerable to data breaches, financial losses, and cyberattacks. Without strong cybersecurity measures in place, both businesses and consumers remain hesitant to fully embrace digital solutions such as online transactions and e-commerce platforms.

6. Cultural Resistance to Change

Cultural resistance to adopting new technologies presents another significant barrier to digital transformation. Many businesses are accustomed to traditional ways of operating and are reluctant to shift towards digital methods. Employees may fear job displacement or lack the confidence to engage with unfamiliar tools. This resistance is particularly strong among smaller enterprises, where there is limited capacity to invest in change management.

5. Innovation Report: Findings and Analysis

5.1. Current State Analysis

5.1.1. Brunei Darussalam

As of 2020, MSMEs represent 97.2% of all registered businesses in Brunei Darussalam, accounting for 30.1% of the total employed persons in Brunei Darussalam.[87] The majority of these enterprises are microenterprises engaged in traditional trading activities, reflecting their dominant share within the economy's SME sector.

Brunei Darussalam's innovation landscape is largely driven by government initiatives that focus on advancing fintech, digitalising public services for greater efficiency, and fostering public-private partnerships to encourage investment and technology adoption.

The government has implemented several programs to promote innovation, such as the FinTech Regulatory Sandbox, which allows companies to develop and test new financial products in a controlled environment. However, the private sector's role in research and development (R&D) remains limited, with most innovation efforts concentrated in public sector projects. Despite government efforts to drive innovation, Brunei Darussalam ranks 88th on the Global Innovation Index,[88] indicating ongoing challenges in developing a robust innovation ecosystem. The government continues to focus on enhancing infrastructure and building partnerships with international stakeholders to stimulate growth and improve the innovation environment.

Recent trends in Brunei Darussalam's innovation landscape include an emphasis on fintech and digital payments. The government actively promotes digital financial technologies, aiming to support economic diversification and modernize the financial sector.[89] Another area of focus is the application of smart solutions to public services, such as smart meter systems for utilities and the digitalization of government services, which align with Brunei Darussalam's broader goal of becoming a technology-driven society.[90] Additionally, the government is encouraging public-private partnerships to drive innovation, particularly in sectors like ICT and smart services.[91] While private-sector engagement remains limited, these collaborations are designed to foster a culture of innovation within the broader economy.

[87] Kon, J. (2023, March 23) Empowering MSMEs towards Economic Growth. *Borneo Bulletin.* https://borneobulletin.com.bn/empowering-msmes-towards-economic-growth/
[88] Othman, A. (2024, October 4). *Brunei slip one spot in Global Innovation Index 2024*. https://borneobulletin.com.bn/brunei-slip-one-spot-in-global-innovation-index-2024/
[89] Autoriti Monetari Brunei Darussalam. (2018, December 21). *Digital Payment Roadmap for Brunei Darussalam 2019–2025* [Press release]. https://cms.bdcb.gov.bn
[90] Ministry of Development, Brunei Darussalam. (2022). *MOD Digital Paradigm Framework 2020-2025*. Ministry of Development. http://www.mod.gov.bn/Shared%20Documents/MOD%20Digital%20Paradigm%20Framework%202020-2025.pdf
[91] Ministry of Finance and Economy, Brunei Darussalam. (2022). *Public-Private Partnership (PPP) guidelines*. Ministry of Finance and Economy. https://mofe.gov.bn/Shared%20Documents/PPP/PPP%20Guideline%20%28March%202022%29%20%281%29.pdf

5.1.2. Indonesia

Indonesia houses 64 million MSMEs contributing 61% to the economy's GDP and employing 97% of the domestic workforce.[92] As of 2023, 27 million MSMEs have integrated into the digital economy, with a government target to increase this number to 30 million by 2024.[93] This digital integration underscores the vital role MSMEs play in driving economic growth and the economy's broader digital transformation efforts.

Indonesia is accelerating its digital transformation through the Making Indonesia 4.0 initiative, which focuses on integrating advanced Industry 4.0 technologies across key sectors. This initiative targets areas such as manufacturing, agriculture, and logistics, with an emphasis on technologies like the Internet of Things (IoT), Artificial Intelligence (AI), and automation. These advancements aim to modernize industries, boost productivity, and enhance Indonesia's global competitiveness. Innovation in Indonesia is further supported by government-led R&D initiatives and partnerships with foreign firms, which aim to drive technological advancements, improve infrastructure, and strengthen Indonesia's competitive edge in sectors like manufacturing and technology.[94] However, despite these efforts, the private sector's investment in R&D remains low, limiting innovation output in certain industries.[95]

Recent innovation trends highlight the growing use of AI and IoT in agriculture, where these technologies are being deployed to optimize operations, reduce waste, and improve productivity. While adoption remains largely concentrated among larger enterprises, the integration of digital solutions in agriculture signals a broader trend towards modernization.[96] Additionally, Indonesia is fostering innovation through strategic partnerships with global tech firms, equipping local businesses with access to technologies such as cloud computing, enterprise resource planning (ERP) systems, and AI solutions.[97] These collaborations not only enhance operational efficiency for MSMEs but also help them remain competitive in the global market.

[92] Coordinating Ministry for Economic Affairs. (2022, March 31). Coordinating Minister Airlangga: Government continues to encourage strengthening economic foundations by establishing digital transformation of MSMEs as one of the priorities. Retrieved from https://rb.gy/68r1aw

[93] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.

[94] Tundang, R., & Mercurio, B. (2023, February 27). *Why Indonesia is so behind the innovation curve*. Asia Times. https://asiatimes.com/2023/02/why-indonesia-is-so-behind-the-innovation-curve/

[95] Asian Development Bank. (2022). *Promoting research and innovation through modern and efficient science and technology parks project* (Project No. 55063-001). Asian Development Bank. https://www.adb.org/projects/55063-001/main

[96] Nuzaverra, S. U. M., Mangurai, A. S., Octaviani, E. A., & Anidah. (2021). *Progressing Indonesia's agriculture 4.0 through research and application towards ASEAN digitalization initiatives in the Covid-19 pandemic* (Policy Brief). Southeast Asia Regional Center for Tropical Biology (SEAMEO BIOTROP). https://asean-crn.org/wp-content/uploads/2021/12/2021_Policy-Brief-Progressing-Indonesia-Agriculture-Research-Application-ASEAN-Digitalization-Covid19.pdf

[97] Indonesia News Center. (2023, July 7). *Accelerating green economy through MSME digitalization in cloud & AI with iSeller and Microsoft*. Microsoft News. https://news.microsoft.com/source/asia/features/accelerating-green-economy-through-msme-digitalization-in-cloud-ai-with-iseller-and-microsoft/

5.1.3. Malaysia

As of 2023, MSMEs accounted for 96.9% of all business establishments in the economy, encompassing a total of 1,101,725 firms.[98] Within this group, a substantial 78.6% are microenterprises, which highlights the prevalence of smaller-scale operations within the Malaysian business ecosystem. Small enterprises represent 19.8% of the total, while medium-sized enterprises make up the remaining 1.6%. The concentration of SMEs is particularly notable in the services sector, which accounts for 83.8% of all MSMEs.[99] This dominance underscores the critical role of the services industry in driving the growth and sustainability of Malaysia's broader economy, as MSMEs continue to contribute significantly to employment, innovation, and economic resilience.

Malaysia is strategically positioning itself as a hub for high-tech innovation, driven by both government-led initiatives and emerging industry trends. By fostering a conducive environment for advanced technologies, Malaysia is aiming to enhance its competitiveness on a regional and global scale.

The current level of innovation in Malaysia demonstrates the economy's strategic focus on high-tech industries, with particular emphasis on sectors such as fintech, agritech, and smart city development.[100] Central to this effort is the government's Industry4WRD initiative, which plays a pivotal role in driving the adoption of advanced technologies, including Artificial Intelligence (AI), the Internet of Things (IoT), and robotics.[101] This initiative primarily aims to bolster key sectors like manufacturing and agriculture by facilitating the integration of cutting-edge digital solutions, thereby enhancing productivity and competitiveness.

Innovation in Malaysia is further supported by a range of government-led research and development (R&D) initiatives, along with strategic partnerships with international firms.[102] These collaborations have been instrumental in advancing technological progress across various industries. However, despite increased government funding for R&D,[103] private sector investment remains comparatively low[104] when measured against other economies in the region. Addressing this gap, the government continues to implement measures designed to stimulate further R&D activities in crucial sectors, ensuring that Malaysia strengthens its position as a regional leader in technological innovation.

[98] SME Corporation Malaysia. (n.d.). Profile of MSMEs 2015-2023. SME Corp. Malaysia. Retrieved from https://www.smecorp.gov.my/index.php/en/policies/2020-02-11-08-01-24/profile-and-importance-to-the-economy
[99] SME Corporation Malaysia. (n.d.). Profile of MSMEs 2015-2023. *SME Corp. Malaysia.* Retrieved from https://www.smecorp.gov.my/index.php/en/policies/2020-02-11-08-01-24/profile-and-importance-to-the-economy
[100] Malaysian Investment Development Authority. (2023). *Why Malaysia: Your profit centre in Asia. Malaysian Investment Development Authority.* https://www.mida.gov.my/wp-content/uploads/2024/09/MIDA_WHY-MALAYSIA-2023-13092024-V6.pdf
[101] Malaysian Investment Development Authority. (2023). *Why Malaysia: Your profit centre in Asia. Malaysian Investment Development Authority.* https://www.mida.gov.my/wp-content/uploads/2024/09/MIDA_WHY-MALAYSIA-2023-13092024-V6.pdf
[102] Malaysian Investment Development Authority. (n.d.). *Research & development (R&D). Malaysian Investment Development Authority.* https://www.mida.gov.my/industries/services/research-development-rd/
[103] Ministry of Finance Malaysia. (2021, October 30). *Budget 2022: RM423 mln for MOSTI, MOHE to intensify R&D.* https://www.mof.gov.my/portal/en/news/press-citations/budget-2022-rm423-mln-for-mosti-mohe-to-intensify-r-d#:~:text=KUALA%20LUMPUR%2C%20Oct%2029%20%E2%80%93%20The,and%20development%20(R%26D)%20activities.
[104] Chng, S. L. (2024, October 17). Malaysia needs RM85.7b R&D investment to achieve NSTIP 2021-2030 targets, says Mosti. *The Edge Malaysia.* https://theedgemalaysia.com/node/730623

The innovation trends in Malaysia reflect the member economy government's strategic emphasis on technological advancement across key sectors, with notable progress in fintech, smart city development, and agritech. In the realm of fintech, Malaysia is emerging as a regional leader[105], driven by concerted government efforts to promote the growth of digital financial services. Startups within the sector are pioneering innovative solutions that encompass digital banking, mobile payments, and blockchain technology. The Fintech Regulatory Sandbox, an initiative designed to support these developments, provides a controlled environment where new financial products can be created, tested, and refined, ensuring they meet regulatory standards while fostering innovation.[106]

Smart city development is another core aspect of Malaysia's innovation strategy. The government has made significant investments in this area, focusing on urban centres such as Kuala Lumpur, Penang, and Johor Bahru.[107] These projects leverage cutting-edge technologies, including Artificial Intelligence (AI), the Internet of Things (IoT), and big data, to enhance urban management, transportation, and public services.[108] By integrating these advanced solutions, Malaysia is not only improving the quality of urban life but also creating new opportunities for SMEs to innovate and expand within the smart technology sector.

In the agricultural sector, Malaysia is encouraging the adoption of smart farming technologies to improve productivity and sustainability. These technologies, which include AI and IoT-based solutions, aim to optimise farming practices by providing real-time data on soil conditions, weather patterns, and crop health.[109] However, the adoption of such advanced technologies among SMEs remains limited, primarily due to financial and technical challenges.[110] Recognising this, the government is working to address these barriers by offering additional support, including subsidies and training programs, to facilitate the uptake of smart agriculture practices. Through these efforts, Malaysia aims to drive innovation and growth across its key economic sectors, positioning itself as a leader in technological advancement in the region.

[105] Malaysian Investment Development Authority. (2023). *Why Malaysia: Your profit centre in Asia*. https://www.mida.gov.my/wp-content/uploads/2024/09/MIDA_WHY-MALAYSIA-2023-13092024-V6.pdf
[106] Chia, B. (2016, November 5). Malaysia FinTech regulatory sandbox. *FinSight by Baker McKenzie.* https://financialinstitutions.bakermckenzie.com/2016/11/05/malaysia-fintech-regulatory-sandbox/
[107] Bernama. (2024, October 23). *Budget 2025: RM15.1 mln to bolster smart city development*. https://www.bernama.com/en/general/news.php?id=2355486
[108] Malaysian Investment Development Authority. (2022, November 1). *Accelerating Malaysia's smart cities aspirations*. MIDA. https://www.mida.gov.my/mida-news/accelerating-malaysias-smart-cities-aspirations/
[109] Hassan, H. (2023, March 21). *Malaysia turns to smart farming to boost food security*. https://www.straitstimes.com/asia/se-asia/malaysia-turns-to-smart-farming-to-boost-food-security
[110] Omar, Z., Saili, A. R., Abdul Fatah, F., Abd Aziz, A. S., Yusup, Z., Rola-rubzen, F., & Bujang, A. S. (2024, June 27). *Exploring the challenges of adopting smart farming in the agriculture sector among smallholders in Malaysia*. International Journal of Academic Research in Business and Social Sciences, 14(6), 1702-1711. https://doi.org/10.6007/IJARBSS/v14-i6/21810

5.1.4. The Philippines

MSMEs in The Philippines makes up 99.59% of all businesses, totalling 1,105,143 out of 1,109,684 establishments. Micro enterprises dominate this sector, comprising 90.49% (1,004,195) of MSMEs, followed by small enterprises at 8.69% (96,464), and medium enterprises at 0.40% (4,484). The top five industry sectors for MSMEs in 2022 include Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; Accommodation and Food Service Activities; Manufacturing; and Financial and Insurance Activities, underscoring their diverse role in The Philippines' economy.[111]

The Philippines is steadily positioning itself as a dynamic innovation hub, bolstered by strong government support and a growing tech startup ecosystem. The member economy government is building an innovation ecosystem with a focus on sectors such as fintech, healthtech, and edtech. Central to this effort is the government's Inclusive Innovation Industrial Strategy (i3S), which aims to enhance innovation by providing funding for research and development (R&D) and fostering collaboration between the public and private sectors. The rise of tech startups, especially in fintech and e-commerce, is another key component of The Philippines' innovation landscape. Innovation hubs and accelerators are being developed to support these startups by providing mentorship, funding, and access to R&D facilities.[112] This growth is indicative of a vibrant startup culture that is driving new technological advancements across various sectors.[113]

Recent innovation trends reflect significant developments in several key areas. Fintech remains one of the most dynamic sectors, with startups creating digital banking solutions, mobile payment systems, and peer-to-peer lending platforms. These innovations help MSMEs streamline their financial operations and improve access to funding.[114] Healthtech and edtech have also gained traction, especially during the pandemic, with startups developing solutions to enhance healthcare accessibility and deliver remote education. This growth is expected to continue as the demand for digital solutions in these sectors rises.[115] Additionally, the government is promoting the use of digital technologies in agriculture to improve productivity and sustainability. Agritech innovations, such as IoT devices and AI for crop monitoring, are beginning to be adopted by some MSMEs, though widespread uptake remains a challenge.[116]

[111] Department of Trade and Industry. (n.d.). *2022 Philippine MSME statistics*. Retrieved from https://www.dti.gov.ph/resources/msme-statistics/

[112] Fintech News Philippines. (2023, August 28). *5 startup accelerators and incubators in the Philippines to know*. Fintech News Philippines. https://fintechnews.ph/59605/fintech/5-startup-accelerators-and-incubators-in-the-philippines-to-know/

[113] Teves, G., Muralla-Palustre, H., Saulo, C. M., Pajutan, J., Fetalino III, M. J., & Vandenberg, P. (2023). *The Philippines' ecosystem for technology startups*. Asian Development Bank. https://www.adb.org/sites/default/files/publication/884641/philippines-ecosystem-technology-startups.pdf

[114] de Gantès, G., Gerson, H., & Romano, K. (2023, May 3). *On the verge of a digital banking revolution in the Philippines*. McKinsey & Company. https://www.mckinsey.com/~/media/mckinsey/industries/financial%20services/our%20insights/on%20the%20verge%20of%20a%20digital%20banking%20revolution%20in%20the%20philippines/on-the-verge-of-a-digital-banking-revolution-in-the-philippines.pdf?shouldIndex=false

[115] Lim, Q. (2024, August 21). *HealthTech in the Philippines*. Milken Institute. https://milkeninstitute.org/sites/default/files/2024-08/HealthTech%20in%20the%20Philippines%20240814-2.pdf

[116] Briones, R. M., Galang, I. M. R., & Latigar, J. S. (2023, December 22). *Transforming Philippine agri-food systems with digital technology: Extent, prospects, and inclusiveness* (Discussion Paper Series No. 2023-29). Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/document/pidsdps2329.pdf

5.1.5. Russia

Russia houses over 6.35 million MSMEs, they account for 21% of the domestic GDP. These enterprises are active in various key sectors, including trade (36%), transport (20%), technology (10%), and IT (7%).[117] In Russia, micro enterprises are primarily involved in trade and agriculture, while medium-sized enterprises tend to focus on manufacturing, construction, and wholesale trade. Most MSMEs cater to the domestic market, with limited participation in international exports.[118]

Russia is modernising its industry by adopting emerging technologies, although innovation remains largely concentrated among larger enterprises. The economy's innovation strategy is guided by the industry 4.0 framework, which focuses on the integration of advanced technologies such as Artificial Intelligence (AI), robotics, and automation, particularly in key sectors like manufacturing and logistics. Despite these efforts, the benefits of technological adoption are primarily seen in larger enterprises, while MSMEs continue to face challenges in embracing innovation at the same scale. The Russian government has made substantial investments in developing an innovation ecosystem, particularly through the National Technology Initiative (NTI), launched in 2014. This initiative aims to bolster high-tech industries and create favourable conditions for Russian companies to become global leaders in emerging markets by 2035.[119] However, private-sector innovation remains underdeveloped, and many MSMEs struggle to scale their innovations effectively, reflecting a need for more inclusive support systems to drive widespread digital transformation.[120]

Recent innovation trends in Russia highlight a growing emphasis on AI and robotics within the manufacturing sector, energy, and agriculture.[121] These technologies are being adopted to enhance productivity and reduce labour costs, with larger enterprises leading the way. While MSMEs are beginning to explore these solutions, their uptake remains relatively limited. The government continues to play a central role in driving innovation, with efforts focused on fostering development and promoting advanced technologies across the economy.[122]

[117] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[118] European Investment Bank. (n.d.). *Small and medium entrepreneurship in Russia*. https://www.eib.org/attachments/efs/econ_study_small_and_medium_entrepreneurship_in_russia_en.pdf
[119] National Technology Initiative. (n.d.). *About NTI*. NTI. https://nti2035.ru/en/
[120] Nikolaeva, J., Struchkova, O., Ivanov, V., & Tsynzak, Y. (2023, April 7). *Development of infrastructure to support the National Technological Initiative: The case of the Russian Federation*. *European Project Management Journal*, *13*(1), 40-54. https://epmj.org/wp-content/uploads/2024/03/4-EPMJ-13-1-Nikolaeva-Struchkova-Ivanov-Tsynzak.pdf
[121] Global Institute for National Capability (2024, September 25) *Russia's National AI Strategy.* https://www.ginc.org/russias-national-ai-strategy/
[122] Konuikhovskaia, A. (2019, August 27). *Five trends in Russian robotics*. International Federation of Robotics. https://ifr.org/post/five-trends-in-russian-robotics

5.1.6. Thailand

MSMEs are a crucial part of Thailand's economy, with MSMEs contributing 35% to the GDP. There are 3.2 million MSMEs in total, making them the second-largest contributor after large enterprises. These small and medium enterprises account for approximately 28.36% of all businesses in the economy. A majority of MSMEs in Thailand are microenterprises or sole proprietorships, primarily engaged in wholesale and retail trade, reflecting their substantial role in the domestic market.[123]

Thailand is making strides in modernising its economy through the Thailand 4.0 initiative, which focuses on the adoption of Industry 4.0 technologies. This strategy prioritises the integration of advanced technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), robotics, and automation, particularly in key sectors like manufacturing and agriculture. These innovations are critical for driving efficiency and productivity, helping to transform traditional industries into more modern and competitive sectors. Innovation in Thailand is also supported by government-funded research and development (R&D) initiatives, along with collaborations with global technology firms. However, private sector investment in R&D remains limited, with many businesses still dependent on government support to advance their innovation efforts. This indicates a need for greater private-sector participation to ensure sustainable technological growth.[124]

Recent innovation trends in Thailand highlight a growing use of AI and robotics in the manufacturing sector to boost productivity and lower operational costs. These technologies are also being integrated into agriculture to optimise production and reduce waste.[125] Additionally, Thailand is fostering partnerships with global tech firms to enhance innovation across various sectors, including healthcare, manufacturing, and fintech. Such collaborations aim to introduce advanced technologies, like cloud computing and AI, to local businesses, further propelling the economy’s digital transformation and economic development.[126]

[123] Asia- Pacific Economic Cooperation. (2024). Accelerating and Promoting Digitalization and Innovation among MSMEs in APEC Economies. Malaysia, MY.
[124] Awutpanyakul, W. (2022, January 26). *Innovation is key to economic recovery*. Thailand Development Research Institute. https://tdri.or.th/en/2022/01/innovation-is-key-to-economic-recovery/
[125] National Innovation Agency. (2024, April 16). *NIA launches new platform to boost Thai agricultural startups with deep tech*. The Nation. https://www.nationthailand.com/blogs/business/tech/40037296
[126] Bangkok Post. (2021, April 16). *A budding leader of automation and robotics*. https://www.bangkokpost.com/business/general/2100643/a-budding-leader-of-automation-and-robotics

5.1.7. Viet Nam

MSMEs are a vital component of Viet Nam's economy, they represent over 97% of all firms as of 2021 and employing 60% of the labour force.[127] A significant number of MSMEs are engaged in traditional trade and low-tech industries, with informal household businesses remaining deeply embedded in the economy. MSMEs in the manufacturing sector provide a substantial number of jobs, and the promotion of new and innovative startups is expected to further boost employment opportunities.

Viet Nam's National Innovation Centre (NIC) plays a crucial role in positioning the economy as a leading innovation hub in Southeast Asia. The NIC drives innovation across key sectors such as information and communication technology (ICT), fintech, and agriculture. Viet Nam's innovation agenda focuses on developing robust research and development (R&D) capabilities and fostering an environment that supports startups and tech-based MSMEs, reflecting the member economy government's commitment to advancing technological innovation.[128]Additionally, Viet Nam's startup ecosystem is rapidly expanding, with a strong focus on technology-driven innovation. Sectors such as fintech, e-commerce, and health tech have seen significant growth, propelled by government programs and venture capital investments.[129] This has led to the establishment of numerous innovation hubs, supporting the growth of startups through funding, mentorship, and access to R&D facilities.[130]

Recent innovation trends in Viet Nam highlight substantial advancements in fintech and agritech. Fintech innovation is gaining momentum, with companies developing solutions such as digital banking, online payments, and blockchain technology. The government's push for greater financial inclusion has created opportunities for fintech startups to thrive and expand.[131] In agritech, Viet Nam is adopting technologies like drones, IoT, and AI to improve productivity and sustainability in farming. These innovations aim to optimise resources and increase crop yields, although adoption is still in the early stages. Through these initiatives, Viet Nam continues to build its reputation as a dynamic and emerging player in the regional innovation landscape.[132]

[127] Vietnam Plus. (2023, October 27). *Vietnam's digital economy to hit 52 billion USD by 2025*. Retrieved from https://en.vietnamplus.vn/vietnams-digital-economy-to-hit-52-billion-usd-by-2025-post200755.vnp
[128] Dharmaraj, S. (2021, January 11). Vietnam National Innovation Centre to Boost Tech Start-up Ecosystem. *Open Gov.* https://opengovasia.com/2021/01/11/vietnam-national-innovation-centre-to-boost-tech-start-up-ecosystem/
[129] Pham, T. T., & Hampel-Milagrosa, A. (2022, July). *Vietnam's ecosystem for technology startups*. Asian Development Bank. https://doi.org/10.22617/TCS220294-2
[130] JDI Group. (2023). *Vietnam startup ecosystem: Why you should be excited*. JDI Group. https://jdi.group/vietnam-startup-ecosystem-why-you-should-be-excited-2/
[131] InnoLab Asia. (2024, January 18). *Vietnam's prospective technology trends 2024*. InnoLab Asia. https://innolab.asia/2024/01/18/vietnams-prospective-technology-trends-2024/
[132] Thuy. (2023, June 1). *Smart agriculture in Vietnam: Harnessing IoT and AI for high-yield farming*. Vietnam Sourcing Hub. https://vietnamsourcinghub.com/smart-agriculture-in-vietnam-harnessing-iot-and-ai-for-high-yield-farming/

5.2. Readiness and Challenges

The analysis of the APEC economies across the APEC economy displays a similar theme where challenges in scaling innovation including limited access to funding and commercialization largely affects innovation among MSMEs. The Global Innovation Index (GII) was used to evaluate the innovation readiness of APEC economies as it offers a comprehensive measure of a economy's ability to foster and scale innovation. This index considers various factors such as research and development (R&D) investments, innovation outputs, and collaboration between the public and private sectors, providing a holistic view of innovation capacity.

88th
Global Innovation Index Ranking

Brunei Darussalam ranks lower on the Global Innovation Index due to limited R&D resources, insufficient funding, and weak technical expertise. Most MSMEs focus on low-tech solutions, with innovation largely driven by government-led initiatives rather than organic private sector efforts. Moreover, the government is working on fostering stronger academia-industry collaboration to align research efforts with industry needs. Currently, the disconnect between research outputs and commercialization hinders innovation, making it difficult for Brunei Darussalam to progress beyond government-driven projects.

54th
Global Innovation Index Ranking

Indonesia's innovation efforts are constrained by a lack of financing and technical expertise, which prevents MSMEs from fully scaling their innovations. Government programs tend to focus on early-stage support, but there is minimal assistance available for commercialization. While several initiatives are aimed at supporting early innovation phases, such as prototyping, MSMEs still struggle to grow due to insufficient funding and resources for commercialization. Bridging this gap will be essential for Indonesia to improve its innovation ecosystem and ensure sustainable growth.

33th
Global Innovation Index Ranking

In **Malaysia**, many MSMEs are actively engaged in early-stage innovation activities, such as product development and prototyping. However, despite their progress in early phases, they often struggle to scale and commercialize their innovations due to limited access to funding and commercialization expertise. Protecting intellectual property also remains a significant challenge, with enforcement efforts being insufficient to foster a robust innovation environment. The government is focusing on strengthening intellectual property frameworks, but smaller enterprises still face difficulties in safeguarding their ideas. With better support mechanisms, these innovations have the potential to reach broader markets.

53th

Global Innovation Index Ranking

The Philippines focuses on basic innovation efforts that aim to improve operational efficiency and customer service. However, scaling these innovations remains a challenge due to a lack of technical expertise. The government offers early-stage support through initiatives like the Go Negosyo program, but more advanced support is needed to enhance the innovation potential of MSMEs. There is also a pressing need to develop a skilled workforce that can support innovation across multiple industries.

59th

Global Innovation Index Ranking

Russia faces challenges in commercializing innovations, largely due to limited funding and inadequate support systems for scaling new technologies. In response, the government has established innovation hubs and incubators to help MSMEs develop advanced technologies, particularly in areas like AI and IoT. However, further efforts are needed to connect MSMEs with financial resources and international markets. Additionally, the government is focusing on enhancing intellectual property frameworks to foster a more secure environment for innovation.

41st

Global Innovation Index Ranking

Thailand lags behind in terms of R&D investment and innovation, with MSMEs encountering obstacles at every stage of the innovation process—from idea generation to commercialization and scaling. While the government offers grants and incentives to encourage MSMEs to adopt new technologies, many struggle to scale their innovations effectively. Collaborative efforts between businesses and academic institutions are being promoted to reduce costs and increase access to new technologies, but further support is needed to build a robust innovation ecosystem.

44th

Global Innovation Index Ranking

Viet Nam's innovation ecosystem is constrained by limited financial support and weak commercialization infrastructure. While many MSMEs focus on process improvements, they struggle to move towards more advanced technology-driven innovation. The government is addressing this challenge by providing early-stage support through incubation programs, but the absence of a comprehensive commercialization ecosystem remains a barrier. Additional investment in research capabilities and scaling frameworks will be crucial for Viet Nam to improve its innovation outcomes.

5.2.1. Summary of Challenges

MSMEs across the APEC region encounter numerous challenges that hinder their ability to innovate effectively. These challenges span across six key themes summarizing the innovation obstacles faced by MSMEs, providing a clearer understanding of the issues that must be addressed to unlock their innovative capabilities. Addressing these challenges through collaborative efforts, supportive policies, and strategic investments will empower MSMEs to contribute more meaningfully to economic growth, technological advancement, and sustainable development across the region.

1. Limited Commercialization Support

One of the primary challenges for MSMEs is the difficulty of moving innovations from development to commercialization. Many promising products remain stuck at the prototype phase due to insufficient market access and operational expertise. Without proper support to scale innovations, MSMEs struggle with marketing their products, conducting sales operations, and identifying the financial and technical resources needed to bring innovations to market.

2. Financial and Technical Constraints

The financial and technical limitations of MSMEs present another significant obstacle to innovation. Developing innovative products requires substantial investment in technology, R&D, and expertise, all of which are often beyond the reach of smaller enterprises. The costs associated with advanced tools such as AI, cloud computing, or prototyping solutions are prohibitive, preventing MSMEs from implementing new ideas. Furthermore, the lack of technical resources limits their ability to engage in continuous innovation.

3. Weak Intellectual Property Protection

Many MSMEs face challenges protecting their intellectual property (IP), which discourages investment in innovation. Weak IP frameworks or inconsistent enforcement expose businesses to the risk of idea theft, eroding their confidence in pursuing innovative projects. Without strong IP protection, businesses are hesitant to invest in R&D or launch new products, fearing their innovations may not be adequately safeguarded.

4. Weak Private Sector Participation and Investment in R&D

The private sector plays a limited role in driving innovation across many APEC economies, with government-led initiatives dominating the innovation landscape. Limited venture capital, weak private sector investment in R&D, and insufficient incentives for businesses to innovate further exacerbate this issue. When innovation efforts rely heavily on public sector funding, it constrains the diversity and dynamism of the innovation ecosystem.

5. Complex Regulatory Environment

MSMEs often encounter complex regulatory frameworks that create barriers to innovation. Lengthy approval processes, compliance requirements, and inconsistent policies make it difficult for businesses to commercialize new products or adopt advanced technologies. Regulatory uncertainty further discourages investment in innovation, as businesses face significant risks associated with navigating these frameworks.

6. Skills Gap and Lack of Digital Literacy

A significant skills gap exists in the APEC region, particularly in high-tech fields such as AI, robotics, and data analytics. The shortage of skilled workers capable of managing and implementing new technologies limits the innovation potential of MSMEs. Many businesses lack access to the expertise needed to develop and scale innovative solutions, slowing their digital transformation journey.

6. Digital Compass: Recommendations and Best Practices

6.1. Recommendation 1: Establishing a Domestic Digital Awareness and Capacity Building Program for MSMEs

The establishment of a domestic campaign that promotes comprehensive digital awareness among MSMEs, focusing on the potential benefits, impacts, and tools available for digital transformation. This program will provide a centralized hub of knowledge through various formats, including online and offline events, guides, and educational content. The campaign will not only highlight the benefits of digital solutions such as cloud computing, CRM systems, and data analytics but will also illustrate how these tools can transform daily business operations for MSMEs.

To make the content practical and relatable, the program will develop success stories and case studies of MSMEs that have embraced digitalization. These examples will demonstrate specific improvements such as higher productivity, increased revenue, and market expansion. The campaign will also focus on overcoming digital resistance by offering hands-on workshops, tutorials, and digital tools fairs. Additionally, MSMEs will be given access to mentors and digital consultants who can guide them through the initial stages of digital adoption.

Issue/Rationale	Many MSMEs in Malaysia are limited in their digital adoption, often restricting their activities to e-commerce platforms without exploring advanced digital tools that can enhance operational efficiency. This issue is further complicated by the fact that many MSMEs are unaware of the various financial incentives, grants, and programs offered by the government to support their digital journey. Additionally, there is a misconception that digitalization is only suitable for larger firms, which discourages smaller enterprises from investing in these solutions. Without access to information on the benefits and support available, MSMEs miss out on opportunities to improve their business processes, scale operations, and remain competitive in a digital-first economy.
Potential Benefit/Outcome:	The domestic digital awareness campaign will empower MSMEs to make informed decisions about digital transformation by showcasing clear examples of how digital tools can improve operations. As a result, more MSMEs will adopt advanced technologies beyond basic e-commerce, such as cloud computing and CRM systems. This adoption will lead to increased productivity, reduced operational costs, and expanded market reach, ultimately enhancing the competitiveness of Malaysia's MSME sector. In the long term, this will foster a more innovative and competitive business environment, encouraging MSMEs to explore new markets and scale their operations effectively. Moreover, with increased awareness, MSMEs will begin to see digitalization not as an added cost but as a necessary investment for future growth and sustainability.

Best Practices:	In The Philippines, the MSME DigiTalks initiative accelerates digitalization by providing MSMEs with critical information on digital tools and market strategies. Through a mix of webinars, podcasts, and in-person events, the program connects MSMEs with tech providers, government bodies, and private enterprises. This approach addresses both knowledge gaps and digital resistance by offering practical solutions, and empowering MSMEs to integrate technology more effectively. Viet Nam has developed sector-specific digital handbooks that guide MSMEs in their digital transformation efforts. These resources are tailored to different industries, providing step-by-step instructions, case studies, and toolkits that help businesses align their digital strategies with industry needs. This targeted approach ensures that MSMEs can navigate the complexities of digital adoption with ease, leading to more effective implementation and tangible outcomes.

Table 11: Recommendation 1 – Digital Compass

6.2. Recommendation 2: Establishing a Digital Skills Development Hub

To address the growing need for digital skills across Malaysia's workforce, a dedicated Digital Skills Development Hub should be established in various regions. These hubs will serve as a central resource, offering tailored training programs aimed at equipping MSMEs and individuals with essential digital skills, such as e-commerce, cybersecurity, and data analytics. In addition to training modules, these hubs will provide workshops, access to certifications, and mentoring from industry experts to ensure a comprehensive learning experience. The hubs will not only focus on basic digital literacy but also on advanced skills, ensuring participants are prepared for the evolving demands of a digital economy.

These hubs should be designed to cater to different regions of Malaysia, especially targeting areas where digital literacy and skills gaps are more prevalent. By doing so, the initiative will help bridge the digital divide, providing individuals and MSMEs in underrepresented regions with the opportunity to develop critical digital skills. The hubs will also offer lifelong learning opportunities, particularly targeting groups such as the elderly, who may face higher barriers to digital adoption.

Issue/Rationale	Despite high internet penetration rates in Malaysia, a significant portion of the workforce lacks digital literacy and advanced digital skills. While many MSMEs may be using basic digital tools like social media for marketing, fewer have the necessary expertise in areas like e-commerce platforms, cybersecurity, and data analytics to fully leverage the benefits of digitalization. This skills gap hinders both business growth and the economy's ability to compete in the global digital economy. Without a skilled workforce, Malaysia risks falling behind in global digital transformation efforts. Furthermore, regional disparities in digital literacy exacerbate the issue, as MSMEs in less developed regions lack access to training and upskilling opportunities

Potential Benefit/Outcome:	By increasing access to digital training and certification, Malaysia's workforce will become more adept at meeting the challenges of an evolving digital economy. MSMEs equipped with certified, digitally skilled workers will be more competitive, agile, and ready to adopt new technologies, thereby improving their operational efficiency and ability to expand into new markets. Reducing the digital skills gap will also contribute to reducing regional inequalities, providing underdeveloped areas with the tools to become competitive players in the domestic and global marketplace. The establishment of digital skills hubs will not only benefit businesses but will also contribute to broader socioeconomic growth. Individuals, especially from vulnerable groups like the elderly or those in rural areas, will have access to educational resources that can help them adapt to the digital age. These efforts will promote greater inclusion, improved economic participation, and the creation of new opportunities in emerging digital sectors.
Best Practices:	Thailand has taken a proactive approach to enhancing digital skills across its workforce. Through initiatives like Coding Thailand and ThaiDigizen, the member economy government offers comprehensive training and certification programs that cater to all age groups, including the elderly. These initiatives promote lifelong learning and digital inclusion, focusing on providing continuous training and certification to all age demographics. Viet Nam has expanded its digital literacy training by using video-based platforms and e-learning systems, making digital skills more accessible to a wider audience. These platforms provide flexible, self-paced learning opportunities that cater to individuals and MSMEs across the economy. Through video tutorials, online courses, and sector-specific training modules, Viet Nam has ensured that digital literacy is achievable for a broad population. This initiative has helped reduce barriers to digital adoption by providing accessible, affordable training resources.

Table 12: Recommendation 2 – Digital Compass

6.3. Recommendation 3: Establishing a Digital Transformation Tax Incentive Program

To facilitate the digital transformation of MSMEs, a Digital Transformation Tax Incentive Program should be introduced. This initiative will include several measures to ease the financial burden for businesses seeking to invest in digital tools and infrastructure. The program can feature a multi-tiered framework offering higher tax incentives for businesses investing in advanced or emerging technologies that go beyond basic digitalization, encouraging MSMEs to adopt cutting-edge solutions.

The program can also be based on expanding the existing tax incentive structures to cover new areas such as digital tools, software, digital infrastructure, and technology upgrades, ensuring broader coverage. In addition, MSMEs will benefit from tax deductions for digital investments, training programs, and technology consulting services. This structure ensures that businesses, regardless of their size or digital maturity, are motivated to integrate more advanced digital solutions into their operations. Clear communication strategies, combined with simplified application processes, will be essential to encourage participation and ensure accessibility to MSMEs.

Issue/Rationale	Digital transformation requires significant investment, with high upfront costs for acquiring new technologies, upgrading infrastructure, and training employees. These costs are particularly prohibitive for MSMEs with limited capital, discouraging them from adopting digital solutions. Without financial incentives, small businesses may continue to operate with outdated systems, limiting their ability to compete in a technology-driven economy. While some support structures exist, many MSMEs are unaware of the financial assistance available, or they find it difficult to access these programs due to complex processes. Expanding the tax incentive framework will directly address these challenges by lowering the cost of investment and encouraging the uptake of innovative digital solutions. The initiative will position Malaysian MSMEs to be more competitive in both local and international markets.
Potential Benefit/Outcome:	By reducing the financial barriers associated with digital investments, the tax incentive program will enable more MSMEs to upgrade their operations, adopt new technologies, and enhance their productivity. The increased adoption of digital tools will improve operational efficiency, reduce costs, and open up new revenue streams, ultimately making MSMEs more competitive and resilient. In addition, businesses that adopt advanced technologies will be better equipped to navigate future challenges and seize emerging opportunities in the digital economy.
Best Practices:	Viet Nam provides significant financial support to MSMEs to offset digital transformation costs under Decree 80/2021/ND-CP. Under this program, small enterprises can receive up to VND50 million annually for consulting contracts, while medium enterprises are eligible for up to VND100 million per year. The program also offers 50% support for renting or purchasing digital solutions, with caps of VND20 million for micro-enterprises, VND50 million for small enterprises, and VND100 million for medium enterprises. These incentives have successfully encouraged MSMEs in Viet Nam to accelerate their digital transformation efforts. Thailand has implemented comprehensive tax incentives to promote both digital transformation and technological advancements. These incentives include corporate tax exemptions of up to 13 years for R&D projects and key technologies, as well as exemptions on import duties for machinery and raw materials. The incentives aim to reduce the financial burden on businesses, facilitating their adoption of advanced technologies and increasing their competitiveness in global markets.

Table 13: Recommendation 3 – Digital Compass

6.4. Recommendation 4: Increasing Collaboration among MSMEs by Developing a Platform for Partnerships on Digital Transformation Solutions

This initiative focuses on establishing a formal platform to foster collaboration between government bodies, private tech firms, industry groups, and MSMEs. The platform will serve as a hub where stakeholders can come together to identify shared digital needs, exchange expertise, co-develop solutions, and co-invest in digital transformation initiatives.

The platform will also offer a curated directory of pre-vetted solutions tailored to different sectors, ensuring that MSMEs have access to affordable and effective digital tools. Furthermore, the platform will encourage joint ventures and cross-sector partnerships, enabling MSMEs to leverage both public sector incentives and private sector innovations. This approach will address key barriers such as technical expertise gaps, regulatory challenges, and funding limitations while promoting sustainable digital transformation efforts.

Issue/Rationale	MSMEs in Malaysia often face challenges in identifying and implementing the appropriate digital tools and technologies due to a lack of resources, knowledge, and technical expertise. Many are unaware of the range of government programs and digital solutions available, limiting their ability to compete effectively in the global market. Additionally, the fragmented nature of digital transformation initiatives which are scattered across both public and private sectors makes it difficult for MSMEs to identify solutions that meet their specific needs.
Potential Benefit/Outcome:	MSMEs will benefit from tailored solutions specifically designed to address their unique needs across various business functions, including marketing, supply chain management, and operations. By accessing solutions aligned with their business objectives, MSMEs can achieve more effective and sustainable digital transformation, helping them remain competitive in an increasingly digital economy. Through public-private partnerships, MSMEs will gain access to affordable, pre-vetted digital tools, significantly lowering the costs and risks typically associated with digital transformation. These partnerships will be further strengthened by government grants, subsidies, or co-investment programs that provide financial incentives, encouraging MSMEs to adopt new technologies and fast-track their digitalization efforts.
Best Practices:	Viet Nam has created a network of expert organizations and consultants that provide MSMEs with the necessary support for digital transformation. This network ensures that MSMEs have access to high-quality expertise, making their transition to the digital economy more effective. The initiative highlights the value of building a collaborative platform that connects MSMEs with the right experts and resources. Viet Nam's Map 4.0 initiative serves as a "Yellow Pages" for digital solutions, connecting enterprises with suitable digital tools and service providers. This tool plays a vital role in fostering collaboration among businesses and supporting their digitalization efforts, reducing the barriers to entry for many MSMEs. Malaysia can replicate this approach to create an accessible marketplace for digital solutions, promoting partnerships across industries.

Table 14: Recommendation 4 – Digital Compass

6.5. Recommendation 5: Promoting SME Cluster Collaboration for Digitalization

This initiative advocates for the creation of industry-specific clusters where SMEs collaborate on digital transformation initiatives by pooling resources, knowledge, and infrastructure. Establishing digitalization clusters will foster cooperation among smaller enterprises, enabling them to adopt digital technologies they might otherwise struggle to implement independently due to financial and technical constraints.

The program would begin with targeted industry assessments to identify sectors with the highest need for digital transformation and the most potential for collaborative success. Once clusters are formed, a dedicated online platform will be developed, allowing cluster members to exchange knowledge, experiences, resources, and best practices. SMEs will also have the opportunity to leverage collective financing, share technical infrastructure, and reduce implementation risks through economies of scale.

Issue/Rationale	Many smaller MSMEs struggle to adopt digital technologies due to a lack of resources, including financing, knowledge, and technical skills. The costs associated with digital tools, infrastructure upgrades, and talent acquisition can be prohibitive for these smaller enterprises. As a result, individual MSMEs are often unable to take full advantage of the digital transformation opportunities available to them. Clustering SMEs into digitalization-focused groups offers a viable solution by enabling them to pool resources, share infrastructure, and co-invest in tools and technologies. This collaborative approach helps to spread the financial burden and operational risks, making it easier for individual companies to participate in the digital economy. Moreover, by working together, SMEs can test technologies collectively, ensuring the selection of tools that best meet the needs of their industries.
Potential Benefit/Outcome:	The creation of digital clusters will accelerate the adoption of digital technologies by enabling SMEs to access essential digital tools and infrastructure more efficiently. This collaborative environment fosters innovation, allowing businesses to leverage digital solutions effectively and enhance productivity across various operations. By working together within these clusters, SMEs can overcome individual limitations, making it easier to integrate new technologies and remain competitive in the evolving digital landscape. Additionally, SMEs within each cluster will experience streamlined operations and benefit from significant cost reductions. Through the sharing of resources, expertise, and infrastructure, these businesses can achieve economies of scale, minimizing the financial risks and operational challenges typically associated with digital transformation.
Best Practices:	Spain implemented a cluster-based strategy where businesses collaborate within specific industries to share technology, infrastructure, and knowledge. These clusters receive government support through grants, tax benefits, and training, helping SMEs overcome financial barriers to digital adoption. Through shared investments, the clusters were also able to test new tools and technologies collectively, ensuring that the best solutions were selected for their industries.

Table 15: Recommendation 5 – Digital Compass

6.6. Recommendation 6: Enhancing the SME info Portal to Include Digitalization Support Programs

This recommendation focuses on enhancing the SME info portal by consolidating all available digital support programs from various sectors. These include funding opportunities, training initiatives, incentives, resources, and regulatory assistance relevant to MSMEs. The enhanced portal will act as a one-stop resource, streamlining access to digital transformation tools and services for MSMEs across Malaysia.

In addition, machine learning algorithms can be incorporated to provide personalized recommendations. These recommendations will suggest the most relevant programs based on factors such as business size, sector, and specific digital transformation needs. This approach will ensure that MSMEs receive targeted support, maximizing the value of the available resources and making the portal more user centric.

Issue/Rationale	Currently, digitalization support programs for MSMEs in Malaysia are scattered across multiple agencies, creating challenges for businesses trying to discover and navigate these resources. MSMEs, especially those in rural and underserved regions, often lack awareness of available tools, grants, and incentives. This disconnect between the available support and the specific needs of MSMEs creates a barrier to effective digital transformation.
Potential Benefit/Outcome:	The enhanced SME info portal will allow for MSMEs to have better visibility and access to relevant support programs, facilitating a smoother transition into digital operations while also bridging the information gap among MSMEs by ensuring that MSMEs are well-informed and can access the right resources at the right time. Furthermore, personalized program recommendations will enable businesses to receive support aligned with their specific needs, increasing the likelihood of successful digital transformation.
Best Practices:	The Philippines developed a comprehensive digital resource hub that provides information to micro, small, and medium enterprises on various technology tools, platforms, and applications available in the market. This platform covers key areas such as e-commerce, digital marketing, logistics, productivity, and access to experts, helping MSMEs make informed decisions and transition smoothly to digital operations. Russia plans to develop a digital platform that allows MSMEs to input their information and development requirements. The system will then use this data to recommend customized support measures for each business. This model streamlines access to relevant assistance, ensuring that enterprises receive the most suitable resources based on their specific needs and growth stages.

Table 16: Recommendation 6 – Digital Compass

7. Innovation Report: Recommendations and Best Practices

7.1. Recommendation 1: Establishing a Domestic Open Innovation Platform with Public-Private Partnerships

This initiative focuses on developing a Domestic Open Innovation Platform that brings together government agencies, private sector stakeholders, and MSMEs to foster collaboration. The initiative will begin by conducting a comprehensive mapping of all available government and private sector digital infrastructure. This includes innovation labs, R&D centres, tech hubs, and corporate innovation spaces, segmented by regions. These facilities will be accessible to MSMEs, enabling them to leverage advanced technologies and expertise without making significant upfront investments. The platform will also encourage joint investments from both public and private sectors, creating a sustainable framework for infrastructure sharing. By lowering barriers to accessing necessary tools, Malaysia can accelerate the adoption of innovative technologies among MSMEs.

Furthermore, the platform aims to address the needs of MSMEs beyond access to facilities. It will include mechanisms to promote collaboration on specific digital initiatives, such as joint research projects and co-investment opportunities in cutting-edge solutions. This approach aligns with global best practices, fostering an ecosystem where shared expertise and infrastructure serve as a springboard for scalable innovation.

Issue/Rationale	Smaller MSMEs in Malaysia lack access to the advanced digital infrastructure, R&D capabilities, and technical expertise needed for successful digital transformation. High-end technologies and state-of-the-art facilities are often concentrated in large enterprises with significant capital investments, making them inaccessible to smaller businesses. Without access to these essential resources, many MSMEs struggle to remain competitive or explore innovative solutions that could streamline their operations and expand their markets. By establishing a Domestic Open Innovation Platform, Malaysia can bridge this infrastructure gap by democratizing access to tools, facilities, and expertise. This collaboration also fosters meaningful connections between MSMEs, government institutions, and private enterprises, which are essential to overcoming the structural limitations that often prevent small businesses from engaging in large-scale innovation projects.
Potential Benefit/Outcome:	The creation of a shared innovation platform will allow MSMEs to benefit from access to cutting-edge R&D facilities, reducing their need to invest heavily in infrastructure. This will significantly decrease the financial burden on smaller enterprises, enabling them to focus their resources on core operations and product development. Additionally, by promoting collaboration between MSMEs and larger enterprises, the platform will nurture a culture of knowledge sharing, encouraging the co-creation of innovative solutions that could lead to new market opportunities. Moreover, shared facilities will reduce redundancy and enhance resource efficiency by pooling investments and expertise from both the public and private sectors. This collaborative framework ensures that digital tools and innovations are more broadly accessible, fostering long-term competitiveness among MSMEs.

Best Practices:	The Philippines' Shared Service Facility (SSF) Program offers a valuable model for this initiative. Under the SSF program, cooperatives and community groups are given access to shared equipment and technology to enhance production and packaging processes. The program is community-driven, with participants proposing solutions tailored to their specific needs. Proposals are evaluated at various stages, and businesses can eventually own the equipment after demonstrating tangible benefits through increased sales and impact on local communities. This approach not only improves productivity but also encourages long-term sustainability by aligning community goals with domestic economic objectives.

Table 17: Recommendation 1 – Innovation Report

7.2. Recommendations 2: Expanding Financial Incentives for High-Tech Innovations

This initiative proposes a strategic approach to incentivize the development and adoption of high-tech innovations among MSMEs through targeted financial support. To drive this initiative, it is essential to identify industries with significant potential for innovation, including AI, robotics, biotechnology, halal products, and green technologies. A comprehensive review of these industries will help tailor grants, subsidies, and tax incentives to reduce the high upfront costs of adopting advanced technologies. Financial incentives should be structured to address specific needs, encouraging MSMEs to integrate innovative solutions into their operations while focusing on sustainability and growth. Additionally, the program will establish a clear set of eligibility criteria to ensure that incentives are granted to MSMEs that demonstrate readiness, growth potential, and industry relevance. These qualifications will evaluate a company's innovation impact, product scalability, and alignment with Malaysia's economic objectives.

Issue/Rationale	High-tech innovations are often accompanied by prohibitive upfront costs, making it challenging for MSMEs with limited financial resources to invest in advanced solutions. While these technologies offer benefits such as improved productivity, operational efficiency, and scalability, many smaller businesses hesitate to adopt them due to budget constraints.
Potential Benefit/Outcome:	Financial incentives will significantly reduce the cost burden on MSMEs, enabling them to engage with advanced technologies that were previously beyond their reach. As more MSMEs adopt high-tech solutions, Malaysia's innovation ecosystem will become more robust, with increased productivity and efficiency across industries. These businesses will also become more competitive in global markets, unlocking new revenue streams and export opportunities. Furthermore, supporting high-tech innovations within MSMEs can foster job creation, as new technologies often require specialized skills and knowledge, contributing to workforce development. By aligning financial incentives with domestic economic priorities, this program will accelerate innovation-led growth, attract global partnerships, and promote sustainable business practices.
Best Practices:	The Small Enterprises Technology Upgrading Program (SET-UP) in The Philippines provides a valuable benchmark for this initiative. Through the Innovation Fund, MSMEs receive interest-free and collateral-free funding to support the adoption of advanced systems, technologies, and equipment. This program helps businesses enhance product quality, streamline operations, and improve productivity. Additionally, the fund operates with flexible repayment terms of 3 to 5 years, and repayment rates exceed 85%, demonstrating the program's success in promoting sustainable innovation.

Table 18: Recommendation 2 – Innovation Report

7.3. Recommendations 3: Developing a Domestic SME Incentive Tracking Database

This initiative focuses on establishing a centralized database that consolidates all financial and non-financial incentives provided to MSMEs. A robust tracking system is essential to monitor the outcomes of various government programs, ensuring that public resources are effectively allocated. This domestic incentive tracking database will collect and analyze key performance metrics such as income growth, employment generation, productivity improvement, and market expansion. The insights gathered will offer government agencies, policymakers, and other stakeholders a clear view of how support initiatives impact MSMEs and drive economic growth.

The tracking system will provide a transparent, data-driven mechanism to assess the real-time progress of MSMEs and ensure that public funds generate measurable results. It will also allow for more targeted adjustments to future incentive schemes, ensuring that the support aligns with MSME needs.

Issue/Rationale	Many government incentive programs designed to support MSMEs lack proper follow-up mechanisms to measure their actual impact on business growth and economic development. As a result, public funds may not be effectively utilized, with limited visibility into how resources have contributed to growth, employment creation, or productivity. This creates challenges in ensuring accountability and transparency, leading to potential misallocation of resources, and missed opportunities for driving economic growth.
Potential Benefit/Outcome:	A domestic incentive tracking database will ensure that financial and non-financial incentives translate into tangible outcomes such as business growth, job creation, and improved productivity. With clear performance metrics tied to funding allocation, the database will encourage more effective use of public resources and allow the government to target incentives where they are needed most. MSMEs will benefit from a transparent system, gaining a deeper understanding of how to optimize available incentives to scale their operations and compete in both local and global markets.
Best Practices:	The MSME Client Profile Monitoring System in The Philippines offers a valuable benchmark for this initiative. This cloud-based, centralized platform tracks the profiles of all clients under the Department of Trade and Industry (DTI), particularly MSMEs. In addition to monitoring client progress, the system provides comprehensive oversight of the various assistance programs these enterprises receive, promoting transparency and enabling efficient management of support initiatives. Similarly, Viet Nam's centralized database aggregates information from multiple agencies to create an internal repository of enterprise data. This includes tax records, income data, GDP contributions, and financial reports, helping to identify challenges faced by MSMEs. The database also serves as a platform for self-assessment, offering businesses insights into their readiness and capability, while supporting better resource allocation at the domestic level.

Table 19: Recommendation 3 – Innovation Report

7.4. Recommendations 4: Establishing a Digital Innovation Marketplace for MSME Commercialization

This initiative focuses on the development of a specialized digital platform for Malaysian MSMEs to showcase their innovations globally. The platform will act as a bridge between MSMEs and international markets, providing them access to investors, business buyers, and consumers. Designed with multiple language options and integrated with global payment systems, this marketplace will enable seamless transactions and foster smoother interactions across borders.

In addition to providing visibility, the platform will connect MSMEs with mentors, industry experts, and investors to refine their innovations, helping them become market ready. The focus on mentorship and guidance ensures that innovations are not only showcased but also developed into viable products with commercial potential. This marketplace would serve as a critical tool for scaling up innovations and breaking the cycle of ideas stalling at the prototype phase.

Issue/Rationale	Many Malaysian MSMEs struggle to transition their innovations beyond the prototype or early development phase, limiting their ability to scale. There is a significant gap in connecting these innovations with international markets, investors, and buyers, preventing MSMEs from capitalizing on global opportunities. Lack of access to financial resources, technical expertise, and mentorship programs further compounds this challenge, making it difficult for MSMEs to navigate commercialization independently. Additionally, MSMEs often operate in a local context with limited exposure to global market demands and trends. Without the proper support system and international visibility, many innovations remain underutilized, reducing their potential to generate economic impact.
Potential Benefit/Outcome:	The establishment of a digital innovation marketplace will open up new revenue streams for MSMEs by providing access to global markets. With diversified income sources, MSMEs can reduce their dependency on the local market and explore growth opportunities internationally. The platform will also create avenues for FDI as international investors gain insight into Malaysian innovations through this digital space.
Best Practices:	Russia's Export Center (REC) provides both domestic and cross-border e-commerce support through the Single Window platform. The REC offers consultation services, financing, and regulatory guidance, enabling Russian products to reach international markets. Additionally, the "Made in Russia" initiative promotes local products globally, showcasing them on international online platforms to enhance visibility and drive export growth. Indonesia's PADI Marketplace facilitates the commercialization of MSME products by connecting them with government buyers. The platform also provides training on digital exports and innovation, equipping MSMEs to leverage new technologies for growth. Russia's Procurement Policy requires large corporations and government entities to procure at least 15% of their supplies from MSMEs. This policy not only supports commercialization but also aligns with broader corporate social responsibility goals, encouraging large entities to actively contribute to the growth of MSMEs.

Table 20: Recommendation 4 – Innovation Report

7.5. Recommendations 5: Developing a Comprehensive Support Platform for MSMEs

This initiative proposes the development of a digital platform that consolidates essential services such as financing, legal advisory, and intellectual property (IP) protection for MSMEs. By collaborating with financial institutions, legal firms, IP offices, and government agencies, the platform will offer a seamless interface where MSMEs can easily access and navigate critical services. The goal is to create a centralized space where MSMEs can connect with service providers, reducing the complexity and fragmentation that often deter small businesses from seeking the support they need.

To ensure widespread adoption, awareness programs will be launched to educate MSMEs on the platform's benefits. These efforts will include digital marketing campaigns, instructional workshops, and Q&A sessions to provide hands-on guidance. Through these programs, MSMEs will become familiar with the platform's features, enabling them to leverage the available services to meet their specific needs and drive their business growth.

Issue/Rationale	MSMEs in Malaysia face significant challenges during the early stages of their development due to a lack of access to essential services such as financing, legal guidance, and IP protection. This shortage hinders their ability to scale, protect their innovations, or navigate complex legal landscapes effectively. Without access to the necessary resources and expertise, many MSMEs remain stagnant, unable to grow or capitalize on new opportunities. Furthermore, IP-related challenges discourage innovation because many businesses are unsure how to protect their intellectual property.
Potential Benefit/Outcome:	Developing a comprehensive support platform for MSMEs will significantly improve their ability to access the critical services required to scale and succeed. The streamlined access to financing will enable businesses to invest in their growth, expand into new markets, and develop innovative products. With legal advisory services integrated into the platform, MSMEs will be better prepared to manage contracts, navigate regulatory compliance, and reduce risks related to legal issues. Furthermore, access to IP advisory services will encourage innovation by providing MSMEs with the knowledge and tools needed to protect their ideas and products effectively.
Best Practices:	Russia has developed a comprehensive digital platform for MSMEs, providing streamlined access to a variety of critical support services such as financing, legal assistance, and property advice. This customer-centric platform offers targeted support measures, integrates vital government e-services, and provides a unified interface for services like procurement, e-commerce, and crowd-investing, helping businesses navigate complex regulatory requirements and scale efficiently.

Table 21: Recommendation 5 – Innovation Report

7.6. Recommendations 6: Promoting Sustainable Innovation through ESG-Driven Practices for MSMEs

This recommendation focuses on empowering MSMEs in Malaysia to adopt sustainable innovation practices aligned with Environmental, Social, and Governance (ESG) standards. It aims to provide structured initiatives that educate MSMEs on the importance of ESG compliance and sustainable business strategies. The program will include access to green financing options, such as grants or low-interest loans, to support the purchase of eco-friendly technologies and encourage sustainable practices.

Moreover, building partnerships between MSMEs and larger corporations that have successfully integrated ESG frameworks will foster knowledge sharing and collaboration. Establishing an eco-certification program or sustainability label for MSMEs will further incentivize sustainable practices. These certifications will act as a symbol of commitment to environmental responsibility, making MSMEs more appealing to environmentally conscious consumers and investors.

Issue/Rationale	With the growing emphasis on sustainability, MSMEs are increasingly required to align with ESG standards to remain competitive in both domestic and international markets. Investors, regulatory bodies, and consumers are holding businesses accountable for their environmental and social impacts. However, many MSMEs in Malaysia face challenges in adopting sustainable innovation practices due to limited financial resources, inadequate technical support, and a lack of knowledge about ESG frameworks. Without adequate guidance or incentives, MSMEs may struggle to implement sustainable business practices, which could limit their ability to attract investors or access new markets.
Potential Benefit/Outcome:	MSMEs that successfully adopt ESG-driven practices will have access to growing markets for sustainable products both locally and globally. By aligning with global ESG standards, they can meet the expectations of environmentally conscious consumers and gain a competitive edge in international markets, such as the European Union. This alignment will also open doors for MSMEs to secure green financing and attract investment from institutional investors and funds that prioritize sustainability. Additionally, adopting ESG practices will enhance the reputation and brand image of MSMEs, making them more attractive to larger corporations seeking sustainable suppliers and partners. This improved market perception will help MSMEs build lasting relationships with both customers and supply chain partners, fostering long-term growth. Overall, embracing ESG practices will position MSMEs as forward-thinking businesses that are prepared to meet future sustainability requirements.
Best Practices:	Singapore's Enterprise Sustainability Program (ESP) provides a useful benchmark for promoting sustainable innovation. The ESP offers financial support and educational courses to help SMEs navigate their sustainability journey. It equips businesses with the technical knowledge and expertise required to adopt eco-friendly practices, reducing the cost and complexity of implementing green projects.

Table 22: Recommendation 6 – Innovation Report

8. Annex

8.1. MSMEs across APEC Economies

Member Economies	Sector	Micro		Small		Medium	
		Number of employees	Other Criteria	Number of employees	Other Criteria	Number of Employees	Other criteria
Brunei Darussalam	-	1-9	**Annual Revenue:** Less than BND100,000 **Assets:** Less than BND60,000	10-29	**Annual Revenue:** BND100,000 to less than BND1million **Assets:** BND60,000 to less than BND600,000	30-99	**Annual Revenue:** BND1 million to less than BND5million **Assets:** BND600,000 to less than BND3million
Indonesia	-	N/A	**Net assets:** ≤ IDR50million **Sales turnover:** ≤ IDR300million	N/A	**Net assets:** IDR50million to IDR500million **Sales turnover:** IDR300million to IDR2.5billion	N/A	**Net assets:** IDR500million to IDR10billion **Sales turnover:** IDR2.5billion to IDR50billion
Malaysia	Manufacturing	1-4	Sales turnover < MYR300,000	5-74	Sales turnover MYR300,000 – 15million	75-200	Sales turnover MYR15million to50million

	Services and others	1-4	Sales turnover < MYR300,000	5-29	Sales turnover MYR300,000 to MYR3million	30-75	Sales turnover MYR3million to MYR20 million
The Philippines	-	N/A	**Total assets exclusive of Land:** ≤ PHP3,000,000	N/A	**Total assets exclusive of Land:** PHP3,000,001 to PHP15,000,000	N/A	**Total assets exclusive of Land:** PHP15,000,001 to PHP100,000,000
Russia	-	<15	**< RUB1.5million**	15-100	**RUB1.5million to RUB10million**	101-250	**RUB10million to RUB25million**
Thailand	Manufacturing	≤ 5	**Annual Income:** ≤ THB1.8million	≤ 50	**Annual Income:** ≤ THB100million	≤ 200	**Annual Income:** ≤ THB500million
	Services and Merchandising	≤ 5	**Annual Income:** ≤ THB1.8million	≤ 30	**Annual Income:** ≤ THB50million	≤ 100	**Annual Income:** ≤ THB300million

Viet Nam	• Agriculture, forestry and fishing • Industry and Construction	1-10	**Total Revenue:** < VND3billion **Total Capital:** < VND3billion	11-100	**Total Revenue:** VND3billion to VND 50billion **Total Capital:** VND3billion to VND20billion	N/A	**Total Revenue:** VND50billion to VDN300billion **Total Capital:** VND20billion to VND100billion
	Trade and Services	1-10	**Total Revenue:** <VND10billion **Total Capital:** <VDN3billion	11-50	**Total Revenue:** VND10billion to VDN100billion **Total Capital:** VND3billion to VND50billion	51-100	**Total Revenue:** VND100billion to VND300billion **Total Capital:** VND50billion to VND100billion

Table 23: MSME Definition Across APEC

END OF REPORT