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Article

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MANAGEMENT | RESEARCH ARTICLE

The Effect of Technology Adaptation and Government Financial Support on Sustainable Performance of MSMEs during the COVID-19 Pandemic

- Kurniawan¹, Agung Maulana^{1*} and Yusuf Iskandar¹

Abstract: By observing 1026 samples of Indonesian MSMEs, this study tries to explain the effect of technology adaptation, innovative financial practices, and financial policy-related factors on sustainable financial performance and the survival-recovery of MSMEs during the Covid-19 pandemic. Data were analyzed using the PLS-SEM technique through SMARTPLS software version 3. Samples were selected and collected through purposive sampling by setting criteria and deploying them online and offline. The results show that the agility to conduct technology adaptation and innovative financial practices by MSMEs significantly affected their sustainable financial performance during the COVID-19 pandemic. Innovative financial practices also positively moderate the relationship between technology adaptations on sustainable financial performance. On the other side, preferential policies of the bank have a significant impact on sustainable financial performance directly and indirectly through the mediating role of perceived policy effectiveness. The financial support by the government

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PUBLIC INTEREST STATEMENT

This study discusses the effect of technology adaptation, innovative financial practices, and financial policy-related factors on sustainable financial performance and the survival-recovery of MSMEs during the Covid-19 pandemic. This article enlightens policymakers and MSME owners, especially in emerging economies like Indonesia, on managing crises amid the pandemic and other emergencies. The study demonstrates that MSMEs that intensely adapt to digitalization in marketing, advertising, transaction, communication, and funding are more resilient to maintain their sustainable performance to survive the pandemic crisis. This study also demonstrates that MSMEs that experienced waivers in banking waivers and financial support from the government also have a bigger chance to survive and keep their financial performance to be sustained. This article discusses the issue from MSME owners' perspective and is very relatable with the current situation of the post-covid-19 pandemic.

also significantly affected the sustainable financial performance of MSMEs through the mediating role of perceived policy effectiveness. Eventually, sustainable financial performance significantly affected the survival-recovery of MSMEs.

Subjects: Entrepreneurship; Small Business Management; Entrepreneurial Finance

Keywords: Crisis Management; MSMEs; Policy-related Factors; Sustainable Finance; Technology Adaptation

JEL classification: E5; G4; L26

1. Introduction

Efforts to stem the spread of the COVID-19 pandemic, such as quarantines and restrictions on community mobility (lockdown), have slowed the world economy. The decline in mass production caused by the disruption of global supply chains and a decrease in aggregate demand continues to hamper investment and erode business and consumer confidence (Salisu & Vo, 2020). Micro, Small, and Medium Enterprises (MSMEs) are critical economic sectors affected by the crisis. A Central Bank of Indonesia (BI) survey in March 2021 showed that as many as 87.5% of Indonesian MSMEs were affected by the pandemic, and 93.3% of business actors in the sector experienced a decline in sales turnover. This condition encourages stakeholders in the Penta helix corridor to seek the best exit strategy for sustainable performance and the recovery of the MSME business.

Zutshi et al. (2021) and Salimzadeh et al. (2013) have explained how MSMEs can grow sustainably, especially amid a crisis. They revealed that MSMEs' sustainable growth and resilience could not be separated from internal and external factors. Three essential internal elements are company performance, employee performance, and the manager's or owner's attributes and performance. As for the external sector, the influential elements are government involvement, stakeholder involvement, and consumers. Both internal and external factors complement each other in the process of creating a sustainable MSME business.

Research then developed in observing the COVID-19 pandemic crisis. Several studies have also focused on the role of innovation and adaptation skills in disrupted technology and business strategies on the survival and recovery of MSME businesses. Several previous studies, such as Najib et al. (2021), Alkahtani et al. (2020), and Ganlin et al. (2021), specifically examined how the combined effect of government assistance and the ability of MSMEs to innovate to survive the crisis. The literature explains that the adaptability and innovation of MSMEs in marketing and services significantly affect the business continuity of MSME restaurants. At the same time, the government's assistance makes it easier for them to carry out these innovations. Other evidence also shows that technological adaptation and innovative financial practices supported by government assistance affect the sustainability of MSME businesses in times of crisis.

Unfortunately, as far as the authors observe, some things have been overlooked by previous research, and that become points of development and can be an improvement in explaining the influence of innovation adaptability factors and the role of government in the sustainability of MSME business. First, concerning the role of government assistance, previous research has not observed the role of effectiveness. The role of policy effectiveness is quite essential to see how the perceptions and views of MSME actors on the implementation of government assistance affect their success in maintaining their financial performance.

Second, several previous studies such as Alkahtani et al. (2020), Ganlin et al. (2021), and Najib et al. (2021) did not specifically categorize what kind of government assistance affects the business sustainability of MSMEs in the crisis moment. This study follows the research of Le et al. (2020) to observe, more specifically, the role of government financial assistance as proxied

by the government's financial aid and preferential banking policies. Third, this study also marks the moderating relationship between technology adaptation and innovative financial practices by MSMEs. The authors believe these two internal factors will strengthen each other and contribute positively to sustainable financial performance. Fourth, previous research rarely discusses the role of sustainable financial performance in influencing the survival and recovery of MSME businesses. This study observed how sustainable financial performance affects the survival-recovery of MSMEs in times of pandemic crisis.

Based on the explanation above, this study integrates the four points of improvement to develop a more comprehensive model explaining the role of adaptability and innovation and government assistance in the sustainable financial performance of MSMEs. Researchers view that creating MSMEs' resilience is one of the main steps to reduce the scarring effect of the COVID-19 pandemic, given the enormous contribution of MSMEs' spending to the Indonesian economy. Therefore, this study tries to form a model to explain the exit strategy of SMEs to survive and get out of the negative impacts of the COVID-19 pandemic by synergizing external and internal business factors and the role of the effectiveness of government policies. This study answered this research gap.

Based on the above background, two research questions are posed in this study: (1) How does the technological adaptability supported by innovative financial practices affect sustainable financial performance and the recovery of MSMEs? (2) How do the government's financial assistance policies (represented by preferential banking policies and government financial assistance) and its perceived implementation's effectiveness also influence the sustainable financial performance and survival-recovery of MSMEs during the COVID-19 pandemic?

This study specifically aims to develop a more comprehensive model explaining the role of agility in technology adaptation and digital financial practices of MSMEs and government assistance with their effectiveness on MSMEs' sustainable financial performance and business continuity during the Covid-19 pandemic. The research uses Indonesia as the case study. In general, the results of this study aim to provide input for the government to formulate policies based on findings to help MSMEs maintain positive financial performance and the ability to recover from the crisis and minimize the scarring effect of the COVID-19 pandemic, especially in the case of third countries.

2. Literature review and hypotheses development

2.1. Crisis Management of MSMEs upon the Covid-19 Pandemic

Crisis management is a transparent approach to adopt in uncertain and fast-changing conditions. Managing crisis management requires changes in managerial attitudes (Csath, 2021). Robust crisis management necessitates business entities, including MSMEs, to develop entrepreneurial skills and innovation (Najib et al., 2021), strengthen trust and relations with partners (Csath, 2021), and technology utilization (Ganlin et al., 2021). Research on how MSMEs could conduct crisis management during a crisis time has been growing rapidly along with the emergence of crisis events. For instance, Doern (2016) observed how small business owners minimized losses during the London 2011 riots by examining factors influencing which small enterprises were fragile or resistant to the riots. They found that maintaining the attitude and behaviours of small business owners and increasing anticipation mindset during riot tragedy can save them from being resilient.

In the context of the COVID-19 pandemic, the combination of economic and health crises has made the world's economic condition very difficult and problematic, particularly for MSMEs. It demands a holistic anticipatory strategy involving internal and external parties (the government; Ogundana et al., 2021). Financial reports and indicators have all shown that they are prone to economic turmoil (Ganlin et al., 2021). Previous studies have shown how MSMEs conduct their crisis management from many perspectives on Covid-19. Literature shows that the ability to innovate in marketing and production is critical for MSMEs to maintain financial performance during the pandemic crisis (El Chaarani et al., 2022). Despite the innovation, technology adoption and high

resilience could help MSMEs maintain crisis management and increase business performance (Charoennan et al., 2022). Csath (2021) has also revealed that strengthening relations with all related stakeholders and building trust with a partner are essential strategies for dealing with crises. This research has filled the gap by combining the internal and external factors that help MSMEs to survive and maintain financial performance amid the Covid-19 pandemic. The authors highlight deeper literature discussion and hypothesis development in the next sub-chapters.

2.2. Determinants of Sustainable Financial Performance and MSME Recovery during the Covid-19 Pandemic Crisis

At least two groups of studies were discussed by researchers on the behaviour of MSMEs in maintaining their financial performance and surviving in a crisis. These two groups can be described by the conceptual ideas of Salimzadeh et al. (2013) and Zutshi et al. (2021), which say that the external and internal factors of MSMEs must be maximized and synergized with each other to create sustainable MSME performance. The three external factors are elements of the government, consumers, and other relevant stakeholders. The internal factors consist of aspects of performance, employees, and those related to the entrepreneurial skills of business owners.

The first research group emphasized the role of the internal capabilities of MSME actors in adapting to changes and disruptions that occurred due to the COVID-19 pandemic. The first group discussed how the commitment and agility of MSMEs that quickly adapt and innovate their business could save them amid the pandemic crisis and make their business sustainable. The literature explains that one of the most critical adaptations and innovations that positively affect the sustainability of their business in the era of the COVID-19 pandemic is the adaptation of innovative technology and financial practices utilizing digitalization.

Technological adaptability is defined as the skills of SMEs in adopting information technology to reduce operating costs, improve services to consumers, increase reaction times between producers and customers, producers and suppliers of inputs, increase market knowledge, and strengthen trade relations (Ganlin et al., 2021). Innovative financial practices are defined as the skills of SMEs in using the latest digital financial products and services for operational and investment efficiency (Ganlin et al., 2021; Tahir et al., 2018).

For example, Lingyan et al. (2021) highlighted the role of technological adaptation and open innovation of women SMEs in achieving business sustainability. They found that women MSMEs who followed the development of open innovation in technology expanded global cooperation networks, traded business licenses, updated technology, and partnered with external parties would be better prepared to compete with competitors and meet market needs. In the context of the pandemic, the ability to innovate in marketing and production is critical for MSMEs to maintain financial performance during the pandemic crisis (El Chaarani et al., 2022). Despite the innovation, technology adoption and high resilience could help MSMEs maintain crisis management and increase business performance (Charoennan et al., 2022).

Looking at the findings of previous studies, the authors believe that the skills of adapting technology and innovative financial practices carried out by MSMEs can also affect their sustainable financial performance. Continuously financial performance then makes it easier for them to survive and recover from the impact of the COVID-19 pandemic. According to Alkahtani et al. (2020) and Su et al. (2017), sustainable financial performance is defined as a business' ability to maintain financial conditions to remain profitable and avoid financial difficulties. This variable is measured by subjective assessment of MSME actors on their business' return on Assets, Equity, and Sales (ROA, ROE, and ROS). The subjective evaluation of financial performance was used because it would be difficult to ask for actual data regarding the respondents' ROA, ROE, and ROS, considering that this data is very confidential for MSMEs.

This variable becomes a missing point in explaining why MSME innovation and skills in adapting to digitalization can save them from the crisis. Researchers believe this is due to digital adaptation and innovative financial practices in payments, marketing, communication, and production and buying and selling processes that continue to help MSMEs maintain their financial performance. Therefore, this study proposes the following hypothesis:

H1: Technology adaptation carried out by MSMEs has a positive and significant impact on their sustainable financial performance during the pandemic crisis.

H2_a: Innovative financial practices carried out by MSMEs positively and significantly moderate the relationship between technology adaptation and MSME's sustainable financial performance, and simultaneously:

H2_b: Innovative financial practices carried out by MSMEs have a positive and significant impact on their sustainable financial performance.

3. The Role of Government Financial Assistance on Sustainable Financial Performance and Recovery of MSMEs during the Pandemic Crisis

The second group is researchers who focus on the role of external parties in helping MSMEs survive during the Covid-19 pandemic. This group highlights things beyond the control of MSMEs, such as government assistance, consumer behaviour, and investor involvement. Because the COVID-19 pandemic is a global problem that requires a one-command strategy in a country, the government's role is crucial in making regulations and providing policies that support the sustainability and recovery of MSMEs. Alkahtani et al. (2020), Ganlin et al. (2021), Le et al. (2020), and Najib et al. (2021) observe how the role of government assistance can drive marketing and product innovation processes and can help accelerate business recovery process. Le et al. (2020) tries to take a closer look at what types of economic assistance affect the ability of MSMEs to survive and recover from the crisis. They form six policy-related variables, namely: (1) Government Financial Support, (2) Bank Preferential Policy, (3) Insurance Policy, (4) State Administration Law, (5) Role of Professional Associations, and (6) Policy Tax Support.

In Indonesia, government assistance policies have been carried out through the National Economic Recovery (PEN) program which is distributed in various fields of assistance such as taxation, banking, social insurance, and fiscal financial aid in the form of financial assistance and other assistance. Government assistance is vital to maximizing the resources owned by the government to maintain a country's macroeconomic conditions. This study develops the research conducted by Le et al. (2020) and Razumovskaia et al. (2020) by examining whether government assistance policies and their perceived effectiveness by MSME actors will significantly impact their sustainable financial performance and MSME recovery during a crisis. Research by Le et al. (2020) does not involve the effect of effectiveness in observing the impact of government aid policies. Likewise, Razumovskaia et al. (2020) assess effectiveness by conducting econometric modelling using cognitive modelling and not by evaluating the perceived effectiveness of MSMEs.

In addition, this study also observes sustainable financial performance as an endogenous variable that was not carried out in previous studies. This research is one of the pioneers in developing this issue. The primary hypothesis of this study is that government policies to provide financial assistance will positively affect the sustainable financial performance of MSMEs directly or indirectly through the mediating role of perceived policy effectiveness, which ultimately leads to the sustainability and recovery of MSMEs. The better the financial assistance policy implementation, the better the point of the policy felt by MSME actors. The better the effectiveness of the procedure, the greater the positive influence of government assistance in influencing the financial performance of MSME actors. Specifically, this study will observe government aid policies in the

economic context proxied by two factors: government financial assistance and preferential banking policies.

Financial assistance is a government policy to provide stimulus funds to increase MSME business finances through a fiscal scheme. The preferential banking policy is defined as a reduction in banking facilities offered by the government to relax the payment of obligations of MSME actors as debtors to debtor banks, such as rescheduling and re-financing facilities (Le et al., 2020). These two policies provide significant benefits for MSMEs to manage and increase their assets to be more productive in times of crisis.

Freedom of use of assets is fundamental to improving their business performance to maintain their profitability and financial health. The success of MSMEs in maintaining a sustainable financial performance will ultimately lead them to recover and survive this pandemic crisis. Therefore, we also put forward additional hypotheses as follows:

H3: The preferential banking policy provided by the government has a positive and significant impact on the sustainable Financial Performance of MSMEs.

H4: The preferential banking policies provided by the government have a positive and significant impact on the effectiveness of policies perceived by MSME actors.

H5: Financial support from the government has a positive and significant impact on the sustainable financial performance of MSMEs.

H6: Financial support from the government has a positive and significant impact on the perceived policy effectiveness of MSME actors.

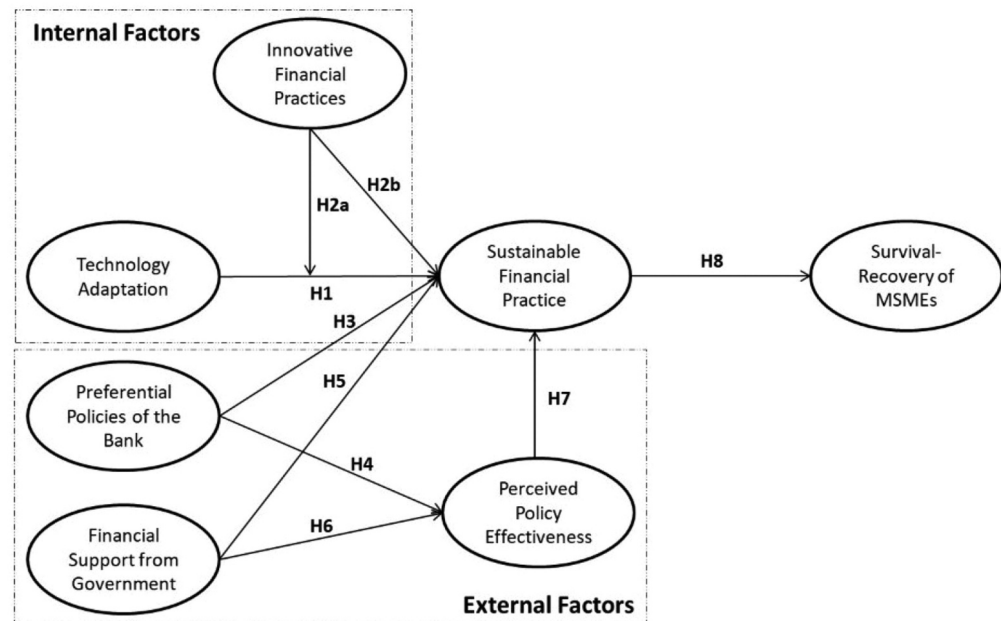
4. Research Gap: The Mediating Role of Perceived Policy Effectiveness on Sustainable Financial Performance and MSME Recovery

Measurement of effectiveness is crucial to ensure whether the implementation of government policies has been right on target. Previous studies have observed how policy effectiveness can influence people's attitudes and attention to issues that are the target of policymaking. For example, Wan et al. (2014) and Wang et al. (2021) observed how policy effectiveness influences people's attitudes and behaviour toward living healthy and recycling activities. They found that the perceived effectiveness of the government's policy on environmental control supports the community to implement ecological regulations made because of the policy's clarity, accuracy, and speed. The community will feel supported and facilitated by the government in implementing clean living if the government's policies are effective.

Previous studies have placed perceived policy effectiveness as mediating and moderating variables to increase or decrease the influence of a policy or phenomenon (Shen et al., 2022; Wan et al., 2014; Wang et al., 2021). Based on the above findings, this study believes that the effectiveness of policies perceived by MSME actors can also magnify and mediate the influence of government assistance policy factors (financial assistance and preferential banking) on the sustainability of financial performance. This variable are measured by forming a series of indicators to determine the feasibility, effectiveness, and accuracy of government assistance provided.

The implementation of a good aid policy will have a positive impact on the effectiveness of assistance felt by MSME actors. Ultimately, these two policy-related factors will help MSMEs maintain a sustainable Financial Performance. Good financial performance will eventually enable them to survive and recover from the crisis. Therefore, this study places the sustainability and recovery of MSMEs as the dependent variable in the model. The recovery of SME continuity is measured by directly assessing the objective views of SME owners and whether the businesses

Figure 1. Research Model.



they run during the COVID-19 pandemic can survive and recover better from the initial period of the pandemic (Le et al., 2020). Therefore, this study proposes additional hypotheses as follows:

H7: The effectiveness of the government's (perceived) policies will have a positive and significant impact on the sustainable financial performance of SMEs.

H8: The sustainable financial performance of MSMEs will positively and significantly affect the survival and recovery of MSMEs in the crisis era.

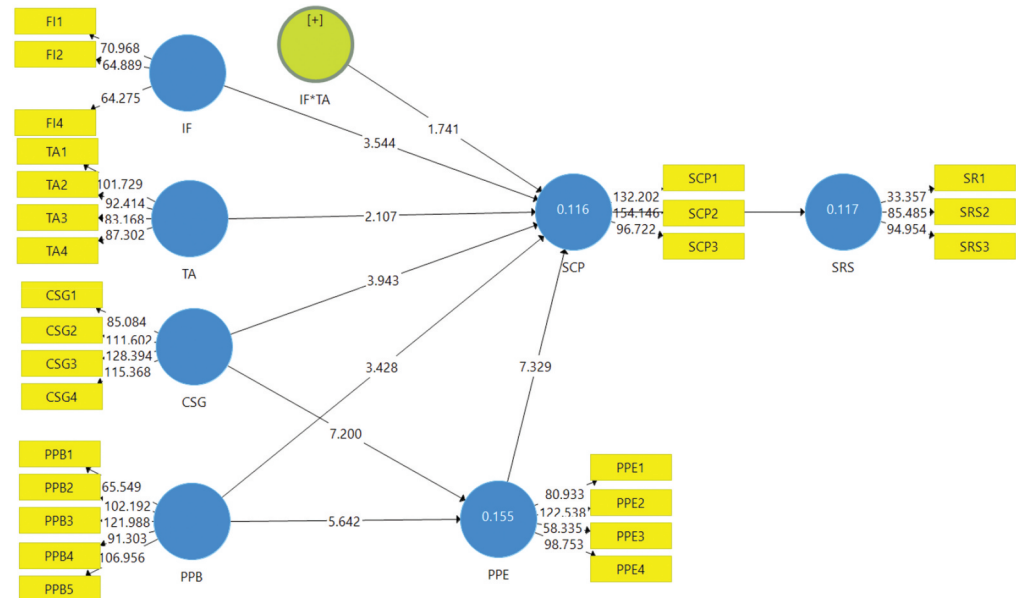
Eight hypotheses were developed to explore the impact of technology adaptation, innovative financial practices, and financial support from the government on the sustainable performance and survival-recovery of MSMEs. Figure 1 displays the finalized conceptual model of the investigation.

5. Data and methodology

5.1. Sample and Data Collection

This study uses primary data collected through online and offline self-reported surveys. Google forms were used to facilitate the online survey process. In the offline survey, enumerators consisting of students and volunteers were deployed to distribute questionnaires directly to prospective respondents. The questionnaires were distributed for four weeks (5–26 June 2022) using Bahasa Indonesia and succeeded in collecting 1026 MSMEs as respondents. The 1062 samples used in this research follow the suggestion of J. J. Hair et al. (2017), who says that the number of samples appropriate for data analysis using the SEM-PLS technique should be 5–10 times the number of indicators. Twenty-six indicators require 260 minimum samples. Therefore, the number of samples in this study has filled the criteria. Most of the respondents from the offline survey process came from the province of West Java, particularly the City and District of Sukabumi, the City of Cianjur, the City and Regency of Bogor, and the City and Regency of Bandung. As for online surveys, questionnaires are distributed randomly without territorial boundaries through social media applications such as WhatsApp, Facebook, LinkedIn, and Line.

Figure 2. Inner Model Test Result.



To avoid self-report bias caused by the confusion of respondents in filling out the questionnaires, enumerators who have been briefed about the questionnaires accompany the respondents during the filling process. In the online survey, the author briefly described the operational definition of each group of indicator items that represented variables and arranged questions shortly, concisely, and clearly. The authors also informed respondents not to write down their full names and replace them with initials so that confidentiality is maintained and they feel comfortable filling out the questionnaire correctly.

This study employed purposive sampling by creating critical criteria to support the study's aims. The requirements for selected respondents are:

- (1) Respondents are official owners or general managers of the business.
- (2) Following Law Number 20 of 2008 concerning Indonesian MSME Criteria, the respondents' business must have a minimum annual income of between 3,900 USD and 19,200 USD (taxable income limit) and a maximum annual of 32 million USD.
- (3) They are customers of savings or commercial bank loans (private or state-owned).
- (4) Have a minimum of 1 to 5 employees (according to the MSME Law).
- (5) The business run by the respondent must continue to run for the entire period of the pandemic, starting on 1 March 2020, until the sampling period was carried out.
- (6) Have experienced/received government assistance in the financial sector for MSME actors either directly or indirectly.
- (7) Researchers avoid choosing ultra-micro businesses such as traders and street vendors with carts or small tents because they most likely do not have access to a bank (unbankable).

5.2. Measurement and Variable Definition

The structured questionnaires measured respondents' perceptions and opinions regarding the construct built on the research model. All indicators representing the variables were measured using a Likert scale of 1 to 5 (1 = strongly disagree and 5 = strongly agree). Before the distribution of the official questionnaires, a pilot study was conducted by sending a questionnaire to a research associate with a doctoral degree in management and behavioural economics with high research experience to run a peer review on each indicator item. The peer-review results are then used as

correction material for the editorial improvement of each indicator. The pilot study results require the elimination of two indicators, including one item in technology adaptation (TA5) and one in innovative financial practices (IFP3). Thus, the indicator that initially numbered 28 was reduced to 26.

Seven latent variables are included in the construct of the research model. Two variables represent the internal factors of MSME's adaptability (technology adaptation and innovative financial practices). Three variables as the external factors (bank preferential assistance policies, government financial support, and perceived policy effectiveness). At the same time, this research's dependent and mediating variables are sustainable financial performance and the survival-recovery of MSMEs. These seven variables were measured using indicators built by previous research. Table 1 describes the number of indicators and references used in constructing the questionnaire instrument.

5.3. Data Analysis

Partial Least Square and Structural Equation Modeling (PLS-SEM) were used to analyze the collected research data. SMARTPLS 3.3.0 is used to run the PLS-SEM analysis process. The confirmatory Composite Analysis (CCA) approach was used in this study as the model was built, and the indicators of each latent variable were built upon a solid theoretical basis from previous studies. PLS-SEM is a variance-based structural equation technique that can manage small sample sizes and is suitable for confirmatory and explanatory research. It can also handle non-normality and data formative components. The tool enabled the authors to link the study model's latent variables with multivariate analysis (J. F. J. F. Hair et al., 2018). Therefore, this tool is appropriate for the investigation.

The analysis process through the PLS-SEM method has two stages, including testing the outer and inner models. The outer model is a series of statistical analyzes carried out to measure the validity and reliability of the construct consisting of a series of indicators on the survey instrument. Two steps were taken to calculate the instrument's validity: convergent and discriminant validity. Instrument reliability is evaluated using Composite Reliability (CR) and Cronbach's alpha (CA) values. Each latent variable with CR and CA values more than 0.70 is considered reliable. Convergence validity is measured using the Average Variance Extracted (AVE) value which must be more than 0.50 (J. J. Hair et al., 2017).

Table 2 shows that all indicator items in this study have a loading factor value above 0.70, indicating that all indicators involved represent the construct correctly. Table 2 also shows that all CR and CA values of each latent variable in this study are > 0.70 . It is concluded that the measurement instruments built in this study are reliable. Besides, the AVE value for each latent variable in this study is also > 0.50 . The ratio value above also shows that the instrument built in this research is valid.

The Heterotrait-Monotrait (HTMT) value was used to test the discriminant validity of the instrument. The HTMT ratio is more reliable in determining discriminant validity in PLS-SEM analysis. For the instrument to be valid, the HTMT ratio value must be below 0.90 (J. F. J. F. Hair et al., 2018). Table 3 shows that the entire value of the HTMT ratio for each latent variable is below 0.90, which means that this research instrument is valid for measuring the model built.

The inner model (structural model) measurement aims to analyze the conceptual model's ability to predict the variance of the dependent and independent variables. Therefore, four measurement analyzes were performed. *First*, the coefficient of determination is measured by looking at the value of R^2 . The aim is to determine the level of significance of the combined effect of exogenous variables in influencing endogenous variables. *Second*, an analysis of model fit (Goodness of Fit) was conducted to validate the overall structural model and see the combined performance of the measurement and structural model. This analysis was carried out by evaluating the value of the SRMR, NFI, and rms theta. *Third*, predictive relevance analysis was carried out through a blindfolding

Table 1. Measurement and Questionnaire Items

Construct	Code	Questionnaire Items	References
Technology Adaptation	Definition: MSME's ability to adopt information technology for marketing, reducing operating costs, improving services to consumers, increasing reaction times between producers and customers, producers and suppliers of inputs, and strengthening trade relations.		(Ganlin et al., 2021; Mehta et al., 2021)
	TA1	I sell and offer products/ services online more often through social media during the COVID-19 pandemic.	
	TA2	I join many online groups/communities on social media to get new customers/consumers during the COVID-19 pandemic.	
	TA3	I sell more often using e-commerce applications (Shopee, TokoPedia, BukaLapak, and others) or SuperApp (Gojek, Grab, Maxim, and others) during the COVID-19 pandemic.	
	TA4	I more often use online advertising services for my business products/ services, such as Facebook Ads, Instagram Ads, Google Ads, and others during the COVID-19 pandemic.	

(Continued)

Construct	Code	Questionnaire Items	References
Preferential Policies of Bank	Definition: The relief of banking facilities provided by the government to relax the payment of obligations of MSME actors as debtors to banks, such as rescheduling and re-financing facilities.		(Alkahtani et al., 2020; Le et al., 2020; Najib et al., 2021)
	PPB1	Banks shorten the time and simplify loan application requirements during the COVID-19 pandemic.	
	PPB2	Banks provide discounts (cuts) on loan interest for new customers during the COVID-19 pandemic.	
	PPB3	Banks provide interest reduction or exemption for ongoing customer loan debt during the COVID-19 pandemic.	
	PPB4	Banks provide rescheduling (rescheduling) facilities for loan payments for customers during the COVID-19 pandemic.	
	PPB5	Banks provide reduced or waived fees for using banking facilities during the COVID-19 pandemic.	
Financial Support from the Government	Definition: Financial assistance is defined as a government policy to provide stimulus funds to increase MSME business finances through a fiscal scheme during the COVID-19 crisis.		
	FSG1	The government provides financial support to MSME owners to pay work termination wages for employees who are laid off during the COVID-19 pandemic.	
	FSG2	The government provides financial support to workers who have reduced income, lost their jobs, or became unemployed during the COVID-19 pandemic.	
	FSG3	The government provides financial support for business actors or MSMEs who stop operating during the COVID-19 pandemic.	
	FSG4	The government provides financial support to participating businesses or MSMEs to help fight the COVID-19 pandemic in their production/ business environment.	

(Continued)

Table 1. (Continued)

Construct	Code	Questionnaire Items	References
Innovative Financial Practice	Definition: MSMEs' ability to use the latest digital financial products and services for operational and investment efficiency.		(Caballero-Morales, 2021; Ganlin et al., 2021; Mehta et al., 2021)
	IFP1	I use Mobile banking/ internet banking more often for buying and selling transactions during the COVID-19 pandemic.	
	IFP2	I often use digital wallets (DANA, Shopeepay, OVO, Gopay, and others) to make it easier for me to make transactions with consumers/suppliers during the pandemic.	
	IFP4	In general, using digital financial facilities that I do facilitate the transaction process and buying and selling of my business during the COVID-19 pandemic.	
Perceived Policy Effectiveness	Definition: The effectiveness of the implementation of government assistance policies felt by MSME actors as measured by their subjective assessment.		(Shen et al., 2022; Wan et al., 2014)
	PPE1	Government assistance, especially financial assistance and banking waivers, can be relied on to help MSMEs survive and recover from the impact of the COVID-19 pandemic.	
	PPE2	Government assistance, especially financial assistance and banking waivers, is sufficient to help MSMEs survive and recover from the impact of the COVID-19 pandemic.	
	PPE3	Government assistance, especially financial assistance and banking waivers for MSMEs, has been carried out properly on target to those in need.	
	PPE4	In general, government assistance, in the form of financial assistance and banking waivers, is effective in helping MSMEs survive and recover from the impact of the COVID-19 pandemic.	

(Continued)

Construct	Code	Questionnaire Items	References
Sustainable Financial Performance	Definition: The ability of a business to maintain a profitable financial condition and avoid financial difficulties as measured by a subjective assessment of Return on Assets, Equity, and Sales (ROA, ROE, and ROS).		(Su et al., 2017); Alkahtani et al., 2020)
	SCP1	In your view, what is the current condition of your business profit/net profit (after tax payments compared to total assets (ROA)) compared to the initial period of the COVID-19 pandemic?	
	SCP2	In your view, how is your business profit/net profit (after tax payments compared to total Equity (ROE)) currently compared to the initial period of the COVID-19 pandemic?	
	SCP3	In your view, what is the current condition of your business profit/net profit (compared to total sales (ROS)) compared to the initial period of the COVID-19 pandemic?	
Survival-Recovery of MSMEs	Definition: Self-assessment regarding the sustainability and recovery of MSME businesses from the perspective of the owners during the COVID-19 pandemic crisis.		(Le et al., 2020)
	SRS1	I can maintain my business during the COVID-19 pandemic.	
	SRS2	I was able to recover my business after being impacted (directly and indirectly) by the COVID-19 pandemic.	
	SRS3	My business has grown gradually after being affected (directly and indirectly) by the COVID-19 pandemic.	

method based on cross-validated redundancy (J. F. J. F. Hair et al., 2018). *Fourth*, hypotheses were tested through direct and indirect path coefficients using the bootstrap method with 5000 sub-samples. The test is carried out by looking at the p-value, which must be less than 0.05, so that the path of the relationship between latent variables is considered to have a significant relationship.

6. Findings

6.1. Respondent Profile

Table 4 provides an overview of the respondents' business profiles. Micro-enterprises dominate the types of MSMEs as respondents. Based on the Law on MSMEs in Indonesia, micro-enterprises have a maximum annual income of 19,200 USD with a business asset value of no more than 3,200 USD

Table 2. Convergence Validity and Instrument Reliability

Variable	Item	Factor Loading	CA	CR	AVE
Financial Support from Government (FSG)	FSG1	0.860	0.908	0.935	0.784
	FSG2	0.891			
	FSG3	0.900			
	FSG4	0.890			
Innovative Financial Practice (IFP)	IFP1	0.874	0.837	0.902	0.754
	IFP2	0.870			
	IFP4	0.861			
Preferential Policies of Bank (PPB)	PPB1	0.813	0.913	0.935	0.742
	PPB2	0.879			
	PPB3	0.887			
	PPB4	0.852			
	PPB5	0.873			
Perceived Policy Effectiveness (PPE)	PPE1	0.832	0.864	0.908	0.711
	PPE2	0.881			
	PPE3	0.798			
	PPE4	0.859			
Sustainable Financial Performance (SCP)	SCP1	0.906	0.881	0.927	0.808
	SCP2	0.916			
	SCP3	0.875			
Survival-Recovery of SMEs (SRS)	SRS1	0.778	0.819	0.889	0.728
	SRS2	0.891			
	SRS3	0.886			
Technology Adaptation (TA)	TA1	0.886	0.901	0.931	0.770
	TA2	0.882			
	TA3	0.871			
	TA4	0.871			

Table 3. Discriminant Validity (HTMT Ratio)

	FSG	IFP	IFP*TA	PPB	PPE	SCP	SRS	TA
FSG								
IFP	0.245							
IFP*TA	0.014	0.243						
PPB	0.708	0.190	0.039					
PPE	0.409	0.276	0.064	0.383				
SCP	0.076	0.254	0.028	0.165	0.31			
SRS	0.141	0.271	0.13	0.116	0.212	0.385		
TA	0.248	0.83	0.182	0.213	0.32	0.243	0.184	

and have 1–5 workers. The descriptive data shows that 76.90% of respondents have a maximum annual income of 19,200 USD, 71.05% have 1–5 workers, and 52.53% have a greatest business asset of 3,200 USD. It is in line with the actual condition where the number of micro-enterprises in Indonesia dominates, reaching more than 62 million units or 98.70%.

Table 4. Respondent Profile

Business Profile	Frequency	Percentage (%)	Business Profile	Frequency	Percentage (%)
Education			Number of Employees		
Elementary School	97	9.45%	1–5	729	71.05%
Junior High School	127	12.38%	5–19	236	23.00%
Senior High School	576	56.14%	20–99	51	4.97%
Bachelor	206	20.08%	> 99	10	0.97%
Master/PhD.	20	1.95%	Ownership		
Annual Revenue (USD)			Individual/ family	924	90.06%
3,900–19,200	789	76.90%	CV	64	6.24%
19,200–160,000	195	19.01%			
160,000–3,200,000	42	4.09%	PT/Corporate	38	3.70%
Total Asset (USD)			Age of Business		
3,200 maximum	539	52.53%	<10 years	589	57.41%
3,200–32,000	392	38.21%	10–15 years	249	24.27%
32,000–640,000	95	9.26%	15–20 years	92	8.97%
			>20 years	96	9.36%

Based on the ownership, individual or family-owned businesses dominate with 90.06%, followed by CV and limited companies (PT/Ltd). Based on business maturity, most respondents have run their businesses for less than ten years (57.41%) and between 10–15 years (24.27%). Respondents who have been in business for more than 15–20 years are 8.97% and 9.36%, respectively. In terms of owner's education, the majority of respondents are high school graduates (56.14%), followed by undergraduate graduates (20.08%), junior high school (12.38%), elementary school (9.45%), and masters/doctoral graduates (1.95%).

6.2. Structural Model (Inner Model)

The first stage of the inner model test is measuring the inner VIF and model fit (*Goodness of Fit*) assumption. PLS-SEM requires the absence of the assumption of multicollinearity between the construct and indicator variables. This criterion can be met by measuring the value of the inner VIF using the PLS method. If the Variance Inflation Factor (VIF) value is more than 3, it is concluded that there is an assumption of multicollinearity between indicators (J. F. J. F. Hair et al., 2018). Table 5 shows that the value of the inner VIF between variables and indicators is smaller than 3. Therefore, this study concluded that there is no assumption of multicollinearity.

Afterwards, the model fit test must be conducted to assess the combined performance of the outer and structural/inner models (J. Hair et al., 2017). The SMARTPLS official website states that to categorize a model as appropriate, the RMS theta (Root Mean Square) value must be less than 0.102, the SRMR (Standardized Root Mean Square) must be less than 0.10 or 0.08, and the NFI value must be > 0,9 or close to 1 (Henseler et al., 2014). Table 6 shows that the estimated NFI value of the model is 0.886 (close to 1), and the SRMR value is 0.0630 (<0.10). It is not necessary to use all index values for model approval. An SRMR value less than 0.10 is sufficient to deem the model fit (J. Hair et al., 2017). It is concluded that the model developed in this study meets the Goodness of Fit (GoF) assumption.

Table 5. Inner VIF Value between Variables

	Perceived Policy Effectiveness	Sustainable Financial Performance	Survival-Recovery MSMEs
Financial Support from the Government	1.714	1.806	
Innovative Financial Practice		2.124	
Moderator Variable		1.072	
Preferential Policies of Bank	1.714	1.76	
Perceived Policy Effectiveness		1.254	
Sustainable Financial Performance			1.000
Survival-Recovery of MSMEs			
Technology Adaptation		2.132	

Table 6. Model Fit Test Result

	Saturated Model	Estimated Model
SRMR	0.04	0.063
d_U LS	0.556	1.389
d_G	0.302	0.31
Chi-Square	2947.353	2973.712
NFI	0.887	0.886
rms theta	0.131	

Table 7. Coefficient Determination Test Result

	R Square	R Square Adjusted
Perceived Policy Effectiveness	0.155	0.153
Sustainable Financial Performance	0.116	0.113
Survival-Recovery of MSMEs	0.117	0.116

After checking the multicollinearity and goodness of fit assumption, the coefficient of determination was evaluated. This test is determined by the value of R^2 obtained from the PLS algorithm procedures. The level of the R^2 ratio is classified into three categories, namely 0.75 (strong), 0.50 (moderate), and 0.25 (weak; J. F. Hair et al., 2018). Table 7 shows that the R^2 value of the MSME Sustainability and Recovery variables (0.1160), Sustainable Financial Performance (0.1130), and Perceived Policy Effectiveness (0.1530) are weak because they are less than 0.25. The combination of exogenous variables (factors related to government policies and adaptability) has a small contribution to explaining the three endogenous variables, not more than 11–15%. In contrast, other variables outside the model explain the rest. It is because this research only focuses on investigating the five roles of internal and external variables that are the determining factors of MSMEs' sustainable financial performance for the sake of a sharper research discussion.

The second stage of the inner model test is to evaluate the results of the blindfolding ratio. The Blindfolding test evaluates the value of Q^2 to determine the level of predictive relevance of a construct model (J. Hair et al., 2017). If Q^2 is more than 0.05, it can be concluded that the

Table 8. Blindfolding Test Result

	SSO	SSE	Q² (=1-SSE/SSO)
Financial Support from the Government	6232	6232	
Innovative Financial Practice	4674	4674	
Moderator Variable	1558	1558	
Preferential Policies of Bank	7790	7790	
Perceived Policy Effectiveness	6232	5566.133	0.107
Sustainable Financial Performance	4674	4252.547	0.090
Survival-Recovery of MSMEs	4674	4304.755	0.079
Technology Adaptation	6232	6232	

constructed model built in this study is appropriate to describe the phenomenon. Based on Table 8, the Q² value of the two endogenous variables in this study is more significant than 0.05 (0.107, 0.090, and 0.079). It can be concluded that the exogenous variables used to predict the endogenous variables in this study were precise.

6.3. Hypothesis Test Results

The last step of the inner model analysis is hypothesis testing through the bootstrapping method. In assessing the structural model's relevance level, the study used 5,000 sub-samples to verify the degree of relevance of the data (J. J. Hair et al., 2017). This study uses a significance level of 5–10%. It is a generally accepted level of significance in economics and management studies. The finding of a direct relationship between latent variables is shown in Table 9. Table 9 shows that all direct relationships among the latent variables based on the model have significant effects. For internal factors, technology adaptation and innovative financial practices significantly affect the sustainable financial performance of MSMEs during the Covid-19 pandemic. The same result was found for financial support and preferential policies of the bank from the government.

The above results indicate that the mediation relationship conditions in this model have been met. The requirement for the mediating effect of a mediator variable (intervening) to function is that the independent variable must influence the mediator variable, and the mediator variable must simultaneously affect the dependent variable (Hayes, 2018). The results above show that all direct relationships between latent variables have a significant relationship. Therefore, it is likely that perceived policy effectiveness mediates financial support and preferential policies of the bank

Table 9. Direct Effect Test Results

Hypothesis	Path	Coefficient	STD	t-statistic	p-value	Conclusion
H1	TA -> SCP	0.077	0.037	2.115	0.034**	Supported
H2 _a	IFP*TA -> SCP	0.044	0.025	1.768	0.0770*	Supported
H2 _b	IFP -> SCP	0.132	0.037	3.583	0.000**	Supported
H3	PPB -> SCP	0.123	0.035	3.536	0.000**	Supported
H4	PPB -> PPE	0.187	0.033	5.663	0.000**	Supported
H5	FSG -> SCP	-0.138	0.035	4.001	0.000**	Supported
H6	FSG -> PPE	0.245	0.034	7.261	0.000**	Supported
H7	PPE -> SCP	0.222	0.030	7.368	0.000**	Supported
H8	SCP -> SRS	0.342	0.025	13.48	0.000**	Supported

**Significant in 5% error *Significant in 10% error

Table 10. Indirect Effect Test Results

Path Number	Path	Coefficient	STD	t-Value	p-value
1	FSG -> PPE -> SCP	0.055	0.011	5.058	0.000**
2	PPB -> PPE -> SCP	0.042	0.009	4.453	0.000**
3	TA -> SCP -> SRS	0.026	0.013	2.103	0.036**
4	IFP -> SCP -> SRS	0.045	0.014	3.297	0.001**
5	IFP*TA -> SCP -> SRS	0.015	0.009	1.723	0.085*
6	FSG -> SCP -> SRS	-0.047	0.012	3.881	0.000**
7	PPB -> SCP -> SRS	0.042	0.012	3.435	0.001**
8	PPE -> SCP -> SRS	0.076	0.012	6.330	0.000**
9	FSG -> PPE -> SCP -> SRS	0.019	0.004	4.607	0.000**
10	PPB -> PPE -> SCP -> SRS	0.014	0.003	4.192	0.000**

**Significant in 5% error *Significant in 10% error

on sustainable financial performance. Likewise, sustainable financial performance may mediate other independent variables on survival-recovery MSMEs (TA, IFP, PPB, and FSG). We must look at the results of specific indirect effects to prove it. Based on the results above, it is concluded that all hypotheses (H1, H2a, H2b, H3, H4, H5, H6, H7, and H8) have been accepted.

The indirect relationship between latent variables is shown in Table 10. Table 10 shows that perceived policy effectiveness positively and significantly mediates and enhances the positive effect of the relationship between preferential banking policies and government financial assistance on sustainable financial performance (Track numbers: 1 and 2). The same results were found in sustainable financial performance as a mediating variable. Path numbers 3, 4, 6, 7, and 8 show that sustainable financial performance is proven to significantly mediate and add the positive effect of the relationship between government financial assistance, preferential banking policies, technological adaptability, innovative financial practices, and perceived policy effectiveness on the survival-recovery of MSMEs.

Specifically, Table 10 shows a shifting effect of financial support from the government on survival-recovery MSMEs. In a direct relationship, the government's financial support negatively affects sustainable financial performance. It then changes to positively and significantly influence the survival-recovery of MSMEs after being mediated by perceived policy effectiveness and sustainable financial performance, as indicated by path number 9. Therefore, it is concluded that thanks to sustainable financial performance, technology adaptation, innovative financial practices, financial assistance, and banking waivers from the government, in the end, significantly affect the survival-recovery of MSMEs amid the Covid-19 pandemic. The results of structural (inner) model test are briefly shown in Figure 2.

7. Discussion and Implications

7.1. Discussion

Based on the direct and indirect relationship test results, it can be concluded that the two research questions in this study have been answered. The research model successfully explains that

technology adaptation and innovative financial practices as internal factors are essential elements that affect sustainable financial performance and the survival-recovery of MSMEs. As an external factor, the financial support from the government and preferential policies of the bank has also proven to be essential factors in surviving the pandemic crisis.

The findings show MSMEs' ability to adapt to technology and digitalization in the marketing, advertising, and business communication processes, as well as innovative financial practices through digitizing buying and selling transactions and financial. The findings support several previous studies, such as Charoennan et al. (2022), Mehta et al. (2021), Caballero-Morales (2021), and Lingyan et al. (2021), and El Chaarani et al. (2022). They found that MSME actors who adapt and follow the development of open innovation in technology which expands global cooperation networks, and partner with external parties will be better prepared to compete with competitors and meet market needs. In addition, they added that using online resources and expertise in innovating on the production, marketing, and financial side is an effective recovery strategy for MSMEs during the pandemic crisis.

Specifically in Indonesia, this research has also supported several independent research findings that private companies and government agencies have conducted. For example, a study conducted by PT Telkom Indonesia in collaboration with the Boston Consulting Group (BCG) found that more than 60% of MSME owners in Indonesia supply goods to customers or from suppliers and seek customers through digital mechanisms (Anam, 2022, September). Digitalization is proven to provide and increase access to new business platforms and opportunities to reach new markets developing nationally, regionally, and globally, so that MSME businesses can continue to be sustainable amid a crisis.

Technology adaptation improves the efficiency of the way businesses works and reduces operational costs. In addition, innovative financial practices also open opportunities for MSMEs to access alternative financings, such as through crowdfunding, peer-to-peer lending, and online loans. These benefits will ultimately lead to maintained profitability and increased MSME activity ratios that make their financial performance sustainable. This research is also in line with a study from the National Development Planning Agency (BAPPENAS) of Indonesia, which found that the government does two important things to save MSMEs from the pandemic crisis: improving internet infrastructure and digital human resources (Yusuf, 2020, December).

Regarding the external factors of MSMEs, the evidence shows that financial support from the government and its effectiveness affect sustainable financial performance and the survival-recovery of MSMEs during the pandemic. These findings support previous research from Le et al. (2020) and Najib et al. (2021). They have proven that assistance from the government can help maintain the continuity and recovery of MSME businesses and encourage innovation. The central bank and the financial services authority have a vital role in creating credit restructuring and rescheduling facilities and interest discounts for MSME actors. The relationship between MSME actors and banks is significant to maintain their cash and financial flows in facing the crisis (Le et al., 2020).

Humanist banking policies are needed to maintain the MSME ecosystem and avoid deleveraging which leads to the demise of the MSME ecosystem and an increase in unemployment (Hasan et al., 2020). The central bank and financial service authority synergize to create holistic policies to meet the financial needs of MSMEs. These policies include conventional banking, economic digitization, legal online loans, and peer-to-peer landing. The findings also confirm the fact on the ground that the bank relief policy in Indonesia has been effective and can help MSMEs maintain business performance and recover during the crisis.

Financial support from the government is the last factor related to policies that positively affect perceived policy effectiveness and sustainable financial performance. This finding has supported

previous studies by Le et al. (2020) and Najib et al. (2021). They have proven that assistance from the government can help maintain the continuity and recovery of MSME businesses and encourage innovation. Financial aid, such as compensation for termination of employment, financial expenditure, and financial support to prevent the spread of the virus in the production factory, is essential. They have proven effective in helping MSMEs. One of the fiscal policies in Indonesia is to provide Micro Business Productive Assistance (BPUM) which has been running through the National Economic Recovery (PEN) program.

As part of the research gap, the findings of this study also confirm and support previous research by Wan et al. (2014) and Shen et al. (2022) by explaining that the effectiveness of government assistance policies has a significant mediating effect between factors related to financial policy on sustainable financial performance. Effectiveness is the key to the success of government policies that have been implemented. The more positive the effectiveness of the policy felt by MSME actors, the more valuable the procedure is for MSMEs to survive during the crisis.

This study makes a theoretical contribution by developing the research of Le et al. (2020), Ganlin et al. (2021), and Najib et al. (2021). It explains that the ability of MSMEs to adapt and innovate in terms of digitalization and government assistance policies does not directly and immediately affect the sustainability and recovery of MSMEs. However, those factors affect their financial performance and sustainable business first. Their Financial performance and sustainable business will ultimately maintain and recover their business during the current crisis.

On the other hand, this study also develops the findings of Alkahtani et al. (2020) and Su et al. (2017) by proving that the government's effectiveness in providing assistance policies increases the positive effect of these policies on sustainable Financial performance and the restoration of the viability of MSMEs. The effectiveness of policy implementation can affect the success of the policy in influencing the objectives/targets/objects of the policy.

This research provides contributions and practical implications for the government and related stakeholders. The government needs to increase the scale and strengthen the effectiveness of the distribution of financial assistance for MSMEs and banking concessions for MSMEs. Maintaining aid regulations, improving beneficiary data, and synergies between financial institutions are some improvements that must be refined following the findings of this and previous studies. In addition, regarding the financial assistance policy, the government needs to improvise so that aid distribution is more effective and efficient. Some examples include expanding the methods and scale of aid socialization, digitizing one-stop distribution channels, and strengthening sanctions and aid regulations.

7.2. Managerial Implications

Considering the essential role of innovative financial practices in supporting technology adaptation and maintaining financial performance, MSMEs actors must seriously consider using digital financing services. Some of them are legal instant personal loan applications which have more flexible than conventional micro banking. Furthermore, most governments of developing countries like Indonesia have no digital-based effective microcredit service that offers cheaper loans than private digital personal loans. Instant, legal, safe, and affordable productive loans could be a game changer to save MSMEs from pandemic suffering. Increasing the ability to carry out digital marketing and advertising is also essential for MSMEs actors, especially for elderly and under-educated owners. These two abilities can help MSMEs maintain their performance amid the pandemic crisis as it requires them to embrace digitalization deeply. The government can support this by providing innovative tutorial videos shared on digital platforms such as YouTube, Instagram, and TikTok, so that MSME owners can easily access them.

From a policy perspective, this research shows that policy effectiveness perceived by MSME actors is essential. Financial support related to the Covid-19 pandemic by the government is supposed to directly target MSMEs actors without having to go through complicated bureaucratic

procedures. It will increase the accessibility of MSMEs to secure financial assistance from the government. Besides, banking waivers for MSMEs must be maintained as it has proven very useful for MSMEs to control their cash flow amid the Covid-19 pandemic. MSMEs can use their fund to innovate and adapt to digitalization and create a new business model.

8. Conclusion and future research suggestions

8.1. Conclusion

This study proves that creating the resilience and agility of MSMEs in adapting to technology or digitalization as well as external support from the government is the leading solution to reduce the bruising economic effect of the COVID-19 pandemic. The results show that the ability to utilize digital platforms for marketing, advertising, and communication and innovative financial practices carried out by MSMEs positively and significantly affected their sustainable financial performance during a crisis. In addition, financial support from the government through banking waivers and Covid-19 financial assistance positively influenced the sustainable financial performance and survival-recovery of MSMEs. As a contribution, this research highlights the essential part of policy effectiveness that has proven to mediate the relationship between financial support from the government on the sustainable performance of MSMEs. As for the managerial and policy implications, this research has given suggestions to the related stakeholders for emphasizing the increasing ability of MSMEs to adapt to digitalization and technology within the context of marketing, finance, production, and communication.

9. Limitations and Future Research Suggestions

Although this research succeeded in answering the problems and objectives, it still has some limitations that need to be developed by further research. First, this study only involves two government financial supports (financial assistance and preferential banking). Other financial policies such as tax policy, social insurance, and the role of MSME professional associations are rarely discussed as an opportunity for deeper future research discussions. Besides, many external factors have not been observed, such as the role of customer and supplier involvement as external parties. Second, related to the internal factors, the role of employees and leaders in managing the company is also an important internal factor that is thought to affect the survival-recovery of MSME businesses. Third, several other important factors that determine the success of implementing government assistance policies are also many that have not been observed in this study. Several factors other than perceived policy effectiveness include trust in the government, policy complexity, ease of access to aid, and so on. Future research can observe these factors and process them into exciting research.

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