

## **Analysis of Key Performance Indicators during and Post the Covid-19 Pandemic (*Case Msmes in Indonesia*)**



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**ABSTRACT:** This study aims to identify the Key Performance Indicators (KPI) of each of the internal and external environmental factors used to measure the performance of Micro, Small, and Medium Enterprises (MSMEs) during and after the COVID-19 pandemic. The population in this study are the owners and managers of MSMEs in Banyumas Regency in December 2020 and 2021. The data analysis technique uses the Mc-Nemar Test Method. The results of the study indicate that KPIs which include production; GMP Good Manufacturing Practices; quality control; Brand; packaging; labeling and intellectual property; marketing; Financial management; capital literacy; Human Resources; character; Relevant agencies, and permits to measure MSME performance during and after the COVID-19 pandemic. These KPIs contain implementation in the short term (during the COVID-19 pandemic) and medium or long term (post-COVID-19 pandemic). This study proves that KPIs relevant to measuring short-term performance are very important to develop a model for the recovery of MSME performance during the COVID-19 pandemic. Relevant KPIs to measure the performance of MSMEs in the medium or long term are very important to determine the post-COVID-19 recovery strategy.

**KEYWORDS:** Key Performance Indicators, MSMEs, Recovery strategy, Covid-19 Pandemic

### **1. INTRODUCTION**

The developing business program for Micro, Small, and Medium Enterprises (MSMEs) in Indonesia concerns the government in national economic development. This effort is the basis of the people's financial system, which aims to reduce the problem of income inequality between groups and communities and overcome poverty and employment problems. To have a strategic meaning for development, MSMEs also function as facilities and infrastructure to distribute development results (Lubanraja & Lubis, 2017). Various growth factors for Micro, Small, and Medium Enterprises are influenced (Montaseb, 2018), so they must be studied to increase MSMEs' growth.

The MSME sector is very strategic in the Indonesian economy and society, considering that around 99 percent of business actors in Indonesia are MSMEs. In addition, the MSME sector includes various labor-intensive industries and can absorb many available workers. In other words, the MSME sector is an important sector for the economic resources of the Indonesian people. The number of MSME units reached 56,534,592 units or 99.9 percent of the total business units in Indonesia. MSMEs can absorb more than 107,657,509 people or 97.16 percent of the workforce. The contribution of MSMEs in the formation of GDP reached IDR 4,870 trillion or 59.08 percent. Regarding grants to build export value, MSMEs contributed Rp. One hundred sixty-seven trillion or 14.06 percent (Amelia et al., 2017).

During the 1998 economic crisis, the MSME sector became the pillar of the economy because the majority had not yet had access to finance and capital, so they were unaffected by the crisis. However, the MSME sector is currently the most vulnerable to the impact of the coronavirus. A study by the Ministry of Finance shows that the COVID-19 pandemic has had negative implications for the domestic economy, such as a decline in people's consumption and purchasing power, a decline in company performance, threats to the banking financial sector, and the existence of MSMEs. MSMEs experienced unavoidable losses due to the COVID-19 pandemic because the products marketed were empty of buyers. Therefore, a study of the factors that can affect the performance of MSMEs during the COVID-19 pandemic that can restore MSMEs' performance is vital. It is needed because it can be used as a guideline by MSMEs and related agencies in restoring MSMEs' performance.

Performance is the result or level of success of a person during a specific period in carrying out tasks compared to possibilities, such as work results, targets, goals, or criteria determined in advance and mutually agreed upon (Rivai, 2005). Performance refers

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to achieving the company's accomplishments within a certain period. The company's sales level, margin level, return on capital, turnover rate, and market share are the company's performance (Sulistiyowati & Lestari, 2016). Internal factors and external factors influence business performance. Many previous researchers have studied internal and external factors under normal conditions. In this study, during the pandemic covid 19 states. The results from previous research are also still full of debate. Therefore, it is necessary to examine KPIs from internal and external factors that MSMEs heavily need during the current COVID-19 pandemic. The research objective is:

1. Identify KPIs for each internal environmental factor used to measure MSMEs' performance during and post the COVID-19 pandemic.
2. Identify KPIs for each external environmental factor used to measure MSMEs' performance during and post the COVID-19 pandemic.

## **2. MATERIAL AND METHODS**

### **2.1. Key Performance Indicator (KPI)**

KPI is a reflection of organizational performance. KPI is a quantitative measurement evaluating organizational performance from various perspectives and becomes a reference for achieving corporate targets (Parmenter, 2015). These definitions describe the execution of an organization's strategic vision quantitatively and produce a concrete database. Warren (2011) mentioned that the characteristics of KPIs are 1) aligned with the strategic vision of the organization; 2) can be understood well; 3) open to monitoring and evaluation; 4) contextual.

Management must have KPIs related to the company's vision and mission, specifically in the entrepreneurial sector. KPIs are lagging indicators and leading indicators. An effective KPI consists of 5 criteria: 1. Specific 2. Measurable 3. Attainable 4. Relevant 5. Time-bound (the availability of a period) (Kaplan and Norton (2000). Parmenter (2015) mentions that the base implementation of KPIs in organizations are four key factors: structural cooperation, the balance of authority, integration of reporting measurement methods, and continuity of performance measurement on strategy implementation.

Warren (2011), Wu (2009), Parmenter (2015), and the Intra-focus Guide (2018) convey several aspects of the problems measured in KPIs: 1) the financial aspect, 2) the consumer aspect; 3) aspects of the organization's internal performance; and 4) aspects of growth and learning. Researchers also mentioned that the KPI measurement used a modified balanced scorecard, as stated in the Intra-focus Guide (2018). The modification of the balanced scorecard is composed of 6 aspects of size: 1) financial, 2) customers or consumers, 3) work environment, 4) internal management, 5) employee satisfaction, and 6) growth and learning.

Previous studies found 11 aspects of KPI measurement to measure the performance of MSMEs. The 11 aspects include 1) Production; 2) Good Manufacturing Practice or GMP; 3) Quality Control; 4) Branding, packaging, labeling, and intellectual property; 5) Marketing; 6) Financial management; 7) Capital and financial literacy; 8) Human Resource; 9) Character; 10) Institutional; 11) Licensing; 12) village-owned enterprises aspects.

### **2.2. Operational Performance**

According to Nugraha (2019), operational performance means the company's ability to carry out its operations. According to Harahap (2014) in Komaludin and Wahid (2017), operational performance is all work results obtained from all business activities in specific periods to achieve an organization's or company's goals. Operational performance is measured using several indicators: 1) the ability to increase profits; 2) the ability to increase turnover; 3) the ability to increase customers; 4) the ability to repay credit; 5) the ability to develop capital (Komaludin, and Wahid, 2017)

### **2.3. Internal Factor**

Internal factors that affect the performance of MSMEs are as follows (Subroto et al., 2016): a) Human resources factors; b) Financial factors; c. Production factors; d) Marketing factors. HR factors include entrepreneurial characteristics (Hamalik. 1993), entrepreneur psychology (Winardi, 2008), managerial abilities (Sembiring, 2016), and other factors. Financial factors include financial literacy (Yanti, 2019), initial capital, access to capital sources, bookkeeping (Pramaishella, 2017), and other factors. Production and marketing factors will explore from the literature and research findings. Based on previous research by Warren (2011), Wu (2009), Parmenter (2015), and the Intra-focus Guide (2018), the internal factors are internal factors of management: 1) Business Strategy aspect; 2) Production aspect; 3) Good Manufacturing Practice or GMP; 4) Quality control; 5) Branding, packaging, labeling, and intellectual property; 6) Marketing; 7) Financial management; 8) Capital and financial literacy; 9) Human resources; 10) Characters.

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### **2.4. External Factor**

External factors include 1) institutional and 2) licensing, abstracted from Warren (2011), Wu (2009), Parmenter (2015), and the Intra-focus Guide (2018), which are the aspects of KPIs external factors measurement can use to measure MSMEs' performance.

### **2.5. Research Design**

This research uses a case study design. According to Yin (2000), a case study is an empirical inquiry that investigates a phenomenon in a real-life context when the boundaries between phenomenon and context are not visible and uses multiple sources of evidence. Yin also stated that a case study is the most suitable for formulating the "how" and "why" problems. Furthermore, case studies are most appropriate when there is no need to control events and when the research aims to track contemporary events and cannot manipulate relevant events. Based on Yin's opinion, the researchers use a case study strategy and do not control events (phenomena can only observe, not controlled like experiments). The focus of the research is on contemporary phenomena in real life.

### **2.6. Population and Sample**

A population is an investigation of all the people, events, or things concerned by the researcher (Ghozali, 2016). The population in this study is the owner and managers of MSMEs in Banyumas Regency in December 2020 and December 2021. Based on data from December 2020 and December 2021, there are 5,754 MSMEs in Banyumas Regency. The amount of sample is determined using a statistical approach with the Slovin formula [26],  $n = N / 1 + N (e)^2$ , and the result is 98.29 MSMEs. The sampling method used is non-probability purposive sampling. This method takes samples by determining specific criteria by the researcher (Ghozali, 2016). The requirements specified are the manager or owner of the MSME, who can explain the KPI sought for each variable.

### **2.7. The Technique of Collecting Data**

The researchers use literature review, observation, interview, Focus Group Discussion (FGD), and questionnaires. Reviewing literature in this research includes looking for relevant and valid references by looking at books, journals, articles, and previous research related to the research problem. Researchers conducted a literature study on the KPI measures used by previous researchers, Warren (2011), Wu (2009), Parmenter (2015), and the Intra-focus Guide (2018). The researchers chose the most relevant KPI measures for the condition of MSMEs in Indonesia. The data accumulated was tested in the next stage.

### **2.8. Variable Measurement**

The variables in this study are latent and unobserved variables that cannot be measured directly. That variable must form through observed indicators (Ghozali, 2013). Collected data before and during the COVID-19 pandemic from respondents.

Based on Previous research about KPIs from internal environmental factors used to measure the performance of MSMEs before and during the COVID-19 pandemic in Indonesia are, namely: 1) Business Strategy Aspects; 2) Production Aspect; 3) Good Manufacturing Practice or GMP; 4) Quality Control; 5) Branding, packaging, labeling, and intellectual property; 6) Marketing; 7) Financial management; 8) Capital and financial literacy; 9) Human Resources; 10) Characters. This research uses previous results about KPIs from external environmental factors to measure the performance of MSMEs before and during the COVID-19 pandemic in Indonesia: 1) institutional; and 2) licensing.

### **2.9. Data Analysis Technique**

McNemar's test is a statistical test used on paired nominal data. Usually used in 2 to 2 contingency tables with a dichotomous trait, with matched pairs of subjects, to determine whether the row and marginal column frequencies are equal (McNemar, 1947) [1.] An application of the genetics test is the transmission disequilibrium test for detecting linkage disequilibrium.[2]

Sensitivity and specificity are commonly used parameters to assess a diagnostic test in medical sciences. Sensitivity (or recall) is the ability of a test to identify people with the disease. Specificity (or precision) is the ability of the test to determine those without the condition.

Now presume we test on the same group of patients. And also assume that these tests have identical sensitivity and specificity. In this situation, one is carried away by these findings and presumes that both tests are equivalent. However, this may be different. We must study the patients with and without the disease (by a reference test). We also have to find out where these two tests disagree. This test compares the sensitivity and specificity of two diagnostic tests on the same group of patients.

## **3. RESULTS**

### **3.1. KPIs for Each Internal Environmental Factor to Measure Performance of MSMEs during the Covid-19 Pandemic**

#### **3.1.1. Business Strategy Aspect**

The KPI items included in the Business Strategy Aspect are a) looking for cheaper raw material suppliers; b) Lowering the specifications/quality of raw materials; c) Purchasing raw materials in large quantities to anticipate price increases; d) Reducing

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the number of workers; e) Reducing the number of workers' wages; f) Changing the method of wages payment (from monthly to weekly or daily); g) Requesting a delay in payment of debt installments; h) Requesting a reduction in installments/month; i) Requesting loan interest relief; j) Having no debt. Table 1 shows the results of the Mc Nemar Test for business strategy aspects.

Table 1: Mc-Nemar Test Result for Business StrategyBased on table 1, only two KPI items differ significantly between before and during the pandemic, namely reducing the number of workers' wages and requesting a reduction in installments/month. Therefore, 8 KPI items in the business strategy aspect are relevant to measuring the performance of MSMEs during the COVID-19 pandemic. We used two relevant KPI items to measure MSMEs' performance post-COVID-19 pandemic.

### 3.1.2. Production Aspect

Table 2 shows the results of the Mc-Nemar test for the production aspect. Based on table 2, the two production aspect items have a significance value of less than 0.05. Based on the Mc-Nemar test, only four relevant items measure MSMEs' performance during the COVID-19 pandemic.

**Table 2: The Mc-Nemar Test Results on the Production Aspect**

Item	Exact.sig.	Conclusion
1 The availability of raw materials to produce or the number of resources for services	1,000	There is no significant difference
2 Suitability with production capacity and Standard Operating Procedures (SOP) for the production of goods or services	0,039	There is a significant difference
3 Implementation of production or service is on time in 1 process cycle.	0,118	There is no significant difference
4 Machines and equipment for the production of goods or services are functioning properly.	1,000	There is no significant difference
5 Products or services following target and accepted by consumers	0,022	There is a significant difference
6 The existence of product or service innovation	0,092	There is no significant difference

### 3.1.3. Good Manufacturing Practice (GMP)

Table 3 shows the results of the Mc-Nemar Test for aspects of Good Manufacturing Practice (GMP). Based on table 3, all KPI items in the Good Manufacturing Practice (GMP) aspect have a significance of more than 0.05. So, the 7 KPI items in the Good Manufacturing Practice (GMP) aspect are relevant to measuring the performance of MSMEs during a pandemic.

**Table 3: The Mc-Nemar Test Results on Good Manufacturing Practice (GMP) Aspects**

Item	Exact.sig.	Conclusion
1 The environment of the production or service location meets the standard requirements for good goods or service production procedures (GMP)	1,000	There is no significant difference
2 There is no potential environmental pollution	0,227	There is no significant difference
3 There are cleanliness and orderliness of production facilities or guaranteed services	0,219	There is no significant difference
4 Cleanliness of employees, equipment and warehouse for goods production, and guaranteed services	0,625	There is no significant difference
5 The handling of raw materials and production outputs or services in accordance with the GMP requirements	0,500	There is no significant difference
6 The production process or service is controlled according to GMP requirements	1,000	There is no significant difference
7 Packaging, storage, and post-production control or service delivery are under the GMP requirements	1,000	There is no significant difference

### 3.1.4. Quality Control

Table 4 shows the results of the Mc-Nemar test for each item regarding quality control. Based on Table 4, all KPI items in the element of quality control have a significance of more than 0.05. So, the six KPI items on the quality control aspects are relevant to measuring the performance of MSMEs during the COVID-19 pandemic.

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**Table 4: Mc Nemar Test Results on Quality Control Aspect**

	Item	Exact.sig.	Conclusion
1	The existence of written documents related to raw materials (quantity and quality, expiration date, supplier)	1,000	There is no significant difference
2	The existence documentation of Standard Operating Procedures (SOP) for production	0,549	There is no significant difference
3	The existence documentation of production implementation	0,453	There is no significant difference
4	The existence documentation of product quality targets	0,687	There is no significant difference
5	The existence documentation of product quality assessment results	1,000	There is no significant difference
6	The existence documentation of maintenance of tools, space, cleaning facilities, and waste management	0,500	There is no significant difference

### 3.1.5. Branding, Packing, Labelling, and Intellectual Property

The results of the Mc-Nemar test for each item aspect of branding, packaging, labeling, and intellectual property show that only 1 item, " There is a different brand from the competitor (original)," has a value of less than 0, 05. So, this item is significant and irrelevant to measuring the performance of MSMEs during the COVID-19 pandemic but is relevant for measuring the performance of MSMEs post the COVID-19 pandemic. Thus, the 5 KPI items on branding, packaging, labeling, and intellectual property are relevant to measuring MSMEs' performance during the COVID-19 pandemic.

**Table 5: Mc Nemar Test rResults on Branding, Packaging, Labeling, and Intellectual Property Aspect**

No	Item	Exact.sig.	Conclusion
1	There is a different brand from competitors (original)	0,031	There is a significant difference
2	There are efforts to build a product brand	0,180	There is no significant difference
3	There is cost allocation for packaging manufacturing	0,180	There is no significant difference
4	There are no complaints from consumers about the convenience of using the packaging	0,508	There is no significant difference
5	The use of materials with proper packaging design and able to protect the product	0,687	There is no significant difference
6	The inclusion of labeling requirements according to laws and other government regulations	0,500	There is no significant difference

### 3.1.6. Marketing Aspect

From the results of the Mc Nemar test for each item in the marketing aspect, four articles have a value of less than 0.05, namely: 1) the existence of sales growth per cycle; 2) having regular customers; 3) there is an increase in consumers in 1 year; 4) the availability of production costs allocation. It means that these four aspects are significant. So, it can conclude that these items are not relevant to measuring the performance of MSMEs during the pandemic. However, these are relevant to measuring MSMEs' performance post the COVID-19 pandemic. Thus, from the marketing aspect, three relevant elements are used to measure the performance of MSMEs during a pandemic: 1) no complaints from consumers; 2) there are efforts to market the product; 3) there is a marketing innovation.

**Table 6: Mc Nemar Test Results on Marketing Aspect**

	Item	Exact.sig.	Conclusion
1	The existence of sales growth per cycle	0,000	There is a significant difference
2	Having regular customers	0,002	There is a significant difference
3	There is an increase in consumers in 1 year	0,000	There is a significant difference

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4	No complaints from customers	0,607	There is no significant difference
5	the availability of production costs allocation	0,008	There is a significant difference
6	There are efforts to market the product	0,065	There is no significant difference
7	There is a marketing innovation	0,815	There is no significant difference

### 3.1.7. Financial Management

The results of the Mc-Nemar test for each KPI item in the financial aspect have a significance of more than 0.05. Thus, it can conclude that the 9 KPI items in the financial part are relevant to measuring MSMEs' performance during the COVID-19 pandemic.

**Table 7: Mc Nemar Test Results on Financial Aspects**

Item	Exact.sig.	Conclusion
1 There is a separation of financial management between personal and business	0,227	There is no significant difference
2 There is a separation of personal and business accounts	1,000	There is no significant difference
3 There is an allocation of the owner's salary in operating costs	0,344	There is no significant difference
4 There is a record of financial transactions on a regular basis, on time, and in accordance with simple accounting standards	1,000	There is no significant difference
5 There is a recording of the type and amount of assets owned by the company (apart from private property)	1,000	There is no significant difference
6 There is a record of changes in the type and value of capital	1,000	There is no significant difference
7 There is a record of the source and amount of payables and receivables	0,453	There is no significant difference
8 There is a special financial management officer	0,219	There is no significant difference
9 There is safe-keeping for proof of transactions	1,000	There is no significant difference

### 3.1.8. Capital and Literacy

From the results of the Mc-Nemar test for each item of the capital aspect, all KPI items for capital and literacy aspects have a significance of more than 0.05. So, the four relevant KPI items for capital aspects are relevant to measuring MSMEs' performance during the COVID-19 pandemic.

**Table 8: The Results of The Mc-Nemar Test for Capital and Literacy Aspects.**

Item	Exact.sig.	Conclusion
1 The existence of knowledge about the terms and mechanisms for applying credit/loans to financial institutions (banks and non-banks)	0,508	There is no significant difference
2 The existence of knowledge about government financial assistance/credit schemes.	1,000	There is no significant difference
3 The existence of knowledge of credit risk from financial institutions (bank/non-bank)	1,000	There is no significant difference
4 The availability of ownership and financial institution products/services utilization (savings, deposits, credit) in the last 1 year	1,000	There is no significant difference

### 3.1.9. Human Resources

From the results of the Mc-Nemar test for each item in the Human Resources aspect, all KPI items have a significance of more than 0.05. So, the four KPI items in the Human Resources aspect are relevant to measuring the performance of MSMEs during the COVID-19 pandemic.

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**Table 9: Mc-Nemar Test Results for Human Resources Aspects**

	Item	Exact.sig.	Conclusion
1	The suitability of recruitment results and employee qualification needs	1,000	There is no significant difference
2	The existence of training for new employees	0,508	There is no significant difference
3	The existence of regular training to improve the quality of human resources	0,687	There is no significant difference
4	The implementation of employee performance evaluation	1,000	There is no significant difference

### 3.1.10. Character and Behavior

The Mc-Nemar test result for each character and behavior aspect item has two items. There is conformity in carrying out work contracts for employees and business partners, and the existence of information disclosure to consumers (clarity of information) has a value of less than 0.05. The concluded, it is significant. So, these two items are not relevant to measuring internal factors that affect the performance of MSMEs during the COVID-19 pandemic. In contrast, these are relevant to measuring internal factors affecting MSMEs' performance in the post-COVID-19 pandemic. Thus, "there are complaints from customers" and "the existence of guarantee the quantity and quality of the product" at KPIs internal factors in the character and behavior aspects are relevant to measuring and affecting MSMEs' performance during the COVID-19 pandemic.

**Table 10: Mc-Nemar Test Results for Character and Behavior Aspects**

	Item	Exact.sig.	Conclusion
1	There is conformity in carrying out work contracts for employees and business partners	0,031	There is a significant difference
2	The existence of information disclosure to consumers (clarity of information)	0,039	There is a significant difference
3	There are complaints from customers	0,687	There is no significant difference
4	There is a guarantee of product quantity and quality	0,453	There is no significant difference

### 3.2. Key Performance Indicator from Every External Environmental Factor to Measure The Performance of MSMEs During The COVID-19 Pandemic

Based on the research, institutions and licensing are key performance indicators for external factors to measure the performance of MSMEs before and during the COVID-19 pandemic. Tables 11 and 12 describe an overview of the results of data analysis to determine items from KPI external factors based on the Mc-Nemar test method.

#### 3.2.1. Institutional Aspect

The result of the Mc-Nemar Test for every item on the institutional aspect is in table 11. Based on table 11, every item on KPIs in the institutional part has a significance of more than 0,05. Thus, the 7 KPI items in the institutional part are relevant to measuring the performance of MSMEs during COVID-19.

**Table 11: Mc-Nemar Test Result on Institutional Aspec**

	Item	Exact.sig.	Conclusion
1	The availability of access to capital from other partners	0,180	There is no significant difference
2	The existence of business legality	1,000	There is no significant difference
3	Participation in social security (BPJS health, BPJS Employment, or other insurance)	1,000	There is no significant difference
4	There is a network with the government, higher education institutions, private sectors, or other institutions.	0,125	There is no significant difference
5	The existence of a partnership that ensures the availability of raw materials	1,000	There is no significant difference

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6	The existence of a partnership that guarantees product marketing	1,000	There is no significant difference
7	Being a business association member	0,687	There is no significant difference

### 3.2.2. Licensing Aspect

The results of the Mc-Nemar test for each item in the licensing aspect are in table 12. Based on table 12, they found that all KPI items in the licensing factor have a significance of more than 0.05. Thus, we can conclude that the 3 KPI items in the institutional aspects are relevant to measuring the performance of MSMEs during the COVID-19 pandemic.

**Table 12: Mc-Nemar Test Result on Licensing Aspect**

	Item	Exact.sig.	Conclusion
1	Having a business license managed by the OSS Institution (one single submission) in the form of a NIB (Business Identification Number)	0,500	There is no significant difference
2	Having commercial or operational license managed by the OSS Institution	0,250	There is no significant difference
3	Having IMB, Location Permit, and Environmental Permit	0,375	There is no significant difference

## 4. DISCUSSION

This study aims to identify the KPIs for each internal and external environmental factor used to measure MSMEs' performance during and after the COVID-19 pandemic. The KPIs used by Wu (2009), Warren (2011), David (2015), and the Intra-focus Guide (2018), according to the researcher, are relevant to performance measurement tools, especially during and after the COVID-19 pandemic. Researchers have filtered KPIs on every aspect of previous research results related to measuring the performance of MSMEs in Indonesia during and after the COVID-19 pandemic. Testing for early identification analysis in measuring the performance of MSMEs in Indonesia is essential because different countries will give different results, especially in pandemic conditions.

Based on the analysis test results using the Mc-Nemar method, this study identified Key Performance Indicators (KPIs) for internal and external environmental factors used to measure MSME performance during and after the COVID-19 pandemic. Most KPI internal and external environmental factors analyzed showed significant results of more than 0.05. The conclusion is that these KPIs are relevant for measuring the performance of MSMEs during the COVID-19 pandemic or in the short term.

The relevant KPIs used to measure the short-term performance of MSMEs or during the COVID-19 pandemic are based on the analysis results using the MC-Nemar method. The results showed no significant difference between conditions before and during the COVID-19 pandemic. The measure of MSMEs' performance in the medium or long term (after the COVID-19 pandemic), the results shows a significant difference between conditions before and during the COVID-19 pandemic.

The analysis results conclude a significant difference between conditions before and during the COVID-19 pandemic, which is irrelevant for measuring the short-term performance of MSMEs. Many external business factors affect the performance of MSMEs. External business factors include economic conditions, government policies, decreased consumer purchasing power, changes in consumer preferences, and many other factors. These factors make it difficult for MSMEs to achieve business targets such as market growth, increased sales, and increased profits. However, improving economic conditions due to loosening government policies related to Large-Scale Social Restrictions (PSBB), the Implementation of Restrictions on Community Activities (PPKM), and others began to make various activities in the business world begin to bloom. Therefore, this KPI analysis remains essential to determine how far MSMEs have increased and recovered after the COVID-19 pandemic.

Based on the study results, the relevant KPIs used to measure the short-term performance of MSMEs during the COVID-19 pandemic were found as follows. KPIs in the business strategy aspect: 1) looking for cheaper raw material suppliers; 2) lowering the specifications/quality of raw materials; 3) purchasing raw materials in large quantities to anticipate price increases; 4) reducing the number of workers; 5) changing the method of wages payment (from monthly to weekly/daily); 6) requesting a delay in payment of debt installments; 7) requesting loan interest relief; 8) Having no debt. KPIs in the operational aspects: 1) the availability of raw materials to produce or the number of resources for services; 2) implementation of production or service is on time in 1 period of the process cycle; 3) machines and equipment for the production process of goods or services function correctly; 4) the existence of product or service innovation.



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The Key Performance Indicators with significant differences between conditions before and during the pandemic are essential to determine the medium or long-term recovery strategies post the COVID-19 pandemic. The KPIs in the business strategy cover reducing the number of workers' wages and requesting monthly installment reductions. KPIs in the operational aspect cover suitability with production capacity and Standard Operating Procedures (SOP) and the appropriateness of products or services. KPI in branding, packaging, labeling, and intellectual property consists of different brands from competitors (original). KPIs in marketing is sales growth per cycle, having regular customers, an increase in consumers in one year, and the availability of production cost allocation. KPI in character and behavior consists of conformity in carrying out work contracts for employees and business partners; information disclosure to consumers (clarity of information).

### 5. CONCLUSION

- a. All KPIs are relevant to measuring MSMEs' performance in the COVID-19 pandemic and post-pandemic but grouped into two, namely the performance of MSMEs in the short term (during the COVID-19 pandemic) and in the medium or long time (in the period post the COVID-19 pandemic).
- b. KPIs relevant to measuring MSMEs' performance during the COVID-19 pandemic or in the short term, based on analysis using the Mc-Nemar method, show no significant difference between KPIs before and during the COVID-19 pandemic. Thus, there are 8 (eight) KPIs in business aspects, 4 (four) KPIs in production aspects, 6 (six) KPIs in Good Manufacturing Practice (GMP) aspects, 6 (six) KPIs in Quality Control aspects, 5 (five) KPIs in the parts of Branding, Packing, Labelling, and Intellectual Property, 3 (three) KPIs in Marketing aspects, 9 (nine) KPIs in financial management aspects, 4 (four) KPIs in capital and literacy aspects, 7 (seven) KPIs in institutional elements, 4 (four) KPIs in human resources aspects, 2 (two) KPIs in character and behavior aspects, and 3 (three) KPIs in licensing elements that we can use to measure the performance of MSMEs in Indonesia during the pandemic.
- c. Key Performance Indicators relevant to measuring MSME's performance in the medium or long term or post the COVID-19 pandemic, based on Mc-Nemar's results, show significantly different results between KPIs before and during the COVID-19 Pandemic. KPIs in the business strategy (reducing the number of workers' wages and asking for installment relief per month; KPIs in the operational aspect (suitability with production capacity and Standard Operating Procedures (SOP) for the production of goods or services; KPIs in branding, packaging, labeling, and intellectual property (the existence of different brands from the competitors (original); KPIs in marketing aspect ( the fact of sales growth per cycle, the presence of regular customers, the increase in consumers in a year, and the allocation of production costs; KPIs in terms of character and behavior (conformity in carrying out employment contracts to employees and business partners and the disclosure of information to consumers (clarity of information)), according to the researchers' analysis, is essential for medium/long-term recovery strategies in the period post the COVID-19 pandemic.
- d. The KPIs are crucial for developing a short-term MSMEs performance recovery model during the COVID-19 pandemic and determining the medium/long-term recovery strategy post the COVID-19 pandemic. We can analyze each component in the KPI in more depth to explore the characteristics of each aspect. Each aspect of the Key Performance Indicators is given weight to determine the priority scale that should be the primary concern in improving performance in each element. The analysis results are used to develop a model of MSME's performance recovery during the COVID-19 pandemic and formulate appropriate MSMEs performance recovery strategies to restore MSME performance during the COVID-19 pandemic.

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