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Building A Competitive Craft Industry from Recycling in Kediri: Moderation Model and Analytical Hierarchy Process Approach

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Abstract

The creative industry of recycled handicrafts is an important sector in driving economic growth and creating jobs in Indonesia. In Kediri City, the development of the recycling handicraft industry is becoming increasingly important considering the high amount of waste generated by community activities in the city. This research is to identify user needs, intangible assets, ecosystem processes, operational activities, and other factors related to the development of the recycling craft industry in Kediri. The method used is a moderation collaboration model with an analytical hierarchy process that can improve influential factors in building a recycled craft creative industry by considering internal operation factors. The results obtained regarding the success strategy of the recycling craft business include meeting user needs, managing Intangible Resources, increasing technological and labor capacity, increasing commercialization of recycled products, managing operational activities, and protecting domestic results, taking into account environmental and social aspects.

Keywords: *economic, creative industries, recycled crafts, environmental, social.*

1. Introduction

The creative industry of recycled handicrafts plays an important role in absorbing labor and driving economic growth in Indonesia. More than 60 million MSME players are active and contribute up to 61.07% of GDP (Amri, 2020; Supriyanto, 2012). These industries must be noticed by the government and society so that they can thrive and compete in this increasingly competitive market (Dewanti et al., 2022; A Komari et al., 2022; Pradana et al., 2020).

The development of the handicraft industry from recycling in Kediri is becoming increasingly important considering the high amount of waste generated by community activities in the city (Prasetyo et al., 2020; Rhohman & Budiretnani, 2018). Therefore, the identification of user needs, intangible assets, ecosystem processes, operational activities, and other related factors must be given special attention in the development of the recycling craft industry in Kediri (Lindahl et al., 2022). In addition, collaboration must be carried out with the government and the community to create a conducive environment for the development of the recycling craft industry to have good sustainability (Forastero, 2023). Thus, the development of the recycling handicraft industry can provide benefits for the environment and the people of Kediri City as a whole.

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This research is with the attraction of collaboration of moderation models with analytical hierarchy processes. This proposed model is to improve user needs, intangible resources, intangible ecosystem factors for Building a Craft Industry from Recycling. Model improvement by designing moderation with internal operation factors. From these factors, priority strategies will be carried out using analytical hierarchy processes to design competitive policies. The location studied is the latest thing, namely in the Kediri area with creative industries that focus on waste management derived from coconut husk, coconut shells, handy craft, wood crafts, bamboo crafts, glass engraving, and jute materials (Sidapotik, 2023).

The creative industry of recycled crafts in Kediri has the opportunity to build a better industry by paying attention to user needs, intangible resources, intangible ecosystem factors moderated by internal operations. The goal in this time is to determine the factors that have a major impact in building the creative industry of recycled crafts by prioritizing the main factors in designing competitive policies.

The findings are theoretically to determine the impact of superior moderation in building creative industries and assess the impact of priorities in policy design. This research will be able to make a major contribution to the sustainability of the creative industry in Kediri with a predetermined competitive policy with a moderation model and analytical hierarchy process.

2. Literature Review

Until now, there are still various gaps in the development of the handicraft industry from recycling (Lisiecki et al., 2023; Skare et al., 2023). Proper waste management to reduce environmental impact is still an unresolved issue (Bao, 2023; Bashir et al., 2023; Haq & Alam, 2023). In addition, financial preparation and sustainable investment are also still obstacles in developing this industry (Agyapong & Tweneboah, 2023; Rittershaus et al., 2023). Products from recycling that are actually intended to protect the environment, are not always promoted appropriately so they do not succeed in reaching a wider market (Gavrila Gavrila & de Lucas Ancillo, 2021; Gerke et al., 2023). A poor product transaction service system is also another problem that affects the reputation of the craft industry from recycling (Howard, Böhm, et al., 2022; Morseletto, 2023). A poor product transaction service system is also another problem that affects the reputation of the craft industry from recycling (Bashir et al., 2023; Forastero, 2023). In addition, marketing systems that are not on target, limited storage space for finished goods, and recycling systems that are not safe for workers are also obstacles in this industry (Tadestarika et al., 2015). In addition, marketing systems that are not on target, limited storage space for finished goods, and recycling systems that are not safe for workers are also obstacles in this industry (Muñoz et al., 2018; Nielsen, 2019).

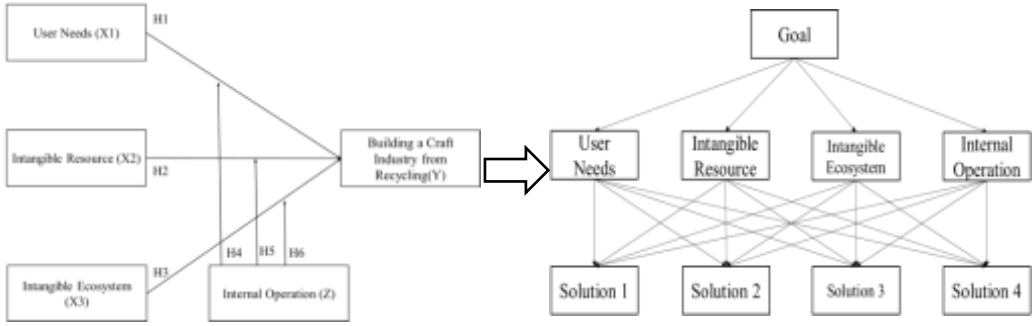

Figure 1. Moderator Model- Analytical Hierarchy Process.

References : (Abdullah et al., 2023; Kayikci et al., 2022; McDougall et al., 2022; Mura et al., 2020; Sekhar et al., 2015; Tamvada et al., 2022a)

3. Methods

Desain Penelitian

Populasi, Ukuran Sampling Dan Teknik Sampling

The population studied is 45 owners of creative craft industries in the city of Kediri. The sample size used corresponds to the population by the saturated sample method (sugiyono, 2016; Sugiyono, 2010). Creative industry category with a product base derived from coconut husk waste, coconut shells, handy craft, wood crafts, bamboo crafts, glass engraving, and jute materials (Sidapotik, 2023).

Instruments

Interview

The interviews were conducted intensely for 3 days from August 3, 2023 to August 5, 2023 to 5 respondents as representatives. These respondents have a history of establishing creative industries for more than 6 years for respondents in AHP (Tamvada et al., 2022a).

Observation

Observation activities were carried out by sampling in the creative industry category of 5 creative industries to determine the basis of the sub-factors used in this study (Safari & Saleh, 2020). Sub-factors derived from the factors studied include user needs, intangible resources, intangible ecosystem, internal operation and building craft industry from recycling.

Research Tools

The research tool used includes offline questionnaires containing respondent characteristics and factors and factors to be filled out by respondents with a likert scale of intervals 1 to 5 (Budiaji, 2013). Microsoft Excel 2016 software for windows for recapitulation of questionnaire results that will be input into IBM SPSS Version 23 software for corrected moderation model process (Field, 2013; Priyatno, 2014). Prioritizing factors to design policy strategies using the AHP method (Abdullah et al., 2023).

Table 1. Variable Operational Definition.

Factor	Sub Factors and References	Codes	Likert Scale
User Needs as identification of user needs for recycled handicraft products (X1)	1) Prioritizing factors to design policy strategies using the AHP method(Agyapong & Tweneboah, 2023) 2) Financial preparation and sustainable investment (Gavrila Gavrila & de Lucas Ancillo, 2021) 3) Products from recycling to protect the environment (Pacheco-López et al., 2023) 4) Increased marketing of recycled products to be right on target (Ana Komari, 2020; Mostaghel et al., 2023) 5) Improved product transaction service system (Güsser-Fachbach et al., 2023; Indrasari et al., 2020; Ana Komari, n.d.; Ana Komari et al., 2019)	1) UNE1 2) UNE2 3) UNE3 4) UNE4 5) UNE5	1 - 5

Factor		Sub Factors and References	Codes		Likert Scale
Intangible Resources are intangible assets that support the handicraft industry's process of recycling (X2)	6)	The intellectual interests of capital with patents of products (Sekhar et al., 2015)	1)	IR1	1 - 5
	7)	Social practices on human resources (Mitra, 2023)	2)	IR2	
	8)	Identify legislative barriers to brands (Debnath et al., 2023)	3)	IR3	
	9)	Consideration of the production process time of recycled products (Mura et al., 2020)	4)	IR4	
	10)	The complexity of implementing the 6Rs and standards from carbon audits to green implementations (Abdullah et al., 2023; Howard, Yan, et al., 2022)	5)	IR5	
Intangible Ecosystem merupakan proses dari industri kerajinan daur ulang secara ekosistem yang tangkas (X3)	11)	User perception of recycled products (Ibáñez-Forés et al., 2023)	6)	IEC1	1 - 5
	12)	Konsistensi perbaikan produk, jam operasional dan proses transaksi (Güsser-Fachbach et al., 2023)	7)	IEC2	
	13)	Menguatkan hubungan bisnis dengan pengguna dan lembaga bisnis untuk ekosistem pemasaran yang lebih baik (Hampton et al., 2023; Kamal et al., 2022)	8)	IEC3	
	14)	Ekosistem rantai pasok tangkas untuk mengurangi waktu tunggu pengiriman produk ke pengguna (Indrasari et al., 2014; Indrasari & Komari, 2021; Kurniawan et al., 2019)	9)	IEC4	
	15)	Adopsi kontingensi sumber daya dan kinerja (Adomako & Ahsan, 2022)	10)	IEC5	
Internal Operation as an operational activity carried out by each creative industry (Z)	16)	Storage space capacity of finished goods (Abbasi, 2011; Mulyadi, 2016)	11)	IO1	1-5
	17)	Worker-safe recycling system (Arfah, 2017; Awali et al., 2018)	12)	IO2	
	18)	Safe recycling system for the creative industry environment and the environment (Syaifudin Zuhri et al., 2020)	13)	IO3	
	19)	Optimization of waste materials with the right product advantage target (Panjaitan & Djunaedi, 2017; Santosa et al., 2021a)	14)	IO4	
	20)	Commercialization of recycled product opportunities (Kumar et al., 2020; McDougall et al., 2022)	15)	IO5	
Building a Craft Industry from Recycling (Y)	21)	Availability of materials for recycling (Arfah, 2017; Istiqomah et al., 2019; Syaifudin Zuhri et al., 2020)	16)	BCIR1	1 - 5
	22)	Availability of manpower and technology with cutting-edge ideas (Indrasari et al., 2021; Santosa et al., 2021b)	17)	BCIR2	
	23)	Protection of domestic products to encourage export activities (Hutami & Kurniawan, 2019; Safari & Saleh, 2020)	18)	BCIR3	

Procedural

Research procedure with Model Moderation – Analytical Hierarchy Process (MM-AHP) as follows.

a) Model moderation begins with item elimination with pearson correlation > 0.312 performed to validate question items from all variables of this study (Bashir et al., 2023; Mitra, 2023). Test reliability with a Cronbach alpha value of > 0.400 to measure the consistency level of the question item (Dey et al., 2022; Rodríguez-Espíndola et al., 2022). The classical assumption test uses only Kolmogorov Smirnov with a p- value of 2 – tailed > 0.05 to determine the level of normality of the variable (Adomako & Ahsan, 2022; Garrido-Prada et al., 2021). Multiple linear regression test to determine revenue accuracy in Building Kediri Handicraft Industry into Circular Economy (Chatterjee et al., 2022; Kamal et al., 2022). Partial test with > 2.42 standard to examine the impact of customer needs, intangible resources and intangible ecosystem on Building Kediri Handicraft Industry into a Circular Economy (Gerke et al., 2023; Ho et al., 2023; Howard, Yan, et al., 2022; Pacheco-López et

al., 2023; Sekhar et al., 2015). A simultaneous test with a standard > of 2.634 was used to test the effect of the variable (Ali et al., 2020; Mura et al., 2020; Scholtysik et al., 2023). The moderation test to evaluate the contribution of customer needs, intangible resources and intangible ecosystem to Building the Kediri Handicraft Industry is moderated by internal operations with a standard of determination value increasing or decreasing with these impacts using intervals of 0.20 to 1.00 to assess the impact of economic circulation in increasing income in the creative industry (Ferreras-Méndez et al., 2022; Forastero, 2023; Lahane & Kant, 2021; McDougall et al., 2022; Mitra, 2023).

b) The AHP method starts designing user needs, intangible resources, intangible ecosystems and internal operations into a hierarchy (Abdullah et al., 2023; Sadeghi et al., 2012). A weighted pairwise comparison was made using the AHP rating scale to determine the importance of each element with a value of 9 declared Absolute more influential, value 7 expressed Very more influential, value 5 stated More influential, value 3 stated Slightly more influential, value 1 expressed Equally influential and 2, 4, 6, 8 expressed Value in between (Kaganski et al., 2018; Lahane & Kant, 2021; Velmurugan et al., 2022). calculate geometric values by determining the importance of 5 selected respondents (0.30; 0.25; 0.20; 0.15; and 0.10) by designing geometric matrices from customer needs, intangible resources, intangible ecosystems and building handicraft industries in Kediri (Balwada et al., 2021; Jayawickrama et al., 2017; Sekhar et al., 2015). Determine the priority of hierarchical factors to obtain the largest eigenvector (Kaganski et al., 2018). Calculate the ratio consistency value with a decision < 0.1 (Tamvada et al., 2022b). Design differentiated global weights (Ho et al., 2023; Mitra, 2023). Design a strategy that is competitive from the global weight (Debnath et al., 2023; Dey et al., 2022).

4. Results and Discussion

4.1. Results

Based on the results of validity testing, it has values from all valid sub-factors at pearson correlation > 0.312 and reliable at Cronbach alpha > 0.400 and it is stated that multiple linear regression tests and model moderation can be carried out.

Moderating Model Correction

Table 2. Moderating Model.

Factors	T_{test}	T_{table}	Sig. 2-Tailed	Decision
User Needs (X1)	2,4803	2,42	0,0427	H1 Accepted
Intangible Resource (X2)	-1.390	2,42	0,173	H2 Reject
Intangible Ecosystem (X3)	1.299	2,42	0,202	H3 Reject
User Needs (X1)* Internal Operation (Z)	2,969	2,42	0,0339	H4 Accepted
Intangible Resource (X2)* Internal Operation (Z)	2,960	2,42	0,0171	H5 Accepted
Intangible Ecosystem (X3)* Internal Operation (Z)	-.890	2,42	0,379	H6 Reject

Sumber: Olah Data, 2023.

Based on the results of the analysis above, there are several decisions that can be taken. First, H1 is accepted, meaning that user needs have a significant influence on company performance. This can be used as a reference to pay more attention to user needs in improving company performance. Second, H2 and H3 are rejected, meaning that intangible resources and intangible ecosystems do not have a significant effect on company performance. However, this does not

mean that these aspects are not important. It is possible that in the context of a particular company, intangible resources or intangible ecosystems can be a more significant factor. Third, H4 and H5 are accepted, meaning that the interaction between user needs and internal operations has a significant influence to the performance of the company. This reflects the importance of synergy between user needs and the company's internal operations in achieving the desired goals. Finally, H6 is rejected, meaning that the interaction between the intangible ecosystem and internal operations does not have a significant effect on company performance. However, it also does not mean that this aspect is not important in the context of a particular company. That user needs and interaction with internal operations are important factors in improving company performance. Meanwhile, intangible resources and intangible ecosystems can remain important factors.

Table 3. Moderating R Square Model.

R Square Model 1	R Square Moderating Model	Decision
18,4%	28,9%	R Square increases

Source: Data Processing, 2023.

Based on the results of the analysis, there was an increase in the value of R Square from model 1 (18.4%) to moderation model (28.9%). This increase shows that the existence of Internal Operation moderators, which are operational activities carried out by each creative industry, is able to have a positive influence on the success of the development of the craft industry from recycling. In addition, factors that become independent variables such as User Needs as identification of user needs for recycled handicraft products (X1), Intangible Resources as intangible assets that support the process of the craft industry from recycling (X2), and Intangible Ecosystem as a process of the recycled craft industry in an agile ecosystem (X3) also contribute to the increase in the value of R Square. From these results, it can be concluded that the development of the handicraft industry from recycling needs to pay attention to intangible factors such as intangible assets and industrial processes that are integrated with an agile ecosystem, and must always understand the needs of product users to improve the success of the development of the industry.

Prioritas Building a Craft Industry from Recycling

Table 4. Geometrix.

No	Criteria	Respondents					Criteria	Geometrix
		0,30	0,25	0,20	0,15	0,10	1,000	
1	User Needs	1	2	6	1	6	Intangible Resource	2,04
2		1	2	1	9	1	Intangible Ecosystem	1,65
3		9	1	1	2	2	Internal Operation	2,30
4	Intangible Resource	1	1	1	1	2	Intangible Ecosystem	1,07
5		6	1	1	9	2	Internal Operation	2,55
6	Intangible Ecosystem	1	8	6	1	1	Internal Operation	2,41

Source: Data Processing, 2023.

Based on the data in the table, there are six criteria assessed by respondents. These criteria have different weights, namely 0.30; 0,25; 0,20; 0,15; and 0.10. The total weight for all six criteria is 1,000. The first criterion is User Needs, which are assessed by respondent 1 with weight 2, by respondent 2 with weight 6, by respondent 3 with weight 1, by respondent 4 with weight 1, by respondent 5 with weight 1, and by respondent 6 with weight 8. Based on these results, the geometric value for the User Needs criterion can be calculated, which is 2.04. The second

criterion is Intangible Resource, which is assessed by respondent 1 with weight 1, by respondent 2 with weight 1, by respondent 3 with weight 9, by respondent 4 with weight 1, by respondent 5 with weight 6, and by respondent 6 with weight 1. From these weight values, a geometric value for the Intangible Resource criterion can be calculated, which is 1.07. The third criterion is Intangible Ecosystem, which is assessed by respondent 1 with weight 6, by respondent 2 with weight 1, by respondent 3 with weight 1, by respondent 4 with weight 1, by respondent 5 with weight 9, and by respondent 6 with weight 1. Based on these weight values, a geometric value can be calculated for the Intangible Ecosystem criterion, which is 1.65. The fourth criterion is Internal Operation, which is assessed by respondent 1 with weight 1, by respondent 2 with weight 9, by respondent 3 with weight 2, by respondent 4 with weight 1, by respondent 5 with weight 2, and by respondent 6 with weight 1. From these weights, the geometric value for the Internal Operation criterion can be calculated, which is 2.30. Based on the results of geometric calculations for each criterion, it can be concluded that Internal Operations is the most important criterion, followed by User Needs, Intangible Ecosystem, and Intangible Resources. This can be a guide in decision making to improve the performance of an organization or company.

Table 5. Comparison Matrix.

	User Needs	**Intangible Resource**	**Intangible Ecosystem**	**Internal Operation**
User Needs	1	2,04	1,65	2,30
Intangible Resource	0,49	1	1,07	2,55
Intangible Ecosystem	0,49	0,93	1	2,41
Internal Operation	0,49	0,93	0,42	1
Total	2,474	4,902	4,141	8,256

Source: Data Processing, 2023.

Based on the data in the importance matrix, it can be seen that the internal operation factor is the most influential factor on other aspects of the business. This can be seen from the highest total value which reached 8,256. Improving internal operations can have a positive impact on other aspects such as increasing intangible resources, intangible ecosystems, and also user needs. Meanwhile, the intangible ecosystem aspect also has a significant value with a total of 4,141. In today's modern business, maintaining a healthy and productive business environment is essential to building long-term relationships with customers and adding value to the company. This factor can also affect other aspects such as intangible resources and user needs. The data in this interest matrix can be a guide for entrepreneurs and business managers in making decisions regarding business strategies to be implemented. Attention to the internal functioning of the business and a healthy environmental ecosystem can be the key to success in developing a sustainable business and providing value to society.

Table 6. Ratio Consistency.

	User Needs	**Intangible Resource**	**Intangible Ecosystem**	**Internal Operation**	**Total**	**Eigen**	**VA**	**Lambda Max**	**CI**	**CR**
User Needs	0,404	0,415	0,399	0,278	1,497	0,3743	1,6000 7	4,3294	0,0823 05	0,0915
Intangible Resource	0,199	0,204	0,259	0,309	0,970	0,2426	1,0627 6			
Intangible Ecosystem	0,199	0,190	0,242	0,291	0,922	0,2304 8	1,0079 6			
Internal Operation	0,199	0,190	0,100	0,121	0,610	0,1526	0,6586			

Total	1	4,3294

Source: Data Processing, 2023.

From the table above, it can be seen that the highest eigenvalue (main value) is found in the User Needs category with a value of 0.37, followed by the Intangible Resource and Intangible Ecosystem categories with eigenvalues of 0.24 and 0.23 respectively. While the Internal Operation category has the lowest eigenvalue of 0.15. The lambda max value, or the maximum value of all pairwise comparison ratios for each category, is highest in the User Needs category with a value of 4.33. This shows a lower level of consistency in the category because it has a higher CI (Consistency Index) value of 0.08 and a Consistency Ratio of 0.09. Overall, the eigenand CI values of each category indicate that the top priorities in an indirect economic perspective are meeting user needs and managing intangible resources and intangible ecosystems. However, to improve overall consistency, it is necessary to balance between all existing factors, including the management of effective internal operations.

Table 7. Ranking Strategi.

	Total	**Rank**
User Needs	1,497	1
Intangible Resource	0,970	2
Intangible Ecosystem	0,922	3
Internal Operation	0,610	4

Source: Data Processing, 2023.

The table above shows the ranking of strategies based on the results of previous analysis. Based on the ranking, the most important strategy is a strategy related to meeting user needs with a total value of 1,497 and reaching the first position in the ranking. Then, strategies related to the management of intangible resources (Intangible Resource) ranked second with a total value of 0.97. Then, strategies related to intangible ecosystem management ranked third with a total value of 0.922. Finally, strategies related to managing internal operations (Internal Operations) ranked fourth with a total value of 0.61. This ranking can help decision makers focus on the most important strategies first, namely meeting user needs and managing intangible resources. However, it should still be noted that all these factors must still be balanced and managed properly to achieve sustainable business goals.

4.2. Discussions

Based on the identification of factors that support the recycling craft industry, there are several strategies that can be applied to achieve sustainable business goals. Based on the strategy ranking table, it can be seen that the most important strategy is a strategy related to meeting user needs (User Needs) with a total value of 1,497 and reaching the first position in the ranking. This shows that it is important to pay attention to the needs and desires of users in the recycling craft industry. In business, meeting user needs is one of the important factors that must be considered so that the business can survive and grow. If user needs are met, then users tend to feel satisfied and become loyal customers. Conversely, if the user's needs are not met, then the user will likely switch to competitors who offer products that better suit their needs. Therefore, strategies related to meeting the needs of users in the craft industry from recycling is a very important step to increase business success. By paying attention to user needs, the resulting product will be more in line with what is desired and customers will feel satisfied with the products offered. This can increase customer trust in the business and increase their loyalty to the products produced. In addition, it is necessary to manage Intangible Resources (X2)

such as social practices in human resource management and consideration of the production process time of recycled products in order to increase efficiency and productivity. Another strategy is to increase the technological capacity and workforce that is up to date in the craft from recycling industry (X3) and increase the commercialization of recycled product opportunities. In the management of operational activities (Z), it is necessary to improve the optimization of waste materials with the right product targets and pay attention to occupational health and safety aspects by providing a recycling system that is safe for workers and the environment. In addition, it is necessary to support the recycling handicraft industry with domestic yield protection policies to encourage export activities. Through this strategy, it is expected to achieve sustainable business goals by paying attention to environmental and social aspects in the management of the handicraft industry from recycling.

5. Conclusion

Strategies to achieve the success of the recycling craft business include meeting user needs, managing Intangible Resources, increasing technology and manpower capacity, increasing commercialization of recycled products, managing operational activities, and protecting domestic products to encourage exports. By paying attention to environmental and social aspects, it is hoped that this strategy can bring the goals of the recycling craft business to sustainable success.

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