

Impact of the Covid-19 Pandemic on the Performance of Micro Enterprises in CA Mau Province, Vietnam



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ABSTRACT: This study investigates how the COVID-19 pandemic has affected the business performance of microenterprises in Ca Mau province, aiming to extract valuable insights and recommendations for crisis management by enterprises. The research involved direct questionnaire interviews with 121 microenterprises in Ca Mau. Employing descriptive statistics, exploratory factor analysis, and regression analysis, the study spans the period from 2019 to 2021. Findings reveal that COVID-19 prevention measures, such as mobility restrictions, lockdowns, and business suspensions, have repercussions on the labor market, financial market, and supply chain, resulting in adverse impacts on business performance. Positive influences on business performance include the supply of materials, while negative correlations are observed with factors like mobility restrictions, employee reduction, and financial leverage. Drawing from these results, the author provides recommendations for the recovery and enhancement of business performance.

KEYWORDS: Performance, COVID-19 pandemic, micro firms, Ca Mau, Vietnam.

I. INTRODUCTION

Since its onset in late 2019, the global reach of the COVID-19 pandemic has prompted widespread concerns and significant repercussions for nearly every country. The intricate course of the epidemic has necessitated swift and decisive actions from governments worldwide to counteract its pervasive transmission. Countries globally have implemented diverse public health measures, including social distancing, to curb the virus's spread among individuals (Fong et al., 2020). Consequently, these preventive measures have led to the closure and temporary cessation of operations for a majority of businesses, factories, schools, and community facilities. This, in turn, has resulted in substantial losses for both the worldwide economy and, more specifically, Vietnam. Economic activities have essentially ground to a halt, particularly in economies with high levels of openness, and the pandemic's economic impacts are evident in various facets such as the labor market, production supply chain, and financial markets.

For the Vietnamese economy, in the first six months of 2020, COVID-19 impacted the economy, leading to the lowest economic growth in the past 10 years (Nguyen Quang Thuan, 2020). According to the Economic and Social Situation Report for the year 2020 from the General Statistics Office, the domestic Gross Domestic Product (GDP) in 2020 increased by 2.91%, marking the lowest growth rate in the period of 2011-2020. The primary victims of the COVID-19 outbreak were micro, small, and medium-sized enterprises (Shafi et al., 2020). Some key findings from the 2020 business survey conducted by the Vietnam Chamber of Commerce and Industry (VCCI) in collaboration with the World Bank in Vietnam revealed that 87.2% of businesses (mostly newly established businesses operating for less than 03 years, especially micro and small enterprises) reported being "mostly" or "completely" negatively affected.

Apparently, it is evident that the pandemic directly affected the efficiency of business operations. However, to the best of our knowledge, there are few studies that verify the impact of the COVID-19 pandemic on the efficiency of production and business activities of micro enterprises in Ca Mau province in Vietnam. Therefore, the main goal of this research is to analyze the factors influencing the efficiency of business operations of micro enterprises in Cà Mau, Vietnam.

II. THEORETICAL FOUNDATION

2.1 COVID-19 Pandemic and Business Performance

The COVID-19 pandemic has caused severe consequences for economies in general, and businesses in particular. The spread of COVID-19 has led governments to implement measures such as social distancing, lockdowns, and closures, resulting in a crisis for a multitude of enterprises, directly impacting their revenue and operations. The closures due to the COVID-19 pandemic have negatively affected small and medium-sized enterprises, as they have faced various issues related to supply chains, labor shortages, and a significant decrease in transportation demand. Numerous experimental studies have shown that this pandemic has strongly affected the performance of businesses. Shen et al. (2020) examined the impact of COVID-19 on the performance of businesses in China during the period from 2013 to 2020. They found evidence of the negative impact of COVID-19 on performance through a reduction in investment scale and total revenue.

Similarly, Boshnak et al. (2021) conducted a study on the impact of various characteristics on the performance of businesses in Saudi Arabia throughout the COVID-19 pandemic, covering the period from Q3/2019 to Q3/2020. The results indicated a significant decline in operational, financial, and market performance when the pandemic broke out. Furthermore, the research results also showed that scale still maintained a positive relationship and leverage had an inverse impact on business performance before and after the pandemic.

2.2 Supply Chain Disruption Theory

Supply chain disruption can be defined as any crisis or change that can negatively impact the local or even global market (Rajaeifar et al., 2022). Disruption in the supply chain can occur due to a combination of various unforeseen and unexpected events happening in the upstream supply chain network, input logistics network, environmental supply source, or a situation that could pose a serious threat to a company's normal operating processes (Bode & MacDonald, 2017). Similarly, according to Braunscheidel & Suresh (2009), supply chain disruption refers to unforeseen and unexpected events; examples include natural disasters, industrial accidents, technological changes, and political events. The consequences of such disruptions can be severe if not addressed promptly (Pettit et al., 2013).

A specific type of supply chain disruption is caused by a pandemic outbreak. Unlike other types of disruptions that only affect a single supply chain, a pandemic demands recovery capabilities across the entire supply chain network (Wang et al., 2021). Muralidharan et al. (2022) argue that, unlike local disruptions like natural disasters, industrial accidents, and transportation disruptions, a pandemic such as COVID-19 is a global catastrophe that affects the foundation of the supply chain, meaning the ability to freely move impacts various geographical locations and industries (Sheffi & Rice Jr, 2005).

2.3 Crisis Risk Management Theory

A crisis is an urgent situation marked by severe disruption and imbalance, capable of causing adverse financial impacts and potentially harming an organization's reputation. Handling a crisis necessitates prompt action, often involving significant time and financial resources, to alleviate the negative effects. Crisis management is a systematic, comprehensive, and scientific approach to addressing a crisis, encompassing identification, control, prevention, and minimization of its impacts on an organization's financial status and reputation. Concurrently, it aims to seize opportunities that may arise within the crisis for the organization's benefit. Effective crisis management enables control of the situation, proactive and timely actions, and the exploitation of positive effects.

Crises arising from pandemics introduce sudden and often unpredictable challenges, resulting in significant consequences. The limitations of time and resources necessitate intensified efforts to implement new ideas, products, and services with innovative thinking to effectively address and respond to the crisis. Conversely, pandemics also create opportunities for substantial growth and development. According to the research by Bessonova & Battalov (2021), digitization is playing a crucial role in shaping the strategic development of the global economy. Throughout the COVID-19 period, governments have been actively investing in innovation to confront the pandemic, with the goal of assisting humanity in overcoming the crisis by enhancing scientific productivity and expanding research and development through patents (Soumitra et al., 2021).

III. DATA, MEASUREMENTS, AND ANALYSIS

3.1 Data

The research relies on the primary data obtained via direct interviews with 121 micro-enterprises (managers) involved in agricultural production and business within Ca Mau province. The survey specifically targets the managers (owners) of these micro-enterprises. Based on the survey findings, 108 of the micro-enterprises surveyed fall under the household type, constituting 89.26%. Private enterprises make up 6.61%, with 8 entities, and 5 enterprises are limited liability companies,

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representing 4.13%. No other types of enterprises were identified. The results highlight that household businesses constitute the largest portion of surveyed businesses. In Vietnam, micro-sized enterprises are predominantly in the forms of households and private enterprises. This trend is particularly pronounced in Ca Mau province, where the agricultural sector is the economic focal point, and household-based businesses, often family-run, dominate the majority.

The economic development of Ca Mau province has consistently been driven by its significant role in agriculture, making it the leading province in seafood farming, processing, and exportation for several years. Consequently, production and business activities in this sector outweigh those in other fields. More precisely, 85% of the surveyed businesses are engaged in production, aquaculture, and agricultural products, while the remaining 15% are involved in trading these items.

Since the onset of the COVID-19 epidemic, businesses and establishments have faced significant challenges in their production and business operations due to the continuous increase in input material prices and disruptions in the supply chains for raw materials, among other factors. According to the survey findings, 35.54% of the surveyed businesses find the sourcing of input materials very difficult, 24.79% consider it extremely difficult, 28.1% perceive their input material situation as normal, and the remaining 11.57% believe they face few or no obstacles in this regard.

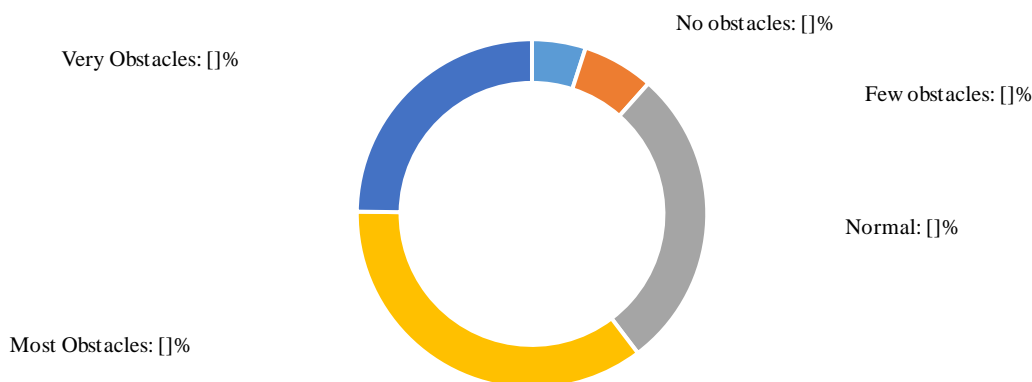


Figure 1. Level of difficulty for raw materials supply
Source: Survey data of 121 businesses in Ca Mau province, 2022

3.2 Measurements

After reviewing previous research documents related to the impact of COVID-19 on the performance of businesses by authors in recent years, such as Phan Anh Tu et al. (2021) and Fu et al. (2020), who measured business performance through revenue growth, the author chose this measurement method because it reflects the fluctuation in a business's revenue in the context of the COVID-19 pandemic. The independent variables in the model include: mobility restrictions, raw material supply, employee layoffs, and financial leverage. Additionally, the model includes control variables: business scale, business age, manager's gender, manager's experience, and government support. The research variables are summarized in Table 1 below:

Table 1: Summary of Research Variables

Variable Name	Symbol	Measurement	Expectation
Dependent Variable			
Revenue Growth	TT	Percentage change in sales revenue during the research period compared to the same period in the previous year (Phan Anh Tu et al., 2020)	
Independent Variables			
Mobility Restrictions	HC	Measured by the number of days the social distancing directive was applied for COVID-19 prevention in a year (Bularafa & Adamu, 2021)	-
Raw Material Supply	NC	Percentage of the quantity of input materials supplied compared to the demand of the enterprise. In other words, the ratio of input materials to demand (output) of the enterprise (General Statistics Office, 2020)	+

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Employee Layoffs	CG	Measured by the difference between the number of employees before and after the COVID-19 pandemic (Saturwa et al., 2021)	-
Financial Leverage	DB	Measured by the ratio of debt to equity (Nwude, 2003)	-
Variable Name	Symbol	Measurement	Expectation
Control Variables			
Business Scale	QM	QM1 takes a value of 1 if the business expands its scale, otherwise contracts the scale is 0. QM2 takes a value of 1 if the business does not change its scale, if it contracts the scale is 0 (Proposed by the author, 2022)	+
Business Age	TDN	Business age is measured by the number of years the business has been operating from the establishment date to the time of the survey (Chen & Hsu, 2006)	+
Manager's Gender	GT	Takes a value of 1 if the manager's gender is female and 0 if the manager's gender is male (Shao & Liu, 2013)	-
Manager's Experience	KN	Number of years of experience measured by the number of years of business management experience of the manager (Johanson & Vahlne, 1990, Contractor et al., 2003)	+
Government Support	HT	Bằng 1 nếu doanh nghiệp được chính phủ hỗ trợ, bằng 0 nếu không được hỗ trợ (Pergelova & Angulo-Ruiz, 2014).	+

3.3 Analysis

To assess the impact of COVID-19 on the operational efficiency of micro-enterprises, the author employs the following analysis methods: descriptive statistics, exploratory factor analysis (EFA), and regression analysis to test the research model.

Based on the identified research variables, the proposed research model is as

$$TT = \beta_0 + \beta_1 HC_i + \beta_2 NC_i + \beta_3 CG_i + \beta_4 DB_i + \beta_5 QM1_i + \beta_6 QM2_i + \beta_7 TDN_i + \beta_8 GT_i + \beta_9 KN_i + \beta_{10} HT_i + e$$

follow:

Where i represents the number of surveyed enterprises, and e represents the error term.

Of which:

Dependent Variable: Sales Growth (TT)

Independent Variables:

β_0 : Intercept

$X_1 - X_4$, including Mobility Restriction (HC), Supply of Raw Materials (NC), Workforce Reduction (CG), and Financial Leverage (DB)

Control Variables:

$X_5 - X_{10}$: Firm size expansion and Firm size unchanged (QM1 & QM2), Firm age (TDN), Manager's Gender (GT), Manager's experience (KN), and Government support (HT).

i : Observed firms

e : Residuals

IV. RESEARCH RESULTS

4.1 Descriptive Statistics

To provide an overview of the variables in the research model, the descriptive statistics results including sample size, mean value, standard deviation, minimum value, and maximum value are presented in Table 2.

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Table 2: Descriptive Statistics

Variable Name	Sample Size	Minimum	Maximum	Mean	Standard Deviation
<i>Dependent Variables</i>					
Revenue Growth (TT20)	121	-90	100	-19.19	31.02
Revenue Growth (TT21)	121	-75	33.33	-13.23	26.93
<i>Independent Variables</i>					
Mobility Restriction (HC)	121	7	90	28.40	18.88
Supply of Raw Materials (NC)	121	-50	60	6.03	24.79
Workforce Reduction (CG)	121	0	7	1.40	1.43
Financial Leverage (DB20)	121	-25	49.11	12.03	14.81
Financial Leverage (DB21)	121	-66.67	50.95	21.00	15.01
Control Variables					
Size Expansion (QM1)	121	0	1	0.12	0.32
Size Unchanged (QM2)	121	0	1	0.50	0.50
Firm Age	121	2	40	13.22	7.86
Manager's Gender	121	0	1	0.16	0.37
Manager's Experience	121	2	50	17.19	9.82
Government Support	121	0	1	0.22	0.42

According to Table 2, it is evident that in 2020, the revenue growth of businesses ranged from a minimum of -90% to a maximum of 100%, with an average of -19.19%. In 2021, the highest revenue growth observed was 33.33%, while the lowest was -75%, with an average of -13.23%. Furthermore, the implementation of travel restrictions led businesses to shut down for an average of 28.40 days during the pandemic, ranging from 7 to 90 days depending on the severity of the outbreak in different regions. Moreover, the prolonged pandemic resulted in disruptions and breaks in the supply chain, causing shortages of raw materials for some businesses. According to the survey results, the reduction in input materials compared to production demand varied, with the most significant decrease being 50% and the highest increase reaching 60%. In addition, many businesses opted to reduce their workforce to cut operational costs and limit the spread of the virus. The results indicate that, on average, 1.40 employees were laid off, with the highest number being 7 and the lowest being 0. Ultimately, the COVID-19 pandemic had a significant impact on the financial situation of most businesses. The results from the table also show that in 2020, the debt-to-equity ratio increased by an average of 12.03% compared to 2019, with the highest increase recorded at 50.95%. Similarly, in 2021, the debt-to-equity ratio for businesses increased by an average of 21% compared to 2019 – before the pandemic occurred.

4.2 Factor Analysis Exploration (EFA)

Following the satisfaction of the Cronbach's Alpha reliability criteria by the 15 observed variables, an additional evaluation of the scales was conducted using Exploratory Factor Analysis (EFA) to assess both convergence and discriminant validity.

Table 3: Factor Rotation Matrix of EFA

Variable	Factor			
	F1	F2	F3	F4
HC1	0,822			
HC2	0,796			
HC3	0,901			
HC4	0,875			
NC1			0,819	
NC2			0,852	
NC3			0,739	
NC4			0,717	
CG1				0,853
CG2				0,876
CG3				0,842
DB1		0,785		

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DB2		0,840		
DB3		0,810		
DB4		0,758		
Eigenvalues	3,884	3,015	2,237	1,536
Total Variance Explained (%)	71,15			
KMO	0,769			
Bartlett's Test (p-value)	0,000			

The EFA results reveal that four factors were extracted with Eigenvalues > 1. These factors were retained in the model, and the total explained variance of 71.15% indicates that these four factors account for 71.15% of the data variability. The KMO index of 0.769 meets the set criteria, suggesting a satisfactory level of sampling adequacy. Furthermore, the Bartlett's Test with a p-value of 0.000 (< 0.05) indicates that the characteristic variables have a linear correlation with the representative factor. The EFA results allow us to conclude that the concepts and component scales are highly correlated, unidimensional, and convergent. This indicates that these results can be used for further exploratory research. However, the author used different observed variables measured on a different scale for regression analysis purposes.

4.3 Regression Analysis

The author employed Ordinary Least Squares (OLS) regression models to analyze the relationship between travel restrictions, raw material supply, employee reduction, financial leverage, and the operational efficiency of micro-enterprises in Ca Mau. This was done to examine the differences in business performance of surveyed enterprises during two different stages of the pandemic in Cà Mau compared to before being affected by COVID-19. Specifically, Model A in Table 4 assesses the impact of COVID-19 on business performance in 2020 compared to 2019 (the baseline year). Model B, presented in Table 5, analyzes the impact of COVID-19 on business performance in 2021 compared to 2019.

Table 4: Regression Results for Model A (2020/2019)

	Business Performance: Sales Growth				
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-37,642*** (6,403)	-30,570*** (7,912)	-30,337** (7,782)	-26,203** (8,365)	-16,360* (7,273)
Control Variables					
Expansion Scale	40,346** (8,721)	37,726** (8,845)	33,903** (8,871)	33,042** (8,866)	21,310** (7,751)
Stable Scale	17,790** (5,378)	15,135** (5,632)	15,794** (5,547)	14,609** (5,601)	12,465** (4,777)
Manager Gender	5,789 ^{ns} (7,526)	5,819 ^{ns} (7,485)	6,536 ^{ns} (7,368)	7,802 ^{ns} (7,406)	9,390 ^{ns} (6,306)
Business Age	-0,520 ^{ns} (0,458)	-0,565 ^{ns} (0,457)	-0,576 ^{ns} (0,449)	-0,570 ^{ns} (0,448)	-0,440 ^{ns} (0,382)
Manager Experience	0,812* (0,344)	0,859* (0,344)	0,780* (0,340)	0,721* (0,342)	0,629* (0,291)
Government Support	-13,595* (6,223)	-12,346* (6,244)	-13,222* (6,154)	-11,500 ^{ns} (6,271)	-5,992 ^{ns} (5,401)
Main Group Variables					
Travel Restrictions		-0,209 ^{ns} (0,139)	-0,204 ^{ns} (0,137)	-0,192 ^{ns} (0,136)	-0,167 ^{ns} (0,116)
Raw Material Supply			0,223* (0,101)	0,217* (0,101)	0,324** (0,088)
Employee Reduction				-2,426 ^{ns} (1,838)	-1,611 ^{ns} (1,569)
Financial Leverage					-0,963** (0,146)

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Observations	121	121	121	121	121
R²_{adj}	0,259	0,267	0,291	0,296	0,490
Sig.	0,000	0,000	0,000	0,000	0,000

Table 5: Regression Results for Model B (2021/2019)

		Business Performance: Sales Growth				
		Model 1	Model 2	Model 3	Model 4	Model 5
Constant		-37,731** (4,992)	-26,950** (5,991)	-26,817** (5,947)	-20,831** (6,261)	-4,967 ^{ns} (6,444)
Control Variables	Group					
Expansion Scale		35,714** (6,798)	31,720** (6,697)	29,534** (6,779)	28,287** (6,636)	18,309** (6,298)
Stable Scale		17,875** (4,193)	13,828** (4,264)	14,205** (4,239)	12,488** (4,192)	10,448** (3,805)
Manager Gender		-4,904 ^{ns} (5,867)	-4,859 ^{ns} (5,667)	-4,449 ^{ns} (5,630)	-2,615 ^{ns} (5,543)	-6,095 ^{ns} (5,049)
Business Age		-0,008 ^{ns} (0,357)	-0,077 ^{ns} (0,346)	-0,084 ^{ns} (0,343)	-0,075 (0,335)	-0,167 ^{ns} (0,303)
Manager Experience		0,856** (0,269)	0,927** (0,260)	0,882** (0,260)	0,797** (0,256)	0,749** (0,231)
Government Support		-10,452* (4,852)	-8,548 ^{ns} (4,728)	-9,049 ^{ns} (4,703)	-6,557 ^{ns} 4,694	-4,774 ^{ns} (4,251)
Main Group Variables						
Travel Restrictions			-0,319** (0,105)	-0,316** (0,104)	-0,298** (0,102)	-0,254** (0,093)
Raw Material Supply				0,127 ^{ns} (0,077)	0,119 ^{ns} (0,076)	0,150* (0,069)
Employee Reduction					-3,512* (1,376)	-3,656** (1,242)
Financial Leverage						-0,608** (0,119)
Observations		121	121	121	121	121
R²_{adj}		0,402	0,442	0,451	0,477	0,574
Sig.		0,000	0,000	0,000	0,000	0,000

The regression results show that, in Model A, there is no impact of the restriction of mobility variable (HC) on the business revenue growth of micro-enterprises. Conversely, mobility restrictions significantly affect the operational efficiency of micro-enterprises in Ca Mau in 2021 in Model B. The results of this model are consistent with the research findings of Abideen (2020), indicating that mobility restrictions applied for varying durations and in different regions have a greater impact on the survival of businesses. In both models, the variable "Supply of Raw Materials" (NC) has a positive impact on the revenue growth of the businesses. When the supply is insufficient, businesses lack the necessary materials for their operations, leading to a significant decrease in revenue. The variable "Reduction in Workforce" (CG) does not affect the revenue growth of the surveyed businesses in 2020 in Model A, reflecting the actual situation in the surveyed area where the pandemic was still under control by local authorities. However, in Model B, reducing the workforce has a significant impact on the operational efficiency of micro-enterprises. According to Enesi & Ibrahim (2021), reducing the workforce helps improve the operational efficiency of businesses, but it also exposes them to the problem of losing skilled labor, which significantly affects their revenue. Financial leverage has an inverse impact on the sales growth of enterprises in both Models A and B. The increased financial pressure during the pandemic makes it difficult for businesses to maintain their operations.

V. DISCUSSION AND SOLUTIONS

Utilizing the Ordinary Least Squares (OLS) regression method, the findings indicate that the implementation of measures such as mobility restrictions, employee reduction, and financial constraints assessed through financial leverage significantly and adversely impacts the sales growth of businesses during the COVID-19 period. Among these factors, employee reduction has the

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most pronounced negative influence on the growth of micro-enterprises. This reduction results in the loss of skilled employees and poses challenges in rehiring labor for business recovery post-pandemic. Furthermore, stringent social distancing policies during the pandemic outbreak affect businesses across multiple dimensions. Mobility restrictions contribute to a shortage of raw materials for production and operations, leading to reduced revenue. These circumstances result in a severe cash flow deficit within businesses, escalating debt levels, and amplifying financial pressure on micro-enterprises. Furthermore, control factors such as the gender of the manager, business scale, business age, manager experience, and government support were also restructured to examine their impact. Accordingly, the gender of the manager, business age, and government support do not have an impact on the sales growth of businesses during the surveyed period. On the other hand, the scale of the business and the manager's experience have a positive impact on the operational efficiency of the business.

Based on the research findings, businesses can adopt several strategies to recover and improve their performance during the pandemic:

Implement COVID-19 Prevention Measures. Taking steps to prevent COVID-19 infections is crucial for stabilizing and maintaining production and business activities. Businesses should not underestimate this aspect, as the continuation of the pandemic, possibly with new strains, may disrupt transportation, circulation, and regular production operations.

Plan for a lean supply chain. Diversifying the supply chain by seeking suppliers from closer geographic sources helps businesses avoid disruptions caused by political fluctuations. This strategy reduces the risk of losing the supply source or facing inflated prices for raw materials.

Retain the workforce. Businesses should prioritize "employee retention" policies, including actively maintaining contact information to recall workers when needed. Establishing a fund to support workers during challenging times and considering alternatives like postponing/suspending work without pay instead of terminating employment contracts can be beneficial. A friendly working environment that ensures occupational safety also motivates employees to stay with the company in the long run.

Build a long-term business plan. To proactively navigate challenges, businesses should continuously develop a business plan based on different market scenarios, enabling them to have corresponding solutions. This approach helps managers avoid a state of mental crisis and confusion when making decisions during challenging times.

Increase Financial Capacity: Enhancing the ability to manage financial policies and utilizing accurate financial information for analyzing strengths and weaknesses are crucial. By making informed financial decisions and implementing them effectively, businesses can work towards achieving their financial goals./.

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