

Enhancing ethic integrity and human resource development to build a sustainable banking business model in indonesia

Sobar M Johari^{a,*}, Wing-Keung Wong^b, Jenho-Peter Ou^c

^a Department of Sharia Economics, Universitas Muhammadiyah Yogyakarta (UMY), Indonesia.

^b Department of Finance, Fintech & Blockchain Research Center, and Big Data Research Center, Asia University, Taichung 41354, Taiwan,

^c Department of Finance, Asia University, Taiwan

Received 10 June 2024 ; Revised 25 August 2024 ; Accepted 02 September 2024

Abstract

In recent years, researchers and intellectuals have paid close attention to Sustainable Banking. Such interest has sparked several debates on the matter, resulting in a significant amount of study in Sustainable Banking throughout the years. An empirical study on Sustainable Banking and profitability for sustainable development has yielded varied outcomes. This study contributes to developing and improving Sustainable Banking by integrating social, resource, and ethical integrity factors of sustainability. This study uses fuzzy logic and the DEMATEL model to identify and evaluate the interdependence of two factors, ethical integrity, and sustainable human resource development. The results of the study indicate that the critical ethical factors are "fairness and equity covering the customer treatment, honesty, and integrity, corporate governance" in the banking industry in Indonesia ethics integrity, and HRD. Despite the importance of this topic, there has been a lack of empirical evidence until recently. In this paper, we take stock of the empirical evidence in the literature through a banking managerial lens.

Keywords: Fairness; Equity, Honesty; Integrity; Fuzzy Method; DEMATEL analysis

1. Introduction

Sustainable Banking is an evolving concept with an important role in the cross-cutting areas of environmental policy, financial institution operations, and socio-economic growth (Chen et al., 2022). Sustainable Banking is a means to combine operational improvements, technology, and changing client habits in the banking business (Biswas, 2011). It is a win-win situation for all to bring benefits to an increasingly competitive marketplace. An adoption of green banking practices is not only useful for the environment, but also beneficial in greater operational efficiencies, a lower vulnerability to manual errors and fraud, and cost reductions in banking activities. In fact, banking has started to offer some of the services towards going green which are necessary for businesses to enjoy these benefits. However, understanding to build and maintain the quality of services in banking is still the main concern of business today. In addition to the importance of implementation, Sustainable Banking must also pay attention to human resources services (Chen et al., 2022). Better service quality in delivery is important for service companies. Service quality has always faced three main challenges consisting of improving service quality, increasing ratings and reliability when competition is increasing, and efforts to gain and retain customers (Tseng, 2017).

When environmental issues get greater attention, pressure is placed on all industries, including financial services, to implement "green" initiatives (Falcone et al, 2018). While Sustainable Banking has not been the main reason for most customers to choose one financial institution above the others, customer demands, and greater environmental awareness encourage several financial institutions to go

green. The environment is the focus among ethical banks, and many conventional banks want to appear more ethical-oriented or use more environmental practices to their advantage. Generally, bankers consider themselves in an industry that is relatively environmentally friendly (Biswas, 2011). However, given their potential exposure to risk, examining the environmental performance of their clients has been very slow. The reason stated for this is that checks such as this will 'require interference' with the client's activities; while the desire not to interfere in the client's business is valid, one can also note that banks must intervene in their clients' business regularly to ensure that the client's business plan can run before issuing them a loan. The type of analysis in which all banks take part is called the bottom-line analysis. It can be debated whether a baseline analysis carried out or an analysis that considers the environmental, social, and financial performance will be more intrusive in terms of the banking sector.

As far as the internal ethics of the bank are concerned, it begins by examining aspects of human resources oriented towards employee welfare, employee and customer satisfaction, benefits, wages, unions, fair sex and race representation, and standing environmental banks. Environmental potential combined effects from banks turn to more environmentally friendly practices. However, compared to many other economic bank sectors, it does not carry the same energy, water, and paper loads. In general, all banks play an intermediary role in the economy because banks can contribute to sustainable development. Therefore, banks can also develop more sustainable products like the environment, social investment, human resources, ethics, and economy. In addition, banks have a big opportunity to increase internal environmental performance. In creating

* Corresponding author Email address: sobar@umy.ac.id

environmental and social screens, banks can promote social or eco-friendly companies and punish those who do not comply.

On the other hand, when banking regulations in Indonesia concerning Sustainable Banking already exist but not many have implemented them, the problem also lies in the extent to which the policymakers in the banking industry are aligned with this decision. Therefore, this study aims to develop a Sustainable Banking model in Indonesia and understand the business model and how policymakers in the banking industry in Indonesia make decisions in implementing Sustainable Banking programs.

In Indonesia, one industry that seeks to show its concern for the environment is the banking sector. This sector is trying to develop environmentally friendly banking known as Sustainable Banking. The World Economic Forum in the 2018 report puts the economy and environment as the world's main risks. Both have a relationship where it is believed that environmental damage caused by unsustainable industrial governance hurts the global economy (Fu, Lin et al, 2014). The basic principle of Sustainable Banking is an effort to strengthen the ability of bank risk management, especially those related to the environment, and encourage banks to increase their environmentally friendly financing portfolio, such as renewable energy and organic agriculture (Fang, Hasan, & Marton, 2014).

This study will evaluate a set of Sustainable Banking characteristics based on the preferences of banking policyholders, with preferences serving as a measure of qualitative information. This study therefore uses the fuzzy Delphi (FDM) approach to obtain a list of valid qualities. Fuzzy set theory is presented to transform linguistic preferences into sharp values in order to facilitate comparisons between the preferences of policymakers in the banking industry. In addition, there are complicated interrelationships between banks, customers, and governments. As a result, this study employs the decision-making trial and evaluation laboratory (DEMATEL) to examine qualitative characteristics and links, as well as complex and interconnected groupings (Tseng et al., 2017). In addition to translating causal links between variables into a visual interrelationship map, the DEMATEL technique justifies improvement criteria in practice (Tseng et al., 2020). Therefore, the goal of this study is to evaluate the following attributes: *First*, to create a collection of valid Sustainable Banking attribute models based on qualitative data. *Second*, to determine the causal links between characteristics and language preferences. *Third*, justify the requirements for practical progress in the execution of Sustainable Banking in the face of uncertainty.

This study contributes to Sustainable Banking theory and practice. These contributions include (1) offering a set of attributes of a valid Sustainable Banking model, (2) resolving causal linkages between attributes, and (3) supplying the banking industry with practical improvement tools to implement Sustainable Banking. This study enables stakeholders to identify the root causes of challenges in the Sustainable Banking implementation process.

The structure of this study is as follows: Section 1 describes the study's shortcomings and aims. The second section examines Sustainable Banking literature, covering theory and characteristics. The third section outlines the

methodology and data analysis. Section 4 explains the findings and provides numerical data for the investigated characteristics. In Section 5, contributions to theory and practice are discussed. Section 6 concludes the study with its results and limitations.

2. Literature Review

This section includes Sustainable Banking literature and the proposed measures in this study.

2.1. Sustainable banking

The emergence of new sustainable development paths that are environmentally friendly because of the shared evolution of two interrelated subsystems, technology-economy and socio-institutional, initiate various innovations that can change the formation of existing systems. According to Falcone et al., (2018), every trajectory of innovation, such as the financial industry, must face an unfavorable and often inhospitable environment. As Dosi observed, the dominant technological paradigm is characterized by a strong effect of exclusion because it focuses on a rather precise technological direction and, as such, does not know the possibility of other technologies (Cahen-Fourot & Lavoie, 2016). The possibility of eliminating the trajectory and practices received in the activity system to solve problems is usually carried out beforehand; this also applies in the banking industry to building a Sustainable Banking model in Indonesia.

Some studies show a positive correlation between environmental performance and financial performance (Liang, et al, 2018). Thus, banking institutions in the current context need to consider environmental performance when deciding whether to invest in the company or advise clients to do so. The establishment of different rules by integrating social, environmental, human, and ethical aspects is seen as a significant contributor to the recent increase in environmental accountability for banking institutions (Fang, et al, 2014). The application of these principles offers significant benefits to banking institutions, consumers, and stakeholders. Credit risk is also related to loans to real estate security whose value has been reduced due to environmental problems known as additional losses in the event of default. Furthermore, the risk of default on loans is due to environmental liabilities due to fines and legal liabilities and the reduced priority of debtors for payments due to bankruptcy.

In fact, in some cases, banks have been responsible for actions that have occurred where they have guaranteed interest (Chaudry, et al, 2018). There are also some cases where the environmental management system has resulted in cost savings, increased bond values, etc. In some cases, environmental management systems produce lower risk, greater environmental management, and increased operating profit. The involvement of social aspects also reduces the risk of bad credit due to public trust in the institution. Banking and financial institutions must prepare guidelines for environmental risks and liabilities to develop protection and reporting policies for each project financed or invested. Therefore, according to Yip & Bocken (2018) Banks should

make loan criteria that seek to filter borrowers who have negative impacts on the environment and /or the community. The central banks in Indonesia BI are of the view that it is important to develop environmentally friendly banking and have been implemented in banking regulations in Indonesia. There are two main reasons why BI considers this important. "First, responding to Law No. 32 of 2009, concerning Protection and Management of the Environment which requires all economic activities to obediently encourage environmental sustainability by giving sanctions both criminal to perpetrators to revocation of environmental permits. If this is not considered by banks, it will potentially increase credit risk, legal risk, and reputation risk. The second reason is that the national problem in Indonesia as homework, includes food and energy security. Both sectors have a significant influence on the economy. It can be seen from the relatively large imports, fluctuations in the price of these commodities that affect inflation and exchange rate pressures, as well as the state budget deficit. If banks support financing for the energy sector and food security,

they will support the creation of energy and food self-sufficiency, while helping to reduce greenhouse gases (Manlagnit, 2015). In this case, the scope of green finance can be extended to other strategic sectors, such as services or transportation, industry, housing, and creative economic products that prioritize the principles of green. Apart from these two things, the importance of national banking in developing Sustainable Banking is also one of the efforts to improve banking competitiveness in Indonesia.

2.2. Purpose measures

Sustainable Banking is a banking model that has a potentially positive effect on sustainable growth through the combination of social impact, environmental management, economic performance, human resource development, and ethical attributes into managerial decisions. Table 1 contains a quick explanation of the suggested measures' characteristics and criteria, with more thorough descriptions following.

Table 1
Aspect and Criteria Sustainable Banking

No	Aspect	C	Criteria	Description	References
AS1	Social impact	C1	Encourage sufficiency	Solutions that actively seek to reduce the utilization of banking products or service	(Yip & Bocken, 2018)
		C2	a stewardship role adoption	Proactively engaging with all stakeholders to ensure their long-term health and well-being	(Yip & Bocken, 2018)
		C3	Cooperation with community	Cooperate with small industries and proactive development	(Sobhani, et al, 2012)
		C4	The contribution of a separate body to CSR activities	Fund allocation for CRS activities, both managed by themselves and other agencies	(Sobhani, et al, 2012)
AS2	Environmental management	C5	Energy saving policies	Energy saving policy in the company	(Sobhani, et al, 2012)
		C6	Investing in energy projects	Investment priority or lending to renewable energy	(Sobhani, et al, 2012)
		C7	Investing in renewable energy	Priority of investment or lending to renewable energy	(Sobhani, et al, 2012)
		C8	Substitute with digital processes	Reduction of environmental impacts and increase in business resilience by using digital channels to deliver services.	(Yip & Bocken, 2018)
AS3	Economic performance	C9	Margin improvement	This can be achieved through actions that increase operational effectiveness, such as eco-efficiency measures and creating premium pricing opportunities through enhanced customer loyalty, product differentiation, and gaining access to new market segments.	(Stankeviciene & Nikonorova, 2014), (Sobhani, et al, 2012)
		C10	Risk reduction	Sustainability actions can reduce both financial risk and protect corporate and brand reputations through actions that create positive stakeholder relationships, generate community support, and increase employee loyalty; thereby reducing the risk of delay in new product introductions and negative shareholder resolutions.	(Stankeviciene & Nikonorova, 2014), (Sobhani et al., 2012)
		C11	Capital efficiency	Return on investment improved by reducing working capital requirements, replacing products with services, or materials with knowledge	(Sobhani et al., 2012)
		C12	Sustainable financial	Scaling up through sustainable financial	(Yip & Bocken, 2018)

			products	products, allows more customers to participate in the economic return of sustainability	
		C13	Resilience in loan granting	Lending criteria that seek to screen out borrowers with a negative impact on the environment and/or society	(Yip & Bocken, 2018)
AS4	Human Resource Development	C14	Commitment to HR development	a long-term human resource development plan and commitment to run it	(Sobhani et al., 2012)
		C15	Talent attraction and retention workers	a vital role in supporting global, and thus, an appropriate policy is required to retain talented workers and to recover the difficulty of talent labor mobilization	Scullion et al. (2008)
		C16	Developing professionalism among the employees	The company always directs employees to develop their professionalism	(Sobhani, et al, 2012)
		C17	Sending employees abroad for professional training	employee competitiveness improvement by sending to several banking professional training	(Sobhani, et al, 2012)
AS5	Ethic Integrity	C18	Honesty and integrity	The company places the principles of honesty and integrity as the foundation in operation	(Ferreira et al, 2016)
		C19	Corporate Governance	Mechanisms, processes, and relationships where the corporation is properly controlled and directed	(Ferreira et al, 2016)
		C20	Commitment to costumers	The company has a high commitment to costumers to solve problems related to business and settlement of credit arrears	(Ferreira et al, 2016)
		C21	Fair and equitable treatment of customers	Positioning and serving consumers in the same position, not discriminating.	(Ferreira et al, 2016)

2.3. Social Impact

Although the level of implementation of Sustainable Banking has been insufficient, Sustainable Banking as a form of social responsibility has the potential to boost a bank's reputation in the eyes of investors by projecting a good image (Rosdwianti & Dzulkriom AR, 2016). Additionally, Sustainable Banking can help minimize paper usage costs, increase profitability (Dialysa, 2015), and mitigate environmental dangers (Weber, 2016). Yip & Bocken (2018) mention that one of the most distinctive characteristics of Sustainable Banking must have a social impact, including encouraging sufficiency and stewardship role adoption. In addition, other social impacts are also such as cooperation with the community, which means Cooperating with small industries and proactive development and the contribution of a separate body to CSR activities (Sobhani et al., 2012).

2.4. Environmental management

Banking also requires environmental management. Therefore, programs such as Energy-saving policies, investing in energy projects, and investing in renewable energy are important for energy sustainability and environmental contribution. Meanwhile (Yip & Bocken, 2018) also added the need for a reduction in environmental impacts and an increase in business resilience by using digital channels to deliver services or, in other words, substitute with digital processes.

2.5. Economic performance

Numerous prior research studies have examined the effect of

sustainable banking practices on financial performance and vice versa, but the findings remain equivocal. According to Rajput et al. (2013), Sustainable Banking practices have little effect on financial performance. On the other hand, Hamilton (1995) asserts that the expense of compliance through the provision of required environmental information/reporting has a detrimental influence on a company's profitability. As a financial institution, banking in economic performance is also very important, considering that the main purpose of banking is to maintain financial stability to gain the trust of customers or owners of third-party funds (Johari. M, 2014). Therefore, margin improvement is a concern, and banks must also consider risk reduction (Stankeviciene & Nikonorova, 2014). In addition, capital efficiency also needs to be a priority in maintaining a balance of income (Sobhani, et al, 2012). In the end, banking to maintain economic performance also requires sustainable financial products and resilience in load grating (Yip & Bocken, 2018).

According to Uwuigbe et al. (2018), the sustainability report benefits stock performance because it demonstrates the firm's commitment to maintaining favorable relationships with its investors so they can continue investing in the company. Additionally, it can foster long-term revenue growth by expanding the bank's customer base and staff resources and occasionally increasing its revenues.

2.6. Human resource development

As an institution that requires the availability of many human resources, banking also requires a commitment to human resource development. In addition, human resources must also be directed at developing professionalism among the

employees (Úbeda et al., 2022). Thus, programs such as Sending employees abroad for professional training are very much needed (Sobhani, et al, 2012). But remember that every human resource needs to channel their talents so that every human resource in banking has room to develop. Therefore, talent attraction and retention of workers are needed (Scullion et al. (2008).

2.7. Ethic

In sustainable banking, ethics are no less important. Instilling the principle of honesty and integrity in workers must become a basic characteristic. Even according to Ferreira et (2016), banking ethics in relation to other parties must also be carried out strictly, such as Corporate Governance, Commitment to customers, and Fair and equitable treatment of customers.

3. Proposed Method

This section includes the industrial background and the proposed analytical fuzzy DEMATEL method.

3.1. Industrial background

The banking program has a strict assessment in 5 aspects, namely: social impact, environmental management, economic performance, human resource development, and ethics. In this case, Sustainable Banking achieves a significant need to encourage criteria from these aspects in the institution. Several banks in Indonesia already have a list of programs in Sustainable Banking including these four aspects. In terms of legality and regulations, Bank Indonesia as the central bank in Indonesia has echoed the policy authority.

This study collects the preferences of 21 banking managers in Indonesia. The managers have over 10 years of experience managing banking in Indonesia. This research was conducted with face-to-face interviews to increase the validity of the experts. Therefore, the measure is satisfied with the content, and the expert validity of the literature and expert views on sustainable Banking.

3.2. Fuzzy DEMATEL

The fuzzy DEMATEL is a powerful fuzzy aggregation technique for converting human evaluations into language variables. Due to the nature of human judgments, qualitative information is always imperfect and subjective. The preferences in linguistics are transformed into triangular fuzzy numbers. The defuzzification process converts fuzzy

$$s = (s\tilde{z}_{1ij}^f, s\tilde{z}_{2ij}^f, s\tilde{z}_{3ij}^f) = \frac{(z_{1ij}^f - \min z_{1ij}^f)}{\Delta_{min}^{max}} = \max z_{3ij}^f - \min z_{1ij}^f \tag{1}$$

Where $\Delta_{min}^{max} = \max z_{3ij}^f - \min z_{1ij}^f$,

Compute left (Abad et al.) and right (rt) normalized value:

$$(slt_{1ij}^n, srt_{1ij}^n) = \left(\frac{sz_{2ij}^f}{(1+(1+sz_{2ij}^f - sz_{1ij}^f))}, \frac{sz_{3ij}^f}{(1+(1+sz_{3ij}^f - sz_{2ij}^f))} \right) \tag{2}$$

Total normalized crisp value:

numbers into crisp values and develops the translation of fuzzy data into crisp values by determining the left and right values using the fuzzy minimum and maximum. The total weighted values are calculated using fuzzy membership functions from a weighted average $\tilde{z}_{ij}^f = (\tilde{z}_{1ij}^f, \tilde{z}_{2ij}^f, \tilde{z}_{3ij}^f)$. The triangular fuzzy numbers are converted into crisp values and applied to the DEMATEL total direct relation matrix the crisp value is utilized as shown in Table 2

Table 2
Fuzzy linguistic preferences

Linguistic Preferences	\tilde{z}_{1ii}^f	\tilde{z}_{2ii}^f	\tilde{z}_{3ii}^f
Very low important	0	0.1	0.3
Low important	0.1	0.3	0.5
Important	0.3	0.5	0.7
High important	0.5	0.7	0.9
Very high important	0.7	0.9	1.0

DEMATEL enables analysis and solves problems using a visualization method. The DEMATEL depicts the interrelationships and the influential effects between cause-and-effect groups to dram the causal and effect diagram. The attributes are divided into cause-and-effect groups. A visual relationship among the attributes provides a better understanding of the structural relationship among aspect and criteria groups [37–39]. The DEMATEL method is applied to construct a causal network structure among the sustainable investment attributes based on investor preferences. The interrelationships between cause-and-effect attributes are converted. A set of attributes $S = (S_1, S_2, S_3, \dots, S_n)$ and particular pairwise interrelationships are for modeling in a mathematical relation. The procedure is described as follows.

The interrelationship scale is designed into a five-point scale in linguistic preferences ranging between 0 standing for no influence, 1 for very low influence, 2 for low influence, 3 for high influence, and 4 for very high influence. If a decision group has n members; take \tilde{z}_{ij}^f to present the fuzzy weight of the i th attribute affects the j th attribute assessed by f_{ij} evaluators.

Normalization:

$$S_{ij}^f = \frac{[slt_{ij}^f(1-slt_{ij}^n) + (srt_{ij}^f)^2]}{(1+slt_{ij}^f - srt_{ij}^f)} \tag{3}$$

The subjective judgment for an evaluator is

$$\widetilde{y}_{ij}^f = \frac{1}{f} (\widetilde{z}_{ij}^1 + \widetilde{z}_{ij}^{f2} + \widetilde{z}_{ij}^3 + \dots + \widetilde{z}_{ij}^f) \tag{4}$$

Define an initial direct relation matrix (IDRM), a $n \times n$ matrix obtained by pair-wise comparisons. In matrix IDRM, z_{ij} has been denoted as the degree to which the criterion i affects the criterion j , i.e., IDRM = $[z_{ij}^f]_{n \times n}$.

$$X = \omega \times Z \tag{5}$$

Where, $\omega = \frac{1}{\max_{1 \leq i \leq f} \sum_{j=1}^f z_{ij}^f}$

The total relation matrix (X) is obtained and uses

$$Y = \lim_{f \rightarrow \infty} (X + X^2 + \dots + X^3)^n = X(1 - X)^{-1} \tag{6}$$

A causal diagram- the vector D represents the sum of rows and vector R represents the sum of columns within the total relation matrix U. A causal and effect group can be designed by mapping with (D + R, D - R). The horizontal axis vector (D + R) has been given the name "Prominence."

$$X = [X_{ij}]_{n \times n}, i, j = 1, 2, \dots, n \tag{7}$$

$$D = [\sum_{i=1}^n X_{ij}]_{n \times n} = [X_i]_{n \times 1} \tag{8}$$

$$R = [\sum_{j=1}^n X_{ij}]_{n \times n} = [X]_{1 \times n} \tag{9}$$

4. Empirical Analysis

4.1. Interrelationships among Aspects

Table 3 depicts the defuzzification process, which uses) (4).

Table 3
Total Aspect direct relation matrix

	A1	A2	A3	A4	A5
A1	4.571	4.678	4.503	4.634	4.671
A2	4.665	4.895	4.624	4.769	4.821
A3	4.272	4.463	4.255	4.389	4.425
A4	4.696	4.905	4.660	4.905	4.898
A5	4.820	4.981	4.750	4.937	5.022

Table 4
The aspect's prominence and relation axis for the cause-and-effect group

	D	R	D+R	D-R
A1	23.058	23.023	46.081	0.035
A2	23.773	23.922	47.695	(0.148)
A3	21.803	22.791	44.594	(0.988)
A4	24.064	23.634	47.698	0.429
A5	24.509	23.837	48.345	0.672
MAX			48.345	0.672
MIN			44.594	(0.988)
AVERAGE			46.883	0.000

aggregated the synthetic value using the equation below:

Standardizing the direct relation matrix IDRM—Using matrix F to obtain matrix X by multiplying matrix Z with ω .

matrix X to calculate the total relation matrix Y .

The vertical axis (D - R) has been given the name "Relation." When the sum of (D - R) is negative, the criterion is grouped into the effect group, and when the sum of (D - R) is positive, the criterion falls into the effect group.

Equations (1)– (3) to convert the TFN into a crisp value (3). Using Equation, the crisp values ($ncvkij$) are aggregated into the initial direct relation matrix (IDM

From the aspect's prominence and relation axis for cause-and-effect groups, we can show the aspect's causal effect diagram. The aspect's causal effect diagram is taken after getting the horizontal axis (D + R) and the vertical axis (D -

R). Whereas (D + R) refers to the strength of influence between criteria, (D - R) refers to the relationship of influence between criteria. The aspect's causal effect diagram is shown in Figure 1.

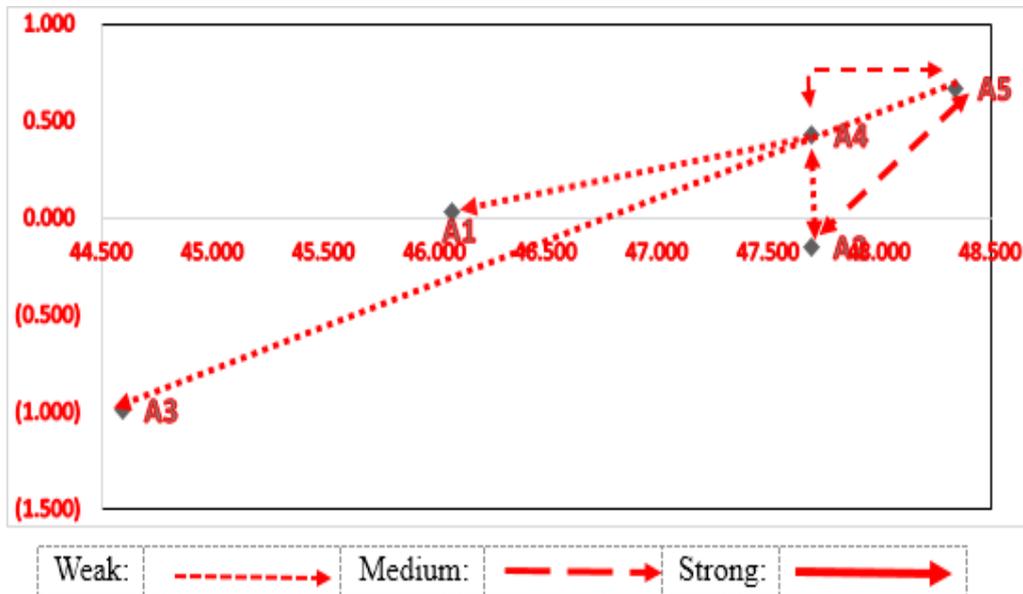


Fig. 1. Aspect's causal effect diagram

This study combines the Fuzzy System Theory and DEMATEL method to evaluate enhancing ethics and human resource development to build a Sustainable Banking business model in Indonesia. The results are summarized based on the causal diagram as follows. The Social impact aspect (A1), human resource development (HRD) (A4), and Ethics (A5) are classified into the cause aspect group, while the effect aspect group includes environmental management (A2) and economic performance (A3), which needs to be improved. They should be the focus since causal factors influence the effect group aspect. The cause group aspect refers to the implication of the influencing criteria, while the effect group aspect refers to the implication of the influenced aspect. Considering the interdependence among factors, much attention should be paid to the cause group aspect related to their influence on the effect group aspect. Therefore, by improving cause factors, effect factors are developed simultaneously. Therefore, A1, A4, and A5 are critical factors of aspect to be considered in enhancing ethics and human resource development to build a Sustainable Banking business model in Indonesia. The most significant causal factor enhancing ethic and

human resource development to build a Sustainable Banking business model in Indonesia is the ethic aspect (A5) has the highest (D-R) value with 0.672, which means (A5) should be given more consideration on the enhancing ethic and human resource development to build a Sustainable Banking business model in Indonesia. Besides, Table 3 shows that the influential impact degree of (A5) is 24.509, ranked the highest among all causal factors. In common, (A5) is the main factor that requires more consideration to build a Sustainable Banking business model process. "Human resource development (A4)" has a significant impact on other cause group factors with the second highest (D-R) degree. Furthermore, (A4) has the second highest D value (24.064) among the causal factors regarding prominent impact degree. Likewise, the "Social impact aspect (A1)" is another significant factor because the D-R value is in the third place (0.035). Besides, A5 has the highest D value (24.509).

Considering results, managers can determine the regular actions that must be taken in building a Sustainable Banking business model. More detailed actions in the criteria for developing Sustainable Banking in Indonesia are given in Table 4.

4.2. Causal criteria group

Table 5
Criteria total direct relation matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21
C1	0.7967	0.7803	0.7731	0.7637	0.7470	0.7612	0.7702	0.7383	0.7226	0.7565	0.7805	0.7794	0.7552	0.7442	0.7594	0.7276	0.7233	0.7518	0.7770	0.7709	0.7739
C2	0.8077	0.8345	0.8083	0.7933	0.7759	0.7921	0.8065	0.7761	0.7536	0.7858	0.8132	0.8174	0.7971	0.7850	0.7965	0.7590	0.7545	0.7801	0.8182	0.7988	0.8085
C3	0.8062	0.8110	0.8153	0.7842	0.7738	0.7947	0.7959	0.7704	0.7447	0.7770	0.8028	0.8023	0.7821	0.7726	0.7893	0.7525	0.7447	0.7656	0.8024	0.7933	0.7893
C4	0.7705	0.7747	0.7670	0.7742	0.7373	0.7573	0.7592	0.7351	0.7074	0.7390	0.7676	0.7656	0.7431	0.7424	0.7565	0.7202	0.7120	0.7359	0.7824	0.7601	0.7594
C5	0.7391	0.7454	0.7385	0.7236	0.7422	0.7305	0.7418	0.7151	0.6918	0.7267	0.7410	0.7461	0.7257	0.7168	0.7242	0.6890	0.6857	0.7011	0.7550	0.7348	0.7331
C6	0.7468	0.7527	0.7387	0.7296	0.7223	0.7615	0.7395	0.7185	0.6942	0.7297	0.7562	0.7509	0.7294	0.7229	0.7385	0.6951	0.6867	0.7066	0.7411	0.7491	0.7391
C7	0.7592	0.7640	0.7574	0.7452	0.7311	0.7452	0.7753	0.7315	0.7047	0.7351	0.7596	0.7574	0.7378	0.7353	0.7488	0.7147	0.7026	0.7111	0.7463	0.7361	0.7562
C8	0.7341	0.7444	0.7376	0.7192	0.7223	0.7243	0.7353	0.7342	0.6905	0.7200	0.7419	0.7367	0.7186	0.7144	0.7292	0.6978	0.6945	0.6953	0.7315	0.7188	0.7171
C9	0.7461	0.7530	0.7429	0.7337	0.7216	0.7426	0.7533	0.7269	0.7236	0.7309	0.7533	0.7513	0.7294	0.7245	0.7419	0.7083	0.6998	0.7152	0.7414	0.7323	0.7290
C10	0.7837	0.7931	0.7731	0.7595	0.7487	0.7685	0.7757	0.7503	0.7278	0.7854	0.7876	0.7732	0.7590	0.7550	0.7777	0.7418	0.7394	0.7457	0.7841	0.7692	0.7704
C11	0.7881	0.7980	0.7842	0.7692	0.7608	0.7847	0.7790	0.7561	0.7322	0.7719	0.8127	0.7809	0.7659	0.7609	0.7871	0.7532	0.7488	0.7574	0.7904	0.7805	0.7779
C12	0.7830	0.7813	0.7705	0.7620	0.7582	0.7751	0.7746	0.7504	0.7261	0.7593	0.7821	0.7985	0.7556	0.7534	0.7668	0.7247	0.7170	0.7331	0.7800	0.7704	0.7569
C13	0.7901	0.7862	0.7751	0.7708	0.7624	0.7821	0.7865	0.7546	0.7300	0.7723	0.7938	0.7856	0.7875	0.7520	0.7793	0.7405	0.7230	0.7482	0.7778	0.7758	0.7781
C14	0.7629	0.7697	0.7572	0.7559	0.7487	0.7640	0.7682	0.7393	0.7128	0.7518	0.7719	0.7674	0.7525	0.7657	0.7523	0.7241	0.7194	0.7246	0.7685	0.7497	0.7592
C15	0.7928	0.7936	0.7820	0.7827	0.7736	0.7891	0.7947	0.7608	0.7361	0.7725	0.7943	0.7896	0.7726	0.7676	0.8024	0.7482	0.7436	0.7591	0.7967	0.7818	0.7754
C16	0.7598	0.7641	0.7492	0.7403	0.7319	0.7480	0.7444	0.7290	0.7069	0.7446	0.7654	0.7556	0.7412	0.7315	0.7495	0.7397	0.7138	0.7305	0.7636	0.7525	0.7417
C17	0.7751	0.7832	0.7746	0.7585	0.7474	0.7608	0.7690	0.7471	0.7254	0.7591	0.7815	0.7785	0.7594	0.7578	0.7769	0.7373	0.7512	0.7359	0.7800	0.7637	0.7746
C18	0.7960	0.8000	0.7913	0.7819	0.7682	0.7899	0.7920	0.7678	0.7440	0.7844	0.8017	0.7983	0.7821	0.7773	0.7950	0.7524	0.7423	0.7841	0.7942	0.7899	0.7969
C19	0.8147	0.8197	0.8098	0.7989	0.7892	0.8060	0.8075	0.7869	0.7606	0.7973	0.8213	0.8166	0.7937	0.7899	0.8028	0.7678	0.7601	0.7819	0.8360	0.8092	0.8152
C20	0.7803	0.7791	0.7734	0.7583	0.7464	0.7618	0.7705	0.7471	0.7220	0.7574	0.7813	0.7785	0.7557	0.7483	0.7672	0.7277	0.7244	0.7457	0.7821	0.7877	0.7612
C21	0.8276	0.8356	0.8194	0.8120	0.8053	0.8167	0.8182	0.7942	0.7676	0.8090	0.8336	0.8298	0.8029	0.7975	0.8187	0.7748	0.7775	0.7916	0.8346	0.8248	0.8363

Table 6
The criteria's prominence and relation axis for the cause-and-effect group

	D	R	D+R	D-R
C1	15.9526	16.3604	32.3130	(0.4078)
C2	16.6622	16.4634	33.1257	0.1988
C3	16.4701	16.2385	32.7086	0.2316
C4	15.7668	16.0168	31.7836	(0.2499)
C5	15.2475	15.8144	31.0619	(0.5670)
C6	15.3488	16.1561	31.5049	(0.8072)
C7	15.5546	16.2573	31.8119	(0.7027)
C8	15.1579	15.7296	30.8875	(0.5718)
C9	15.4009	15.2245	30.6255	0.1764
C10	16.0690	15.9658	32.0348	0.1032
C11	16.2401	16.4434	32.6835	(0.2034)
C12	15.9790	16.3597	32.3387	(0.3807)
C13	16.1517	15.9465	32.0982	0.2053
C14	15.7858	15.8150	31.6009	(0.0292)
C15	16.3092	16.1600	32.4693	0.1492
C16	15.6031	15.3967	30.9998	0.2064
C17	15.9970	15.2643	31.2613	0.7327
C18	16.4297	15.6006	32.0303	0.8291
C19	16.7852	16.3831	33.1683	0.4022
C20	15.9563	16.1496	32.1059	(0.1933)
C21	17.0277	16.1495	33.1772	0.8782
MAX			33.1772	0.8782
MIN			30.6255	(0.8072)
AVERAGE			31.9900	0.0000

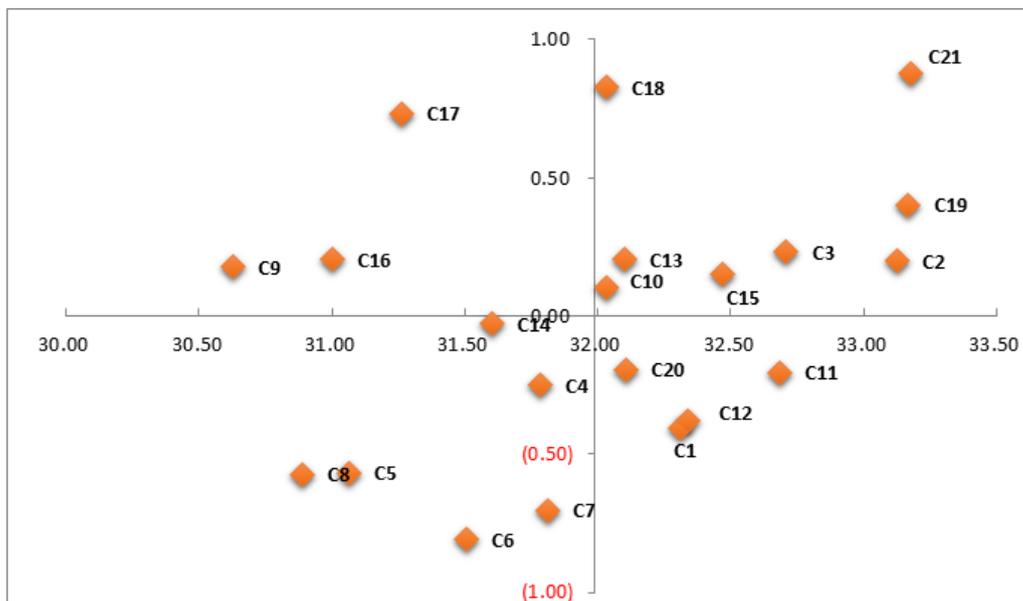


Fig. 2. Criteria causal and effect diagram

As shown in figure 2 above, a stewardship role adoption (C2), cooperation with the community(C3), risk reduction (C10), resilience in loan granting(C13), talent attraction and retention workers (C15), honesty and integrity (C18), corporate governance (C19), and fair and equitable treatment of costumes(C21) are classified into the cause aspect group, while effect criteria group includes encourage sufficiency (C1) Capital efficiency(C11), sustainable financial products (C12) and commitment to costumers(C20) which need to be improved. Since causal factors influence the effect group aspect, they should be the focus. The cause group criteria refer to the implication of the influencing criteria, while the effect group criteria refer to the implication of the influenced criteria. Considering the interdependence among factors, much attention should be paid to the cause of group criteria related to their influence on the effect of group criteria. Therefore, by improving cause factors, effect factors are developed simultaneously. Therefore, C21, C19, C18, C15, C13, C10, C3, and C2 are critical factors of criteria to be considered in enhancing ethics and human resource development to build a Sustainable Banking business model in Indonesia.

In summary of the analysis, this study revealed that ethic-human resource development factors are the core factors influencing other factors, and they are the active determinants of building a sustainable banking business model in Indonesia. The ethical factors in question are honesty and integrity, corporate governance, and fair and equitable treatment of costumes. The factor of human resource development consists of talent attraction and retention of workers. Social factors must also be considered, such as stewardship role adoption, and cooperation with the community.

5. Implications

5.1. Theoretical implication

The sustainable banking program in developing countries has indeed been initiated by banking authorities in each country, but its implementation is far from expected. Therefore, the identification of various aspects that enable the Sustainable Banking program in each country to succeed needs to be done. This study was successful in identifying the merging of several aspects that were important factors for the sustainability of the Sustainable Banking program

Of the five aspects such as social, environment, human resources, economics, and ethics, it turns out that the most dominating ethical factors in this regard. Theoretically, this can add new things, where, usually, the economy will be more dominant in the industrial aspect. In developing countries such as Indonesia, the religious and cultural values of the people are more dominant, allowing the pattern of thinking of the community to be more inspired and strongly driven by these factors. In religion, ethical and social factors are put forward. So for studies in developing countries that adhere to strong religious beliefs, both aspects, such as ethical and social, can be of particular concern.

5.2. Managerial implication

An effective decision model for determining the right step in the success of a program is to identify the most appropriate aspects and criteria that are the main facts first. In developing

the sustainability of the banking industry, various factors that enable the success of a bank need to be deeper identified. In this study many new facts were discovered which could be a reference for policy holders in banking. The focus in serving well-known customers is indeed very important, especially at the fair and equitable treatment of costumes (C21), more precisely the positioning and serving of consumers in the same position, not discriminating. While for Honesty and integrity (C18), the company places the principles of honesty and integrity as the foundation in operation must remain the main goal in decision making. The process of having a controlled and directed corporation (C19) must be a guideline so that every decision can be accounted for and open to the public, moreover this is related to how to grow the Sustainable Banking industry which certainly has a high sustainability value for the banking industry in the world.

6. Conclusions

Presently, to build a Sustainable Banking business model in Indonesia is a big challenge for various levels of the hatchery industry, government, and researchers. The banking industry considers how to maintain the economy and the environment by integrating social, resource, and sustainable ethical factors. The main challenge is the planting of ethical values in the banking industry and evaluating the patterns of critical human resource development followed by social implications. In this study, fuzzy logic and DIMATEL models are used to identify and evaluate interdependence on two factors, namely, ethical, and sustainable human resource development. The results show that important ethical factors are fair and equitable treatment of customers, honesty, and integrity, and corporate governance in the banking industry in Indonesia.

The results of this evaluation give decision-makers and stakeholders insights on how to instill ethics and develop human resources from the results of the identification of factors that influence the pattern of Sustainable Banking business in Indonesia. The implication for policymakers is that they should pay more serious attention to the ethical aspects and human resources that have been identified earlier. Thus, the Sustainable Banking business in Indonesia can be implemented with an adequate and planned design by first building a pattern of ethical improvement and developing human resources.

References

- Abad, J., D'Errico, M., Killeen, N., Luz, V., Peltonen, T., Portes, R., & Urbano, T. (2022). Mapping exposures of EU banks to the global shadow banking system. *Journal of Banking & Finance*, *134*, 106168.
- Biswas, M. N. (2011). *Sustainable Sustainable Banking Approach: The Need of the Hour*.
- Cahen-Fourot, L., & Lavoie, M. (2016). Ecological monetary economics: A post-Keynesian critique. *Ecological Economics*, *126*, 163–168. <https://doi.org/10.1016/j.ecolecon.2016.03.007>
- Chaudry, A. S., Azmat, S., & Sohail, M. (2018). State contingent and conventional banking: The optimal banking choice model. *Economic Modelling*. <https://doi.org/10.1016/j.econmod.2017.07.008>
- Abad, J., et al. (2022). Mapping exposures of EU banks to

- the global shadow banking system. *Journal of Banking & Finance*, 134, 106168.
- Chen, J., et al. (2022). The Effect of Sustainable Banking Practices on Banks' Environmental Performance and Green Financing: An Empirical Study. *Energies*, 15(4), 1292.
- Tseng, M.-L., et al. (2020). Sustainable packaged food and beverage consumption transition in Indonesia: Persuasive communication to affect consumer behavior. *Resources, Conservation and Recycling*, 161, 104933.
- Úbeda, F., et al. (2022). Do formal and informal institutions shape the influence of sustainable banking on financial development? *Finance Research Letters*, 46, 102391.
- Dialysa, F. (2015). Sustainable Banking: One Effort To Achieve The Principle of GCG. *First International Conference on Economics and Banking*. Doś, A. (2018)
- Dosi, G. (1982). Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change. *Research Policy*, 11(3), 147–162. [https://doi.org/10.1016/0048-7333\(82\)90016-6](https://doi.org/10.1016/0048-7333(82)90016-6).
- Falcone, P. M., Morone, P., & Sica, E. (2018). Greening of the financial system and fuelling a sustainability transition: A discursive approach to assess landscape pressures on the Italian financial system. *Technological Forecasting and Social Change*. <https://doi.org/10.1016/j.techfore.2017.05.020>
- Fang, Y., Hasan, I., & Marton, K. (2014). Institutional development and bank stability: Evidence from transition countries. *Journal of Banking and Finance*. <https://doi.org/10.1016/j.jbankfin.2013.11.003>
- Ferreira, F. A. F., Jalali, M. S., & Ferreira, J. J. M. (2016). Experience-focused thinking and cognitive mapping in ethical banking practices: From practical intuition to theory. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2016.04.058>
- Fu, X. (Maggie), Lin, Y. (Rebecca), & Molyneux, P. (2014). Bank competition and financial stability in Asia Pacific. *Journal of Banking and Finance*. <https://doi.org/10.1016/j.jbankfin.2013.09.012>
- Hamilton, J. T. (1995). Testing For Environmental Racism: Prejudice, Profits, Political Power? *Journal of Policy Analysis and Management*, 14, 107–132.
- Johari, M. (2014). Analisis Financial Crunch Pada Industri Perbankan Syariah Saat Krisis Keuangan Global 2008. *Afkaruna: Indonesian Interdisciplinary Journal of Islamic Studies*, 10(1), 59-67. [doi:https://doi.org/10.18196/aiijis.2014.0031.59-67](https://doi.org/10.18196/aiijis.2014.0031.59-67)
- Liang, L. W., Chang, H. Y., & Shao, H. L. (2018). Does sustainability make banks more cost efficient? *Global Finance Journal*. <https://doi.org/10.1016/j.gfj.2018.04.005>
- Manlagnit, M. C. V. (2015). Basel regulations and banks' efficiency: The case of the Philippines. *Journal of Asian Economics*. <https://doi.org/10.1016/j.asieco.2015.06.001>
- Uddin, M. N., & Ahmmed, M. (2018). Islamic Banking and Sustainable Banking for Sustainable Development: Evidence from Bangladesh. *Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah*.
- Rajput, N., Arora, M. S., & Khanna, M. A. (2013). An Empirical Study of Impact of Environmental Performance on Financial Performance in Indian Banking Sector. *International Journal of Business and Management Invention*, 2(9), 19–24.
- Rosdwianti, M. K., & Dzulkrirom AR, M. (2016). Pengaruh Corporate Social Responsibility (CSR) Terhadap Profitabilitas Perusahaan. *Jurnal Administrasi Bisnis SI Universitas Brawijaya*, 38(2), 16–22.
- Sobhani, F. A., Amran, A., & Zainuddin, Y. (2012). Sustainability disclosure in annual reports and websites: A study of the banking industry in Bangladesh. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2011.09.023>
- Stankeviciene, J., & Nikonorova, M. (2014). Sustainable Value Creation in Commercial Banks During Financial Crisis. *Procedia - Social and Behavioral Sciences*. <https://doi.org/10.1016/j.sbspro.2013.12.966>
- Tseng, M. L. (2017). Using social media and qualitative and quantitative information scales to benchmark corporate sustainability. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2016.05.062>
- Uwuigbe, U., Uwuigbe, O. R., Teddy, O., & Emmanuel, O. (2018). Sustainability Reporting and Firm Performance: A Bi-Directional Approach. *Academy of Strategic Management Journal*, 17, 1–16.
- Yip, A. W. H., & Bocken, N. M. P. (2018). Sustainable business model archetypes for the banking industry. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2017.10.190>
- Weber, O. (2016). The Impact of Sustainable Banking Guidelines on the Sustainability Performance of Banks. *Cigi*, (79), 8.