



IDENTIFICATION AND RISK ASSESSMENT OF KETAK HANDICRAFT SMEs IN THE MIDDLE OF THE COVID-19 PANDEMIC

Wafiah Murniati¹, Hairul Fahmi².

Informatics Engineering STMIK Lombok

Jln Basuki Rahmat No 105 Praya Lombok Tengah NTB

E-mail: wafiah.mr@gmail.com¹, iroel.ami@gmail.com²

ABSTRACT

Uncertainty in conditions driven by external factors from the threat of the virus that has an impact on restrictions on human movement by the government affects business and economic conditions in Indonesia, including Small and Medium Enterprises (SMEs) in handicrafts. The business processes carried out by SMEs are inseparable from the risks they face. Risk management is the right strategy in tackling risks that occur throughout the business process. The purpose of this study was to identify and conduct an assessment of the risks faced by SMEs in Central Lombok during the Covid-19 Pandemic. The method used to analyze risk factors is the checklist method and the Analytical Hierarchy Process (AHP). All risks that SMEs may face have been identified, classified and ranked according to risk exposure. The results showed that there were 4 risk factors and 11 risk subfactors identified. The most critical risk comes from financial risk. There was a decrease in income during Covid-19, a decrease in the level of consumer purchasing power, and limited capital. Limited human resource capabilities if marketing online and the difficulty of obtaining raw materials are also critical risks faced by SME actors during the Covid-19 Pandemic.

Keywords: Risk; SMEs; Checklist; AHP

Article history:

Submit 18 November 2021

Received in from 23 February 2022

Acceted 16 March 2022

Avilable online 6 April 2022

Published By:

Fakultas Teknologi Industri
Universitas Muslim Indonesia

Address :

Jl. Urip Sumoharjo Km. 5 (Kampus II UMI)
Makassar Sulawesi Selatan.

Email :

Jiem@umi.ac.id

Phone :

+6281341717729

+6281247526640

Liscensed by: <https://creativecommons.org/licenses/by-nc-sa/4.0/>

DOI : <http://dx.doi.org/10.33536/jiem.v7i1.1045>



1. INTRODUCTION

The global epidemic known as the Covid-19 pandemic that occurred in 2020 to date, has plunged the global economy into the worst conditions to cause a great depression (Trautrimis et al., 2020). many businesses limped in the middle of the economic crisis over the last 2 years. A number of challenges are present in human life including business operations activities around the world (Lu et al., 2021; Ebersberger and Kuckertz, 2021), and the impact they have on business activities is very wide and varied. Based on a report published by the Organization for Economic Cooperation and Development (OECD) in 2020, it was revealed that the Covid-19 pandemic has affected the economy from the supply and demand side (OECD, 2020). On the supply side, the company reduces the supply of raw materials and labor. Meanwhile, from the demand side, there is a decline in demand and consumer confidence in a product. The OECD also said that Small and Medium Enterprises (SMEs) had a significant impact on the Covid-19 pandemic. Dependence on other business sectors such as tourism, transportation and culinary makes SMEs very vulnerable to business risks. When the COVID-19 pandemic creates an economic downturn in these business sectors, SMEs also feel the impact. As a result, business risks must be faced by all business sectors including SMEs.

SMEs are one of the essential sectors of the Indonesian economy that absorb the most labor (Sugiri, 2020). The sizable contribution that comes from SMEs makes it the backbone of the Indonesian economy. Its presence has an impact on decreasing the unemployment rate, regional economic growth to empowering local communities (Fatmawati et al., 2021). Like the Ketak Handicraft SMEs, which is located in Lombok Regency. This industry produces various products such as furniture, baskets, tissue holders, mineral drinking water containers, bags and others. The business processes carried out by this industry are inseparable from a number of risks faced during the COVID-19 pandemic. Basyaib (2007) explains that risk is an opportunity for an undesirable outcome to occur. Risk can be associated with the possibility of unexpected losses. This possibility can indicate the existence of uncertainty. Meanwhile, uncertainty creates both negative and positive effects on the achievement of the goals of any organization that is faced with risk.

One way to anticipate uncertainty that leads to a negative impact on MSME business performance is to carry out risk management based on Risk Management (Carpitella, et al., 2018). This strategy begins with identifying, analyzing, evaluating, and managing risks (Belas et al., 2018). Identifying risk sources and events is the most important phase of the risk management concept because this phase is the initial stage in preventing negative impacts on risks that arise through identification activities (Gorzeń-Mitka, 2019).

The application of risk management has been widely carried out by previous researchers, such as Safi'i et al, (2020) who researched risk analysis in tofu Takwa Kediri SMEs on the impact of the Covid-19 pandemic; analysis of risk management on MSMES (case study of the bamboo handicraft industry) (Hirawati, H 2020); analysis of risk management in rattan small industry in Malang (Ardia Sari, R 2017); analysis model and risk mitigation strategy for Tempe Chips production (Prasetyo, IJ. 2017); risk management through identification and risk grouping during the Covid 19 pandemic case study of UMKM Batik Tulis Lasem in Rembang Regency, (Damayanti, 2020); Identification and assessment of supply chain risk: development of AHP model for supply chain risk prioritisation (Sharma and Bhat, 2012). The implementation of risk management that is managed well can contribute to the achievement of goals, improvement of performance and quality of work (Misbah, 2017).

The application of risk management is proven to be able to detect potential risks that arise throughout the business process. The purpose of this research is to implement risk management through identification, assessment and risk mitigation proposals in the ketak industry located in Central Lombok Regency during the Covid-19 pandemic.

2. RESEARCH METHODS

This research was conducted in accordance with the general risk management framework, namely risk identification, risk assessment, and responding to risks that have a high exposure value.

2.1 Risk Identification

The stages of risk identification are conducting interviews with Ketak handicrafts SMEs actors, literature studies and the checklist method. The following is a list of potential risks identified in

the SMEs of Ketak Crafts during the Covid-19 Pandemic as shown in table 1 as follows.

Table 1. List of Potential Risks Identified

Risk Factors	Sub-Risk Factors
Raw material	Difficulty in obtaining raw materials during Covid-19 (BB1)
	Increase in raw material prices (BB2)
	Lack of raw materials (BB3)
Financial	There has been a decline in income during Covid-19 (F1)
	There was a decline in consumer purchasing power during Covid-19 (F2)
	Limited Capital (F3)
Operational	There was a decrease in the number of production during Covid-19 (O1)
	There is a delay in the production time of Covid-19 (O2)
	Inhibited Production Process (O3)
HR	Labor Reduction (M1)
	Limited HR capabilities if marketing online (M2)

2.2. Risk Assessment

In general, the identified risk factors need to be evaluated to calculate the impact of the factors on the overall risk. This measure can be seen as a decision support tool for predicting risk factors. The aim is to prioritize risks and establish the importance of risks, so that appropriate attention can be taken to address risks.

The risk assessment is carried out using the Analytical Hierarchy Process (AHP) method. AHP is used for weighting and selecting potential risks and must be managed so as to increase the productivity of SMEs. There are 2 (two) basic

principles of problem solving using the AHP method, namely (saaty, 1980):

a. Create a hierarchy

The risk hierarchy structure is based on: the sources of risk that exist in the Small and Medium Enterprises of Crafts during the Covid-19 Pandemic. These factors have been grouped into Raw Material, Financial, Operational and Human Resources risk factors. The subcategories of these factors have been shown in a hierarchical structure as shown in Figure 1.

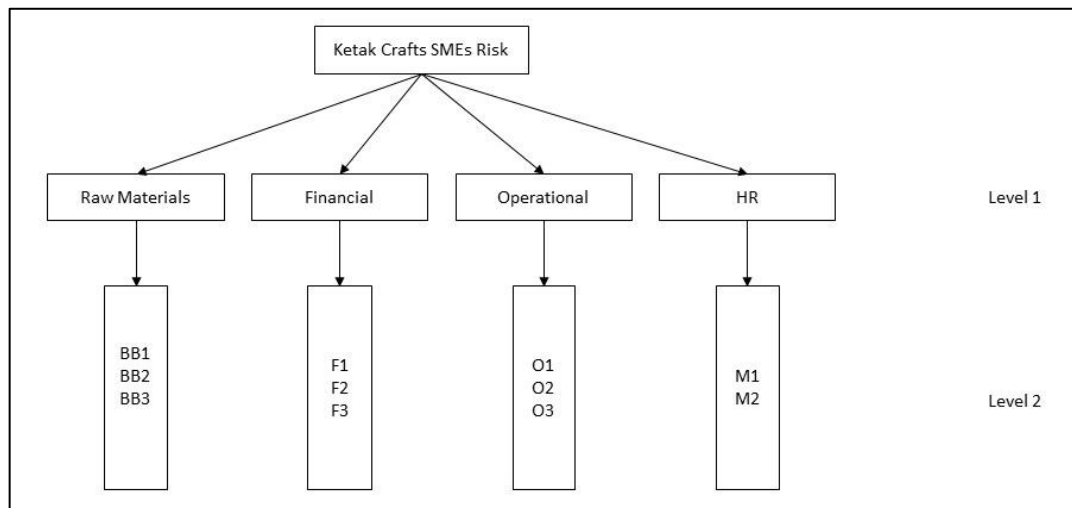


Figure 1. Risk Hierarchy

b. Criteria assessment

Criteria assessment is carried out by :

- a. Build a pairwise comparison matrix for each risk factor.

- b. Calculating the relative weights (priority vectors) of risk factors at level 1 and level 2.

- c. Calculating the Consistency Index (CI)

$$CI = \frac{(\lambda_{max} - n)}{(n-1)} \quad (1)$$

- d. Calculating Consistency Ratio (CR)

$$CR = \frac{CI}{RI} \quad (2)$$

- e. Checking hierarchy consistency
If the value is more than 0.1 then the judgment data assessment must be corrected. However, if it is less or equal to 0.1, then the calculation results can be declared correct
- f. Calculate the severity of each risk factor by multiplying the local weight of the risk factor and its global weight
- g. Based on the severity calculated in step f, each risk is prioritized.

2.3. Risk Response

In this study, only dominant risks or risks with high exposure values will be analyzed and strategies for handling them are made. Of the 11 (eleven) risks, 5 (five) risks are taken with the

highest risk factors that need to be handled. The risk management strategy is carried out based on recommendations from the implementing parties in the field and literature studies.

3. RESULTS AND DISCUSSION

3.1 Risk Assessment

The weighting of risk factors and risk subfactors is based on a questionnaire containing an assessment of the importance of each risk criterion that affects the condition of industry performance. The questionnaire was distributed to competent Ketak handicraft industry workers in the company. Risk Assessment using the AHP Method aims to determine the most dominant risk to be handled.

1. Risk Factor Weighting (Level 1)

The first step is to calculate the level of importance of the Level 1 risk factors, namely Raw Material Risk, Financial Risk, Operational Risk and HR Risk. The weighting is done using Microsoft Excel based on the Level 1 pairwise comparison matrix, the processing is using Geometric Mean.

Table 2. Pairwise Comparison Matrix Level 1

Criteria	RAW MAT.	FIN	OP	SDM	PRIORITY VECTOR
Raw Material	1,000	0,359	2,993	1,974	0,259
Financial	2,787	1,000	3,845	2,551	0,482
Operational	0,334	0,249	1,000	0,803	0,108
HR	0,506	0,392	1,246	1,000	0,150
Consistency test: To test the consistency of decision makers, the priority vector is multiplied by the comparison matrix of the importance of the initial criteria. Then we divide the first column by the priority vector, which is shown in the second column and then take the average as the value of λ_{max} . Next is the calculation of the CI and CR values.					
	1,051				4,058
	2,002				4,154
	0,435				4,028
	0,605				4,033
					Total = 16,273
					$\lambda_{max} = 4,068$

The Consistency Index (CI) value is obtained by the following calculation:

$$CI = \frac{\lambda_{max} - n}{n-1} = \frac{4,068 - 4}{4-1} = 0,023$$

The Random Index (RI) value for the number of elements 4 is 0.9 so that the Consistency Ratio (CR) is:

$$CR = \frac{CI}{RI} = \frac{0,023}{0,9} = 0,025$$

The CR value is less than 0.10 so that in general decision makers are consistent in making decisions.

2. Weighting of risk subfactors (Level 2)

The next step is to calculate the level of importance of the Risk subfactor level 2. The

weighting is done using Microsoft Excel based on the pairwise comparison matrix.

Subfactors.

a. Weighting of Raw Material Element Risk

Table 3. Pairwise comparison matrix (Raw Material Risk)

Criteria	BB1	BB2	BB3	Priority Vector
BB1	1,000	1,059	1,431	0,380
BB2	0,944	1,000	0,803	0,303
BB3	0,699	1,246	1,000	0,317
Consistency Test				
	1,155		3,039	
	0,916		3,023	
	0,960		3,028	
			Total = 9,091	
			$\lambda_{\max} = 3,030$	

$$CI = \frac{\lambda_{\max} - n}{n-1} = \frac{3,030 - 3}{3-1} = 0,015$$

$$CR = \frac{CI}{RI} = \frac{0,015}{0,58} = 0,026$$

The CR value is less than 0.10 so that in general decision makers are consistent in making decisions.

b. Weighting of Financial Element Risk Subfactors

Table 4. Pairwise comparison matrix (Financial Risk)

Criteria	F1	F2	F3	Priority Vector
F1	1,000	1,246	2,169	0,439
F2	0,803	1,000	1,149	0,307
F3	0,608	0,871	1,000	0,254
Consistency Test				
	1,372		3,126	
	0,951		3,101	
	0,788		3,097	
			Total = 9,324	
			$\lambda_{\max} = 3,108$	

$$CI = \frac{\lambda_{\max} - n}{n-1} = \frac{3,108 - 3}{3-1} = 0,054$$

$$CR = \frac{CI}{RI} = \frac{0,054}{0,58} = 0,093$$

The CR value is less than 0.10 so that in general decision makers are consistent in making decisions,

c. Weighting of Operational Element Risk Subfactors

Table 5. Pairwise comparison matrix (Operational Risk)

Criteria	O1	O2	O3	Priority Vector
O1	1,000	0,334	0,384	0,152
O2	2,993	1,000	1,000	0,434
O3	2,605	1,000	1,000	0,414
Consistency Test				
	0,456		3,001	
	1,303		3,003	
	1,244		3,003	

	Total = 9,007 $\lambda_{\max} = 3,002$
--	---

$$CI = \frac{\lambda_{\max} - n}{n - 1} = \frac{3,002 - 3}{2 - 1} = 0,001$$

The CR value is less than 0.10 so that in general decision makers are consistent in making decisions

$$CR = \frac{CI}{RI} = \frac{0,001}{0,58} = 0,002$$

d. Weighting of Risk Sub-Factors of Human Resources Elements

Table 6. Pairwise comparison matrix (HR Risk)

Criteria	M1	M2	Priority Vector
M1	1,000	0,384	0,277
M2	2,605	1,000	0,723
Consistency Test			
	0,555	2,00	
	1,445	2,00	
		Total = 4,00	
		$\lambda_{\max} = 2,00$	

$$CI = \frac{\lambda_{\max} - n}{n - 1} = \frac{2,00 - 2}{2 - 1} = 0,000$$

general decision makers are consistent in making decisions.

$$CR = \frac{CI}{RI} = \frac{0,000}{0} = 0,000$$

The next step is to calculate the severity of each risk factor by multiplying the local weight of the risk factor and its global weight as shown in Table 7.

The CR value is less than 0.10 so that in

Table 7. Global weights and ranking of each risk

Risk Factor	Global Weights	Risk Subfactor	Local Weights	Overall Weights	Risk Rank
Raw Materials	0,259	Difficulty in obtaining raw materials during Covid-19 (S1)	0,380	0,098	5
		Increase in raw material prices (S2)	0,303	0,078	7
		Lack of raw materials (S3)	0,317	0,082	6
		There has been a decline in income during Covid-19 (F1)	0,439	0,212	1
Financial	0,482	There was a decline in consumer purchasing power during Covid-19 (F2)	0,307	0,148	2
		Limited Capital (F3)	0,254	0,122	3
		There was a decrease in the number of production during Covid-19 (O1)	0,152	0,016	11
Operational	0,108	There is a delay in the production time of Covid-19 (O2)	0,434	0,047	8
		Inhibited Production Process (O3)	0,414	0,045	9
HR	0,15	Labor Reduction (M1)	0,277	0,042	10
		Limited HR capabilities if marketing online (M2)	0,723	0,108	4

Table 7 above presents the risk rating of the Ketak crafts Small and Medium Enterprises Industry during the Covid-19 pandemic. From

the results of the risk rating, it is known which risks are more important and require greater attention from SME owners. The decline in

revenue during the Covid-19 pandemic is the most critical risk with a risk exposure of 0.212. The second most important risk factor is a decrease in the level of consumer purchasing power with a risk exposure of 0.148. Limited capital is the third most important risk factor with an exposure of 0.122. Then, the fourth most important risk is the limited ability of human resources if marketing online with an exposure of 0.108 and the difficulty of obtaining raw materials during a pandemic is the fifth most important risk with an exposure of 0.098.

Furthermore, the results of the risk ratings in table 7 are depicted in a graph as shown in Figure 2. The graph shows a decrease in risk exposure from various risks. The first significant risk (F1) has the highest risk exposure and then the risk exposure (F2) decreases sharply by 30.2%. So, business owners must focus on reducing these two risks. The next risk group that business owners also need to pay attention to is F3, M2 and S1.

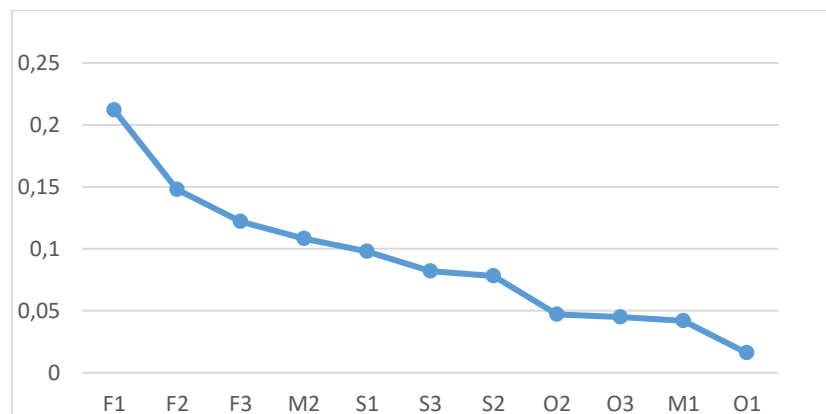


Figure 2. Risk Level Chart

3.2 Risk Management

After the assessment process is carried out, the next step is the risk response process. Risk management is carried out on risks that have high exposure. Risks with a high category will be handled by providing solutions to the risks that occur. The impact caused by the Covid-19 pandemic that affects the sustainability of SMEs, especially for SMEs in the Ketak Industry.

The decline in income during the Covid-19 pandemic is the most critical risk. Handling that is done is financial arrangements by choosing a priority budget and making financial adjustments according to current conditions. The decline in consumer purchasing power during the Covid-19 pandemic is the second most important risk. The handling is done by making the right marketing strategy. The third most important risk is Capital Limitations. Limited capital for SMEs is one of the problems that are often faced by SMEs. The handling is done by establishing cooperation with investors and cooperatives. HR capabilities are limited when marketing online. The handling is by providing training to HR on the use of technology related to marketing using digital media (online) so that HR is able to market their products at any time. Difficult to obtain raw materials during Covid-19. The handling is to determine suppliers and establish cooperation so that the needs of raw materials can be met under any conditions. In addition, improving communication with suppliers also needs to be done.

4. Conclusion

Based on the results of the identification and risk assessment using the AHP (Analytical Hierarchy Process) method in Ketak Craft SMEs during the Covid-19 Pandemic in Central Lombok, it can be concluded as follows: (1) The results of interviews, checklists and literature study there are 4 risk factors and 11 risk subfactors which affect the performance of the Small and Medium Enterprises of Ketak Handicrafts; (2) The order of risk priority based on a questionnaire analysis using the AHP (Analytical Hierarchy Process) method as follows: Decreased income during the Covid-19 pandemic, Decreased consumer purchasing power during the Covid-19 pandemic, Limited Capital, Limited HR capabilities when marketing online and Difficulty in obtaining raw materials

during Covid-19; and (3) Handling the dominant risk in this study using recommendations from implementers in the field that are matched based on previous studies.

References

- Ardia SR. 2017. Analisa manajemen risiko pada industri kecil rotan di Kota Malang. *Journal of Industrial Engineering Management Bravijaya*, 2(2), pp. 40-47.
- Basyaib, F. 2007. Manajemen Risiko. Jakarta: Grasindo.
- Belas, J., Smrcka, L., Gavurova, B., and Dvorsky, J. 2018. The impact of social and economic factors in the credit risk management of SME. *Technological and Economic Development of Economy*, 24(3), pp. 1215–1230.
- Carpitella, S., Certa, A., Izquierdo, J. and Fata, C. M. 2018. A Combinet multi-criteria approach to support FMECA analyses : A real world case. *Reliability Engineering and System Safety*, 169, pp. 394-402.
- Damayanti, R. 2020. Manajemen Risiko melalui Identifikasi dan Pengelompokan Risiko saat Pandemi Covid 19 Studi Kasus UMKM Batik Tulis Lasem di Kabupaten Rembang. *Prosiding Seminar Nasional Unimus*, 3, pp. 1038–1044.
- Ebersberger, B and Kuckertz, A. 2021. Hop to it! The impact of organization type on innovation response time to the COVID-19 crisis. *Journal of Business Research*, 124, pp. 126-135.
- Gorzeń-Mitka, I. 2019. Interpretive structural modeling approach to analyze the interaction among key factors of risk management process in SMEs: Polish experience. *European Journal of Sustainable Development*, 8(1), pp. 339-349.
- Hirawati, H., Sijabat YP. 2020. *Analysis of Risk Management on MSMEs (Case Study of The Bamboo Handicraft Industry)*. *Jurnal REKOMEN (Riset Ekonomi Manajemen)*, (1)4.
- Laura Hardilawat W, 2020. Strategi bertahan UKM di Tengah Pandemi Covid-19. *Jurnal Akuntansi & Ekonomika*, 10(1).
- Misbah, M. 2017. Asesmen Maturitas Manajemen Risiko Perusahaan pada Kontraktor Kecil dan Menengah. *Jurnal Teknik Mesin Mercu Buana*, 6(2), 147-154

- OECD. 2020. SME Policy Responses. https://read.oecd-ilibrary.org/view/?ref=119_119680-di6h3qgi4x&title=Covid-9_SME_Policy_Responses
- Pakpahan, A. K. 2020. Covid-19 Dan Implikasi Bagi Usaha Mikro, Kecil Dan Menengah. *Jurnal Ilmiah Hubungan Internasional*, 59-64.
- Prasetyo, I. J. 2017. Model Analisis dan Strategi Mitigasi Risiko Produksi Keripik Tempe. *Jurnal Teknologi dan Manajemen Agroindustri*, 6(2): 85-96
- Saaty, T. L. 1980. *The Analytic Hierarchy Process*, RWS Publications, Shallowater, TX
- Safi'i, I., Widodo, S. R and Pangastuti, R. L. 2020. Analisis Risiko pada UKM Tahu Takwa Kediri terhadap Dampak Pandemi COVID-19. *Jurnal Rekayasa Sistem Industri*, 9(2), 107–114. <https://doi.org/10.26593/jrsi.v9i2.4003.107-114>
- Sharma, S. K. and Bhat, A. 2012. Identification and assessment of supply chain risk: Development of AHP model for supply chain risk prioritisation', *International Journal of Agile Systems and Management*, 5(4), pp. 350–369. doi: 10.1504/IJASM.2012.050155.
- Sugiri, D. 2020. Menyelamatkan usaha mikro, kecil dan menengah dari dampak pandemi Covid-19. *Fokus Bisnis: Media Pengkajian Manajemen dan Akuntansi*, 19(1), pp. 76–86.
- Trautrim, A., Schleper, M. C., Cakir, M. S and Gold, S. 2020. Survival at the expense of weakest? Managing modern slavery risks in supply chain during COVID-19. *Journal of Risk Research*, (7-8)23, pp. 1067-1072.
- Lu, L., Peng, J., Wu, J and Lu, Y. 2021. Perceived impact of the Covid-19 crisis on SMEs in different industry sectors: Evidence from Sichuan, China. *International Journal of Disaster Risk Reduction*, 55, pp. 1-9