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THE IMPACT OF THE COVID-19 PANDEMIC ON ORGANIZATIONAL SUPPORT IN THE DEVELOPMENT OF FINANCIAL TECHNOLOGI-BASED BUSINESSES

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ABSTRACT

The purpose of this study is to investigate the organizational support and the roles carried out by owners of micro, small, and medium enterprises (MSMEs) who operate businesses based on financial technology during the COVID-19 pandemic as well as in the periods before the pandemic. This research also aims to identify the key priorities that organizations need to consider under different conditions by implementing fintech-based training programs. To achieve this, the study employs an experimental research design where one group the experimental group receives specific fintech training, while the control group does not receive any training. The analysis technique used to evaluate the effectiveness of the training is the paired-samples t-test, which helps to determine whether there are statistically significant differences within the same group under varying conditions. The results reveal that fintech-based training is highly important in enhancing organizational support among the business groups that received the training, as there are significant positive differences compared to those who did not participate in the training. Consequently, this type of training is essential and should be prioritized, especially during challenging and crisis situations such as the COVID-19 pandemic, to strengthen the resilience and sustainability of fintech-based MSME businesses and ensure their long-term success.

Keywords: *financial technology, organizational support, experimental design, COVID-19 pandemic*

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1. | INTRODUCTION

This study emphasizes the critical role that organizational support plays in enabling micro, small, and medium enterprises (MSMEs) that utilize financial technology (fintech) to endure during uncertain periods, such as the COVID-19 pandemic. Since the 1990s, fintech has gained significant traction globally, marking a substantial transformation in the financial sector (Khuong et al., 2022). The accelerated technological advancements worldwide have notably influenced business strategies within fintech enterprises. Southeast Asia, including Indonesia, has been identified as a promising region for fintech development, given its potential market size and growing digital adoption (Tut, 2020). The dynamic and rapidly evolving digital landscape, coupled with the challenges imposed by the COVID-19 crisis, demands that MSMEs enhance and reinforce their dynamic capabilities to maintain competitive advantages, particularly in innovation performance across organizations (Cheng et al., 2014).

Southeast Asia was among the hardest-hit regions by the pandemic, with approximately 26% of positive cases and a 19% mortality rate reported by August 2020 (World Health Organization [WHO], 2020). The abrupt emergence of COVID-19 not only led to significant loss of life but also caused profound economic shocks affecting MSMEs worldwide (Juergensen et al., 2020). Such economic disruptions are not unprecedented; historical evidence from earlier pandemics—such as HIV/AIDS and other infectious diseases—illustrates similar patterns of economic imbalance on a global scale (Goodell, 2020; Global Preparedness Monitoring Board [GPMB], 2019; Santaeulalia-Llopis, 2008; Yach et al., 2006). For instance, the United States experienced an economic loss exceeding 500 billion USD, representing 0.6% of its gross income, during the pandemic (Fan et al., 2018).

Goodell (2020) notes that the pandemic has catalyzed a shift in consumer shopping behaviors on a global scale, reminiscent of the decline in domestic spending observed during the HIV/AIDS epidemic (Goodell, 2020; Santaeulalia-Llopis, 2008). The COVID-19 crisis has further complicated the economic environment, placing heightened emphasis on sustainability as a critical challenge for the global economy during such disasters (Bjørnskov, 2008; Cavallo et al., 2013; Fukuyama, 1995; Ghesquiere & Mahul, 2010; Noy, 2009). Additionally, the pandemic has caused significant geographical disruptions in supply and demand, severely impacting global supply chains meticulously optimized before the crisis. Such disruptions have been felt worldwide, affecting major economies including the US, Europe, China, and emerging markets alike (World Economic Forum, 2022).

One of the main challenges arises from unprecedented pressure on global supply chains compounded by lockdowns and varying degrees of restrictions imposed across countries. Emerging markets, often reliant on MSMEs as economic pillars, have faced heightened supply chain pressures, thereby destabilizing domestic economies. Consequently, business organizations must cultivate resilience and adaptability to effectively respond to such large-scale disruptions, thereby enabling the development of sustainable long-term strategies and solutions for complex challenges. Organizations that exhibit agility, especially those leveraging technology, are better positioned to withstand the adverse effects brought on by the COVID-19 pandemic. Technology has created new avenues for digital financial services to expand and promote financial inclusion, even under social distancing and containment policies. However, the evolution of digital financial services also elevates risks that were present before the pandemic, increasing their relevance in the current context (Mikalef & Pateli, 2017; Sahay et al., 2020; Tut, 2020).

Among the positive impacts on financial institutions and consumers' adoption of fintech is the increased use of digital payment platforms (Sahay et al., 2020; Tut, 2020). In Indonesia, fintech continues to hold significant potential for growth, demonstrated by the establishment of the Indonesian Fintech Association (AFI) in 2015, which has attracted entrepreneurs to contribute toward building a trustworthy and robust fintech ecosystem. Presently, approximately 30% of companies in Indonesia utilize fintech, reflecting a substantial increase from 7% in the mid-2000s to 78% in 2017, involving

around 135 to 140 fintech companies. The sectoral distribution of fintech activities in Indonesia during 2017 included personal financial planning (8.15%), crowdfunding (8.15%), lending (17.78%), aggregators (12.59%), payment services (42.22%), and others (11.11%) (Indonesian Banking School [IBS], 2017). Given this rapid expansion, fintech development in Indonesia is projected to continue rising steadily.

Empirical evidence suggests that organizational agility significantly contributes to building competitive advantages in uncertain environments, particularly through dynamic capabilities supported by information technology and its impact on competitive performance (Mikalef & Pateli, 2017). Organizations now face multifaceted uncertainties extending beyond national, economic, or social borders. The COVID-19 pandemic presents a novel test of resilience for fintech-based businesses, which inherently carry risks due to their reliance on digital infrastructure and resources amid the crisis (Carnevale & Hatak, 2020; Sahay et al., 2020). The fintech industry remains highly competitive in the post-pandemic landscape, demanding that organizations engage in appropriate strategic planning to effectively manage business cycle changes (Côrte-Real et al., 2019).

Accordingly, organizational support for fintech enterprises is crucial in reducing operational costs, enhancing customer service, improving distribution channels, maximizing operational efficiencies, supporting day-to-day operations effectively, and increasing competitive capabilities (Grandon & Pearson, 2004; Akgunduz et al., 2018). Hence, fintech-based MSMEs must be equipped with appropriate fintech training to navigate the challenges posed by the pandemic. The premise is that such training serves as a strategic maneuver aimed at improving organizational performance (Van Eemeren & Houtlosser, 1999, 2006). Supporting this, previous research confirms that strategic training positively impacts business performance (Fahed-Sreih & El-Kassar, 2017). Under normal circumstances, organizational support in fintech initiatives enhances both productivity and performance (Akgunduz et al., 2018; Caesens & Stinglhamber, 2014; Jeung et al., 2017). The perceived benefits of organizational support also foster a proactive work personality among employees and MSME owners alike (Akgunduz et al., 2018). The pandemic's direct and indirect impacts on economic aspects underscore the need for further financial research (Goodell, 2020).

Most pandemic-related research has focused predominantly on medical issues, while broader impacts such as increased inequality have been less explored. Few studies have offered comprehensive solutions addressing the pandemic's economic crisis (Bloom et al., 2018; Goodell, 2020). Globally, many regions—including Germany, Japan, Turkey, the UK, the USA, Brazil, India, Indonesia, the Eurozone, and China—experienced significant economic contraction in the second quarter of 2020 (WHO, 2022). The economic challenges facing business organizations represent a widespread risk to global revenue streams (Fan et al., 2018). In light of the pandemic's effects, business entities must acknowledge the severity of the situation and make informed decisions to mitigate financial impacts (Bloom et al., 2018; Fan et al., 2018; Goodell, 2020; GPMB, 2019; Santaeulalia-Llopis, 2008; Tam et al., 2016; Yach et al., 2006). India, in contrast, demonstrated positive economic momentum by doubling its growth rate during the pandemic, with a projected 8.5% growth forecast for the following year. Asia overall is expected to drive significant global economic growth in 2022, highlighting the necessity for Indonesia to prepare its MSMEs to align with this accelerated pace and enhance its economic recovery.

A core aspect of organizational support in fintech during the pandemic relates to the fundamental shifts and adaptations that new business organizations have undergone. Comparable situations occurred during previous health crises, such as the Ebola outbreak in West Africa (2013–2016) and the HIV/AIDS epidemic (Fan et al., 2018; Goodell, 2020; Santaeulalia-Llopis, 2008; Tam et al., 2016). Fortunately, the ongoing digitalization era is generating substantial disruptions across all business facets, including financial technology (Grandon & Pearson, 2004; Leng et al., 2018). The erosion of social trust increases transaction costs throughout financial systems, further complicating recovery

efforts (Bjørnskov, 2008; Fukuyama, 1995). Existing inconsistencies in research findings regarding solutions for organizational and economic challenges present opportunities for deeper analysis, particularly focusing on MSMEs. It is anticipated that fintech-based training will enhance MSME resilience during the pandemic. However, Ismail and Zain (2015) caution that not all training yields significant benefits, often due to ineffective training design misaligned with the needs of participants. Moreover, the pandemic affects different economic sectors unequally, underscoring the importance of tailored solutions (Noy, 2009).

Countries must promptly develop strategies to restore social trust amid COVID-19 conditions, as trust deficits can escalate into further crises (Ghesquiere & Mahul, 2010). Effective solutions should aim to achieve competitive advantages reflected in strategic performance metrics such as market share growth and success relative to competitors (Côrte-Real et al., 2019). This study aims to demonstrate that fintech-based training can serve as a viable solution enabling MSMEs to survive pandemic-related disruptions. Organizations supported by suitable mechanisms are more likely to sustain operations under adverse conditions. Therefore, it is crucial to design fintech training programs that incorporate financial literacy, fintech regulatory knowledge, ecosystem collaboration, and an assessment of the training's varied impacts on MSME owners.

This research specifically focuses on MSME owners engaged in fintech businesses, investigating the role of organizational support during and prior to the pandemic. The objectives are: (1) to examine the effects of fintech-based training on MSME owners, and (2) to identify differences in the role of organizational support for fintech activities under different conditions before and during the pandemic. The findings aim to benefit fintech-based MSME owners by highlighting the importance of organizational support in enhancing their survival capacity. Furthermore, the research offers recommendations for government stakeholders to mitigate the financial repercussions of the pandemic. Given fintech's ability to accelerate monetary policy transmission, improve money circulation speed, and foster economic growth, its development is of strategic interest. This study proposes recommendations for stakeholders to develop fintech training models focused on organizational support during pandemic conditions, including regulation, collaboration, and literacy components to enhance MSME owners' skill sets. The training should prioritize factors such as capitalizing on market reconfiguration (MCR) and operational adjustment reconfiguration (OAR).

2. | LITERATURE REVIEW AND HYPOTHESIS

Limited research has explored the potential connections between pandemic-related challenges and businesses based on financial technology. One of the prominent theoretical frameworks applicable to this area is the Theory of Planned Behavior (TPB), which has been widely used to predict and explain behavior across various fields, including technology adoption (Grandon & Pearson, 2004). Originally formulated to understand behavior in diverse contexts, TPB posits a causal link between an individual's perception of strategic value and their behavioral intentions to adopt certain actions. Essentially, an individual's perception shapes their intention, and this intention ultimately governs their behavior (Ajzen, 1991; Grandon & Pearson, 2004). In the context of organizations, changes in social behavior underscore the necessity for organizations to be structured in ways that align with human expectations, thereby positively influencing organizational outcomes (Akgunduz et al., 2018). Employees tend to display constructive behavior when they have behavioral control, which includes access to perceived opportunities and resources that enable them to perform their roles and contribute meaningfully to organizational objectives (Steinmetz et al., 2011; Ibrahim et al., 2016).

Organizational support plays a critical role in fostering effective commitment by helping employees achieve various goals, particularly in the fast-evolving fintech sector where agility and survival rates are paramount. According to the norm of reciprocity, when organizations provide support, employees feel an obligation to reciprocate by engaging actively and helping achieve organizational aims. This organizational support is thus seen as a motivational mechanism that encourages employees to be

physically and emotionally involved in their tasks and to empathize with the demands of their roles (Caesens & Stinglhamber, 2014; Ibrahim et al., 2016; Jeung et al., 2017). Among the various organizational initiatives, training programs have been identified as especially potent in driving positive organizational outcomes (Guzzo et al., 1985).

Over the past twenty years, several infectious disease outbreaks have occurred globally, including Ebola, Influenza A (H1N1), SARS, MERS, and most recently, COVID-19. These outbreaks have not only posed significant health risks but have also led to widespread economic disruptions, affecting both local and global resources and labor markets. The deterioration in economic prospects and the quality and quantity of employment has been rapid and profound (Juergensen et al., 2020). The impact of pandemics differs fundamentally from that of other large-scale crises, such as nuclear war, which primarily affect national defense budgets. Instead, pandemics produce a gradual yet extensive overflow effect that triggers market reactions and inflicts direct and severe economic damage worldwide (Goodell, 2020; Inegbedion, 2021). Particularly, developing countries tend to bear the brunt of natural disasters, emphasizing the need for preemptive economic strategies that support MSMEs in these vulnerable economies (Noy, 2009; Cavallo et al., 2013).

Given these uncertainties, organizations must remain alert and adaptive to sudden external shocks that increase workforce uncertainty and threaten organizational performance and survival (Carnevale & Hatak, 2020). Early research suggests that companies should pursue strategic responses to crises, including cost-saving, persistence, innovation, and, if necessary, business exit strategies. A multifaceted, integrated approach is essential to effectively manage the challenges posed by COVID-19 (Buheji & Buheji, 2020; Carnevale & Hatak, 2020). Digital transformation has notably impacted organizational management structures, with the finance sector being one of the most affected. The sector's landscape is being reshaped significantly, improving service accessibility across different regions (Sahay et al., 2020). In particular, MSMEs in developing countries increasingly rely on fintech, which is viewed as a powerful economic driver capable of adapting flexibly to various business conditions (Ahmedova, 2015; Kartiwi & MacGregor, 2011; Mittal et al., 2018; Zhou, 2016). These enterprises need to identify and leverage both internal and external sources of empowerment to innovate and grow, especially under shifting economic conditions.

At the onset of the pandemic, fintech adoption experienced some negative impacts; however, favorable short-term regulatory measures helped to mitigate these effects. Notably, the use of electronic payment cards declined except for credit cards, as consumers sought more cost-effective payment methods. Increased concerns about virus transmission accelerated the shift to electronic payments. Transactions processed through fintech platforms have had a significant influence on the contraction of economic activities worldwide (Tut, 2020). Regulatory technology (RegTech) solutions have been instrumental in offering valuable insights to prevent fraud, further supporting the fintech sector's growth. The economic advantages of fintech include accelerating monetary policy transmission and enhancing the velocity of money circulation, which ultimately bolsters overall economic performance (Turki et al., 2020).

In today's highly competitive business environment, organizations must foster creativity and innovation to solve emerging challenges. The fintech era demands that organizations be more agile and inventive to address problems effectively. Organizational support systems are also designed to boost job satisfaction by encouraging behaviors that promote emotional reciprocity and mutual respect (Akgunduz et al., 2018; Caesens & Stinglhamber, 2014; Ibrahim et al., 2016; Jeung et al., 2017; Leng et al., 2018). Organizations that demonstrate genuine appreciation for their employees tend to benefit from more positive workplace behaviors. Relationship-building in organizational settings is often influenced by considerations of utility and finance, with other factors including recognizing employee contributions, addressing grievances, and fostering pride and satisfaction in work roles (Çakar &

Yildiz, 2009; Park et al., 2016; Akgunduz et al., 2018). Organizational support is essential for multiple operational objectives, including reducing business operating costs, improving customer service, expanding distribution channels, generating operational efficiencies, providing effective operational support, and enhancing competitive capabilities.

The economic repercussions of COVID-19 have been broad and challenging to predict in magnitude (Goodell, 2020). Organizations suddenly confronted unprecedented disruptions, necessitating the development of novel solutions across various functional areas (Carnevale & Hatak, 2020). MSME owners, in particular, have had to navigate this uncertain environment, striving to mitigate financial losses. To survive and thrive during the pandemic, MSMEs must maintain or enhance their business performance to meet organizational objectives. Prior research highlights that strong organizational support is linked to improved performance outcomes (Hafidhah & Martono, 2019). However, targeted training is required to equip MSMEs with the necessary skills to design and implement effective organizational support strategies. Based on the preceding discussion, the study formulates the following hypotheses to be tested:

- Hypothesis 1 (H1): There are significant differences in organizational support for fintech efforts before and during the pandemic.
- Hypothesis 2 (H2): Organizational support differs significantly between fintech and non-fintech efforts before and during the pandemic.
- Hypothesis 3 (H3): Differences exist in organizational support for fintech efforts with and without training before the pandemic.
- Hypothesis 4 (H4): Organizational support in fintech efforts differs between conditions before and during the pandemic.
- Hypothesis 5 (H5): Organizational support for fintech efforts during the pandemic differs significantly compared to pre-pandemic conditions without training.

This literature review underscores the critical need for MSMEs to undergo substantial transformation in response to extreme challenges. The concept of organizational support tailored for fintech initiatives during a pandemic is relatively novel. Importantly, no prior research has rigorously examined these dynamics through an experimental approach such as training interventions. Consistent with the Theory of Planned Behavior, training can influence individual behaviors that support organizational goals. Effective organizational support mechanisms help reduce operational costs, enhance customer service, optimize distribution channels, realize operational benefits, provide robust support for operations, and increase competitive advantage.

Furthermore, this study explores fintech collaboration and financial literacy training delivered both before and during the pandemic. This research addresses notable gaps in the literature by focusing on the empirical effects of organizational support and training interventions within fintech-based MSMEs. The subsequent sections will detail the data collection procedures and analytical methods employed in this investigation.

3. | RESEARCH METHOD

Preliminary research indicates that the perceived strategic value of e-commerce significantly influences managers' attitudes toward adopting electronic payment systems, with organizational support and managerial productivity identified as key factors (Grandon & Pearson, 2004). In the context of fintech-based enterprises, robust organizational support is critical to withstand the challenges posed by the pandemic. Consequently, this study emphasizes organizational support as a primary consideration for Indonesian MSMEs operating their businesses amid such conditions. The research

participants consisted of business owners from developing countries, selected through purposive sampling, following guidelines from Bank Indonesia (2015).

For data collection, a questionnaire based on the framework developed by Grandon and Pearson (2004) was employed to assess organizational support. Responses were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. This study applied a quasi-experimental design, as recommended by Chang and Chen (2015), to examine the impact of organizational support on the resilience of MSMEs in navigating the circumstances before and during the pandemic, as well as the role of fintech-based training.

Experimental Design

An experimental design carefully balances several important elements, including statistical strength, generalizability, different forms of validity, practicality, and cost-effectiveness. To ensure reliability in interpreting results, an experimental design must meet certain criteria. These include: (1) maintaining equal influence of design points on regression coefficients and effect estimates; (2) detecting the presence of nonlinear relationships; (3) demonstrating robustness against potential model specification errors; and (4) providing adequate information to support follow-up testing (Ryan & Morgan, 2007). Furthermore, the use of experimental techniques is essential to guarantee that process control methods are consistently applied to control variables throughout the experiment.

The sample for this study consisted of 100 fintech-based MSMEs, selected according to the SME criteria outlined in Table 1. These MSMEs were divided into control and experimental groups for analysis purposes. The design allowed for comparative evaluation of the effects of organizational support and training interventions on MSMEs' capacity to adapt and sustain operations during varying environmental conditions, including the pandemic.

Table 1. SME Criteria.

Business Size	Criteria	
	Asset	Annual Revenue Sales
(1)	(2)	(3)
Micro business	Maximum of IDR 50 million	Maximum of IDR 300 million
Small business	>IDR 50 million–IDR 500 million	>IDR 300 million–IDR 2.5 billion
Medium Enterprises	>IDR 500 million–IDR 10 billion	>IDR 2.5 billion–50 billion

Source: *Bank Indonesia (2015).*

a. Group A consisted of 100 MSME players before the COVID-19 pandemic.
b. Group B comprised 100 MSME players during the pandemic.
c. Group C consisted of 46 MSME actors who received fintech-based training on organizational support during the pandemic.
d. Group D consisted of 46 MSME actors who did not receive fintech-based training on organizational support during the pandemic.
e. Group E comprised 46 MSME actors who received fintech-based training on organizational support before the pandemic.
f. Group F consisted of 46 MSME actors who did not receive fintech-based training on organizational support before the pandemic.

The pre-test was carried out with 46 participants each in the control and experimental groups, with the following materials on Table 2.

Table 2. Training materials for fintech-based organizations before and during the COVID-19 pandemic.

Time	Class Name	Content
(1)	**(2)**	**(3)**
Stage 1	Regulation Fintech	1.RegulationFintech 2. Emerging Segments: RegTech, InsurTech, and LawTech 3. IoT and Cybersecurity
Stage 2	Collaboration Fintech	1. Collaboration Role in Financial Technology 2. Stakeholders Condition with Angel Investors, Fund Managers, Corporate Mentors 3. Policies Related to Regulation, Collaboration, and Financial Literacy
Stage 3	Financial Literacy	1. The Importance of Financial Literation in SME 2. The Concept of Fintech and Its Capabilities 3. Industry Convergence and Evolution of New Business Opportunities

Source: *Authors' calculations.*

The experimental group in this study received structured training designed to enhance organizational support, with the content divided into three primary modules: regulatory understanding of fintech, collaboration within fintech ecosystems, and financial literacy, as summarized in Table 2. Each training session lasted 60 minutes and followed a consistent format across all nine sessions. The format included an introductory session, group discussions focused on predefined topics, and the development of practical recommendations. Specific objectives of the training program included helping MSMEs (1) reduce operational costs, (2) improve customer service, (3) strengthen distribution channels, (4) gain operational efficiency, (5) effectively support internal operations, and (6) increase overall competitiveness.

The control group, in contrast, did not participate in any fintech-based training or receive any structured interventions. These businesses continued to operate based on the owners' individual knowledge and strategies both before and during the COVID-19 pandemic. After completing the training intervention, evaluations focused on participants' interpretation and application of organizational support. This was achieved through both direct observation and the administration of post-test questionnaires.

Data Treatment

This study adopted a quasi-experimental research design, utilizing both t-tests and multivariate analysis to examine the effects of fintech-based organizational support training. The training was designed to investigate its impact before and during the pandemic, especially regarding MSMEs' ability to adapt to environmental changes and maintain business resilience.

Step 1: Paired-Sample t-Test , in the initial analysis phase, paired-samples t-tests were used to assess statistical differences between two conditions within the same group. This test aimed to determine whether significant behavioral or perceptual changes occurred due to the training intervention. This approach followed the model suggested by Chu and Choi (2000), which emphasizes comparative evaluation within groups over time.

Step 2: Multivariate Factor Analysis, to further assess organizational support priorities across different contexts, multivariate factor analysis was employed. This analytical technique is particularly

useful for identifying a smaller set of latent constructs from a large array of observed variables, as outlined by Hair et al. (2018) and Worthington and Whittaker (2006). The assumption of multivariate normality underpins this type of analysis, and thus, normality tests such as Probability-Probability (P–P) and Quantile-Quantile (Q–Q) plots were conducted to ensure that the data followed a linear pattern (Park, 2008; Ryan & Tipu, 2013).

The factor analysis helped in categorizing variables into coherent groups with similar characteristics but differing impact magnitudes. According to Björklund (2011) and Hair et al. (2018), this grouping is essential for understanding the underlying structure of organizational support factors, especially in varied pandemic conditions.

Following normalization of the data, Principal Component Analysis (PCA) was conducted to evaluate how changes in certain variables influenced overall outcomes. PCA is a standard statistical method that simplifies large datasets by identifying hidden relationships and removing redundancies (Le et al., 2019). Each input variable used to construct the index was assigned a weight, with the first principal component representing the variable with the highest explanatory power. This component was considered the most significant and best suited for summarizing the data (Le et al., 2019; Radovanović et al., 2018).

To determine the appropriateness of the dataset for PCA, both Bartlett's Test of Sphericity and the Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy were applied. Bartlett's test checks whether the correlation matrix is significantly different from an identity matrix and must yield a p-value of less than 0.05 to justify the use of factor analysis (Le et al., 2019; Tabachnick et al., 2007). The KMO index, meanwhile, evaluates the proportion of variance among variables that might be common variance, with values closer to 1 indicating greater adequacy for factor analysis.

PCA also ranks components according to the variance they explain. The first component accounts for the greatest share of the total variance, while subsequent components capture remaining variations. The extraction process continues until the number of components equals the number of original variables. Only those components with eigenvalues above a predefined threshold were retained for further interpretation (Le et al., 2019; Radovanović et al., 2018).

Through these analytical procedures, the study aimed to measure and interpret how training interventions based on fintech themes influenced MSME owners' perceptions of organizational support. The structure of the training sessions, combined with robust quantitative evaluation techniques, offered a comprehensive understanding of behavioral changes and organizational adaptability before and during the pandemic.

This methodology provided not only empirical validation of the role of organizational support in MSME resilience but also highlighted the practical value of fintech-based training in fostering sustainable business practices in crisis contexts. The quasi-experimental design allowed researchers to examine causal relationships in real-world business environments without the full constraints of controlled laboratory conditions, making the results both applicable and relevant to policymaking and practical implementation.

4. | RESULTS

Small and medium enterprises (SMEs) are widely acknowledged as critical contributors to the economic development of emerging nations (Kartiwi & MacGregor, 2011; Mittal et al., 2018). Recent research emphasizes that the transition toward digital strategies, particularly in alignment with Industry 4.0 objectives, is vital for SMEs to maintain competitiveness and sustainability. Digitalization efforts, encompassing both horizontal and vertical integration across value chains, have become foundational for fintech-based ventures in Indonesia (Ahmedova, 2015; Mittal et al., 2018). The agility and adaptability of SMEs allow them to respond effectively to economic shifts and market dynamics, which became especially evident during the COVID-19 pandemic. During this period, businesses were required to maintain flexibility as consumer behavior evolved rapidly, further emphasizing the relevance and acceleration of digital transformation, including the expansion of fintech services (Ahmedova, 2015).

Statistical Analysis

Before conducting comparative statistical analysis, the researchers first tested for data normality to ensure the suitability of parametric tests. This normality assessment was carried out using Q–Q (quantile-quantile) plot visualization. The visual review of these Q–Q plots revealed that the data points closely followed the diagonal reference line, indicating minimal deviation from normality (Hair et al., 2018). Therefore, the data distribution was deemed normal, satisfying one of the assumptions for conducting further statistical testing.

To assess the effect of fintech-based organizational support training, a difference test was conducted on six sample groups, which were later organized into five paired comparisons. These groupings were created based on variations in training exposure and business operating conditions. The paired-samples t-test, a method suitable for comparing means from two related groups, was used to determine if statistically significant differences existed pre- and post-intervention.

The results, presented in Table 3, highlight that the implementation of fintech-based training produced measurable differences in SME owners' perceptions of organizational support. Each group pairing demonstrated varied levels of change depending on the intervention type and timing. For example, significant improvements were observed in areas related to financial literacy, collaborative practices, and regulatory understanding among those who received targeted training modules. The consistent pattern of improvements across most groups underscores the role of structured organizational support in enhancing business resilience and adaptability.

Furthermore, the test statistics confirm that the training had a statistically significant impact on participants' understanding and application of organizational support practices. These findings align with previous studies suggesting that supportive digital strategies can facilitate greater responsiveness and sustainability among SMEs during crises or disruptions (Grandon & Pearson, 2004; Chang & Chen, 2015).

Ultimately, the statistical analysis provided empirical support for the hypothesis that fintech-based training interventions—focused on regulation, collaboration, and digital finance—can effectively strengthen organizational capabilities within SMEs. These interventions proved essential in preparing businesses not only to survive but to operate more strategically in uncertain environments.

Table 3. Results of paired-samples *t*-test.

	Group	N	Mean	SD	t	df	Sig (2 Tailed)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pair 1	Before the COVID-19 pandemic	100	3.4417	0.44215	−10.495	99	0.000 *
	During the COVID-19 pandemic	100	3.9367	0.68730			
Pair 2	During the COVID-19 pandemic with fintech-based training	46	4.5616	0.32080	24.024	45	0.000 *
	During the COVID-19 pandemic without fintech-based training	46	3.3188	0.28290			
Pair 3	Before the COVID-19	46	3.7319	0.40289	8.840	45	0.000 *

	pandemic with fintech-based training						
	Before the COVID-19 pandemic without fintech-based training	46	3.1413	0.20777			
	During the COVID-19 pandemic with fintech-based training	46	4.5616	0.32080			
Pair 4					15.820	45	0.000 *
	Before the COVID-19 pandemic with fintech-based training	46	3.7319	0.40289			
	During the COVID-19 pandemic without fintech-based training	46	3.3188	0.28290			
Pair 5					4.446	45	0.000 *
	Before the COVID-19 pandemic without fintech-based training	46	3.1413	0.20777			

* $p < 0.05$. Source: *Authors' calculations.*

1. Comparing t tables and t value
   - If t value < t table, then H_0 is accepted.
   - If t value > t table, then H_0 is rejected or H_a is accepted.

The value of t table for N (100) with df (99) is 1.98422 and t table for N (46) with df (45) is 2.01410.

2. See the significance value
   - If the significance value > 0.05 then H_0 is accepted.
   - If the significance value < 0.05 then H_0 is rejected.

The statistical analysis involved a paired-samples *t*-test to assess differences in organizational support across varying conditions. The criteria for decision-making were: if the calculated *t*-value is less than the *t*-table value, or if the significance level exceeds 0.05, then the null hypothesis (H_0) is accepted. Otherwise, H_0 is rejected, and the alternative hypothesis (Ha) is accepted. For the sample size of 100 (df = 99), the *t*-table value is 1.98422, while for the sample size of 46 (df = 45), it is 2.01410.

In Pair 1, the *t*-value of −10.495 is smaller than the critical value (−1.98422), and the p-value is 0.000, which is below 0.05. These results lead to the rejection of H_0, indicating a significant difference in organizational support for fintech-based SMEs before and during the COVID-19 pandemic. This supports Hypothesis 1.

In Pair 2, the analysis yielded a *t*-value of 24.024, exceeding the *t*-table value of 1.98422, and a significance value of 0.000. Thus, H_0 is rejected again, suggesting a meaningful difference in organizational support for fintech firms during the pandemic, validating Hypothesis 2.

The test for Pair 3 reported a *t*-value of 8.480 and a significance level of 0.000. Since these meet the rejection criteria, it confirms that there was a significant difference in organizational support prior to the pandemic, which supports Hypothesis 3.

Pair 4 involved a comparison between organizational support before and during the pandemic with the presence of training. The resulting *t*-value was 15.820, higher than the threshold, and the significance value remained at 0.000. These findings confirm a significant impact of training on organizational support, affirming Hypothesis 4.

In Pair 5, which examined organizational support without training, the *t*-value was 4.446, exceeding the critical value, and the significance value was again 0.000. This indicates a difference in organizational support even without fintech training, thereby supporting Hypothesis 5.

Furthermore, the feasibility of factor analysis was confirmed through the Kaiser–Meyer–Olkin (KMO) and Bartlett's sphericity tests. The KMO values exceeded 0.5, and Bartlett's significance value was below 0.05, aligning with standard guidelines (Hair et al., 2018). These results suggest that the data is suitable for further factor analysis procedures.

Table 4. Results of Bartlett's test of sphericity and the Kaiser–Meyer–Olkin Measure of Sampling Adequacy.

	Bartlett Test of Sphericity			**Kaiser–Meyer–Olkin Measure of Sampling Adequacy**
	Chi-Square	**df**	***p*-Value**	
Organizational support for fintech businesses before the pandemic	355.230	15	0.000 *	0.832
Organizational support for fintech efforts during the pandemic	558.904	15	0.000 *	0.896
Organizational support for fintech businesses during the pandemic with fintech-based training	83.614	15	0.000 *	0.695
Organizational support for fintech businesses during the pandemic without fintech-based training	60.109	15	0.000 *	0.566

* $p < 0.05$. Source: *Authors' calculations.*

In the subsequent phase of analysis, factor determination was conducted using eigenvalues as outlined in Table 5. For organizational support in fintech enterprises prior to the pandemic, one dominant factor emerged, with an eigenvalue of 3.960 and a cumulative variance of 65.996%. This indicates that the factor accounted for 65.996% of the shared variance. During the pandemic, organizational support for fintech businesses yielded one factor with an eigenvalue of 4.705, explaining 78.409% of the total variance, thus reflecting a higher communal contribution.

For fintech organizations that underwent training during the pandemic, two significant factors were extracted, with eigenvalues of 2.682 and 1.431 respectively, and a cumulative variance of 68.547%. This suggests a combined contribution of 68.547% to the shared variance. In contrast, for businesses that did not receive fintech training, two factors were identified with eigenvalues of 2.411 and 1.177, resulting in a cumulative variance of 59.801%, contributing to over half of the total variance.

To refine the factor interpretation, Varimax rotation was applied, optimizing the factor loading structure to ensure greater clarity and distinction among variables (Hair et al., 2018). This rotation enhances the identification of key components within each condition of organizational support.

Table 5. Results of exploratory factor analysis.

Scale and Item	Organizational Support for Fintech Businesses before the COVID-19 Pandemic		Organizational Support for Fintech Efforts during the COVID-19 Pandemic		Organizational Support for Fintech Businesses during the COVID-19 Pandemic with Fintech-Based Training		Organizational Support for Fintech Businesses during the COVID-19 Pandemic without Fintech-Based Training	
	Factor		Factor		Factor		Factor	
	1	2	1	2	1	2	1	2
OS1:Reduce costs of business operations	0.663	-	0.799	-	0.019	**0.497**	0.025	**0.951**
OS2:Improve customer service	0.773	-	0.863	-	**0.713**	0.124	**0.504**	0.164
OS3:Improve distribution channels	0.763	-	0.004	-	**0.905**	0.135	**0.719**	0.006
OS4:Reap operational benefits	0.803	-	0.918	-	**0.775**	0.156	**0.825**	−0.076
OS5:Provide effective support role to operations	0.790	-	0.824	-	0.203	**0.501**	**0.289**	0.230
OS6:Increase ability to compete	0.821	-	0.876	-	0.144	**0.844**	**0.542**	0.199
Eigenvalue	3.960	-	4.705	-	2.682	1.431	2.411	1.177
Percentage of variance explained	65.996	-	78.49	-	44.704	23.844	40.187	19.614

Scale and Item	Organizational Support for Fintech Businesses before the COVID-19 Pandemic		Organizational Support for Fintech Efforts during the COVID-19 Pandemic		Organizational Support for Fintech Businesses during the COVID-19 Pandemic with Fintech-Based Training		Organizational Support for Fintech Businesses during the COVID-19 Pandemic without Fintech-Based Training	
	Factor		Factor		Factor		Factor	
	1	2	1	2	1	2	1	2
Cumulative percentage of variance explained	65.996	-	78.409	-	44.704	68.547	40.187	59.801

Source: *Authors' calculations.*

During the period of fintech-based training amid the pandemic, several elements showed strong associations with the first identified factor. These include enhanced customer service, expanded distribution channels, and realized operational advantages. Additionally, elements linked to market capitalizing reconfiguration (MCR) were evident, as well as aspects such as cost reduction in business operations, improved operational support, elevated competitiveness, and components of operational adjustment reconfiguration (OAR).

In contrast, for the group that did not participate in fintech-based training, the variables strongly connected to the first factor were similar in some respects. These included improved customer service, optimized distribution channels, operational benefits, strengthened operational support roles, and enhanced competitiveness. However, in this group, strategic performance reconfiguration (SPR) also emerged as a closely associated factor.

Further related variables involved cost-efficiency in business operations and financial performance reconfiguration (FPR), suggesting that even without formal fintech training, SMEs engaged in adaptive financial strategies. The differences in factor correlation between the two groups indicate that fintech-based training influences how organizational support is structured and perceived during crisis periods such as the pandemic, contributing to varied strategic and operational outcomes depending on the training exposure (Hair et al., 2018).

5. | DISCUSSION

The COVID-19 pandemic has brought about substantial economic and societal consequences on a global scale, significantly affecting Micro, Small, and Medium Enterprises (MSMEs) (Goodell, 2020; International Trade Centre, 2020). As organizations have encountered disruptions in their operational continuity, it has become essential to find adaptive strategies to sustain performance amidst ongoing uncertainty. One such approach is enhancing organizational support mechanisms, which showed notable variations before and after the pandemic, particularly in the context of financial technology (fintech) integration (Chang & Chen, 2015; Grandon & Pearson, 2004; Ibrahim et al., 2016).

Given the rapid shift toward digital interactions during the pandemic, MSME owners are compelled to reevaluate and redesign organizational support structures within fintech businesses to respond proactively to environmental changes. The shift in consumer behavior, marked by the growing preference for electronic payment systems, reinforces the importance of digital transformation. Thus,

organizational agility is imperative in addressing operational challenges and ensuring support systems are responsive to both internal and external demands.

Effective organizational support includes measures such as cost reduction, enhanced customer service, improved distribution networks, operational efficiency, competitive positioning, and a stronger support infrastructure. Training is a pivotal component in this strategy, as it empowers employees with the knowledge and skills necessary to support technological transitions. Specifically, competence in fintech is critical to the overall success of MSMEs in the digital era. This aligns with the Theory of Planned Behavior (TPB), which posits that individuals are likely to engage in a particular behavior when they perceive that it is supported by their social environment (Ajzen, 1991). In the context of MSMEs, fintech-related training not only enhances technical capabilities but also fosters organizational commitment and a shared vision among employees.

According to national statistics, Indonesia's fintech sector is dominated by payment platforms (43%), followed by credit services (17%), crowdfunding, and other models. This underscores the significance of fintech in economic activities, especially during the pandemic. Organizational support fosters a norm of reciprocity, where employees respond positively by contributing to the organization's objectives. This reciprocal relationship strengthens affective commitment, job engagement, and overall performance (Caesens & Stinglhamber, 2014; Ibrahim et al., 2016; Jeung et al., 2017). When employees perceive that their emotional and professional needs—such as recognition, respect, and support—are met, their job satisfaction and well-being also increase, further enhancing workplace productivity.

Incorporating regulatory topics related to fintech into training initiatives is essential to help MSMEs scale their operations efficiently. The findings of this study have broader implications, suggesting that the strategies adopted by Indonesian MSMEs could be replicated in other countries with similar economic structures. During the pandemic, fintech-based MSMEs must manage their operations adeptly amidst a surge in digital finance demand (Sahay et al., 2020; Tut, 2020). However, existing barriers such as limited financial knowledge (Sahay et al., 2020) and inadequate organizational support (Zhou, 2016) pose challenges to MSME owners.

To address these gaps, robust fintech-oriented training programs must be implemented. Empirical results from the study indicate clear differences in performance outcomes between trained and untrained employees. Factor analysis reveals that training must be carefully designed to prioritize specific dimensions, particularly Market Capitalizing Reconfiguration (MCR) and Operational Adjustment Reconfiguration (OAR). These two factors are essential in strengthening the organization's ability to adapt, expand market reach, and streamline operational processes during periods of rapid change.

Digital training enhances employee competencies in financial literacy, regulatory compliance, and collaborative practices within the fintech ecosystem. As emphasized in previous research, MSMEs must gain sufficient insights into digital financial inclusion, which broadens financial access for low-income populations and small enterprises (Sahay et al., 2020). This aligns with the work of Guzzo et al. (1985) and Schraeder (2009), who assert that training is one of the most impactful activities in an organization. Effective training not only boosts individual performance but also contributes to a firm's competitive advantage by ensuring the practical application of acquired knowledge in day-to-day operations.

The adoption of fintech enables MSMEs to better withstand the economic shocks caused by the pandemic. Digital financial services offer speed, cost-effectiveness, and convenience, allowing greater financial inclusion for underserved communities. Contactless and cashless transactions, which became crucial during the health crisis, are facilitated by fintech platforms, making them an indispensable tool in mitigating the effects of the pandemic. Furthermore, digital financial inclusion supports the implementation of efficient governmental support programs, ensuring timely delivery of assistance to individuals and businesses (Sahay et al., 2020; Tut, 2020).

From a macroeconomic perspective, fintech contributes to the acceleration of monetary policy transmission, increases the velocity of money circulation, and promotes overall economic growth. The study highlights that MSMEs with strong organizational support mechanisms were better equipped to navigate the pandemic, reinforcing the critical role of institutional support in economic resilience.

In conclusion, organizational support plays a vital role in enabling MSMEs to adapt and thrive in challenging environments. Fintech-based training emerges as a key factor in enhancing workforce capacity, ensuring business continuity, and fostering innovation. By aligning employee development initiatives with fintech capabilities, MSMEs can strengthen their operational effectiveness and contribute meaningfully to national economic recovery efforts.

6. | CONCLUSIONS

In summary, this study confirms that there are clear distinctions in the way MSMEs utilize fintech to enhance their resilience during the COVID-19 pandemic. The findings underscore notable differences in organizational support, particularly when fintech-based training is prioritized and aligned with critical factors such as Market Capitalizing Reconfiguration (MCR) and Operational Adjustment Reconfiguration (OAR). These priorities are further reinforced by an emphasis on deepening financial literacy, understanding fintech regulations, and fostering collaboration within the fintech ecosystem. Training programs that focus on these elements are essential to ensure MSMEs are better equipped to adapt in uncertain and rapidly changing environments. The role of organizational support becomes central in helping businesses navigate disruptions by offering structures that enhance digital capabilities and innovation.

The practical implications of the research suggest that MSMEs should strengthen their organizational support systems by focusing on six key areas: reducing operational costs, enhancing customer service, expanding distribution channels, gaining operational advantages, improving internal support functions, and increasing competitiveness. Emphasizing training in fintech regulations, collaboration, and digital literacy is vital to achieving these outcomes. Theoretically, the study contributes to a deeper understanding of the foundational elements of fintech-based organizational support—specifically MCR and OAR—which offer a framework for further empirical testing. Additionally, the pandemic context provides a unique lens through which organizational behavior and participation in digital transformation initiatives can be analyzed. However, the study is not without limitations. Potential bias may exist in the subjective evaluation and monitoring of organizational policies across fintech ventures, particularly as assessments were conducted based on traditional perceptions of success by various teams. Future research should broaden the respondent profile by including a more diverse range of business scales and geographic areas. In-depth qualitative approaches are also recommended to explore contextual insights. These limitations open pathways for future studies to build upon these findings and support the advancement of MSMEs through data-driven policy and practice. Theoretically, this research serves as a foundation for future exploration of fintech adoption in MSMEs, while practically, it provides actionable recommendations for designing effective training that addresses the core aspects of regulation, literacy, and collaboration to promote long-term

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Conflicts of Interest

The authors declare no conflict of interest.

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