

Sustainable Business Model: Innovation in Conventional Banks in Indonesia

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Abstract: - Model for long-term success, every industry, including banking, is beginning to see innovation as a key to long-term sustainability by driving system change. This research examines the traditional banking business in Indonesia. The study's overarching goal is to learn more about sustainable business models in the service sector, with a focus on banking, and how client attractiveness and the adoption of these models by banks affect one another. This research employed a mixed-methods approach with an exploratory focus, beginning with qualitative analysis (literature review, field observations, and semi-structured interviews) and concluding with quantitative analysis. The research concluded with the creation and verification of eight viable banking business models. Customers are more fond of the approaches that include "encouraging sufficiency," "adopting a management role," or "replacing with a digital process.". "Encouraging sufficiency" is one of the approaches that stands out as being at odds with present corporate practices.

Key-Words: - Sustainability, Innovation, Banking, Sustainable, Green banking, Banking business models, Mixed-methods research.

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1 Introduction

Everyone must do their part to combat climate change now that the public understands how critical environmental concerns are. The 2015 United Nations Conference on Sustainable Development Goals is one example of the work that multinational organizations have done. If businesses can act ethically, prioritizing profit while simultaneously addressing social and environmental issues, we can ensure their long-term viability, [1].

One of the first approaches to environmental management is the carrying capacity method. But since the natural environment can only take so much pollution before it becomes unmanageable, there has to be a shift in focus from pollution treatment at the end of the pipe to pollution prevention, with business playing a key role in environmental management. In addition, the green business idea is one way that industries are actively attempting to limit pollution to provide safe and ecologically friendly goods, as their understanding of the need for environmental management grows, [2]. In the corporate world, "green business" refers to the methods used to keep environmentally aware practices going strong, while in the banking industry, "green banking" describes the same thing.

Sustainable development fundamentally means that future generations shouldn't have to give up more social welfare than the present generation to fund the current generation's progress. Economic well-being, social welfare (which encompasses healthcare and education), and environmental welfare are all part of what is meant by "social welfare" in this context.

Consequently, banks should take a stand for environmental protection to enhance their services and influence their clients' banking habits. For the sake of both the environment and the bank's operating efficiency, it is important to employ appropriate environmental technology and to execute the management system well. A primary goal and important feature of green banking is its beneficial effect on the environment, especially in terms of cost and security. More and more, the banking industry is seeing sustainable business model innovation as a key component in achieving systemic change towards sustainability.

The problems that occur include:

- a. Which sustainable business model will be profitable for the sustainability of the banking industry?

- b. Which model will receive the best customer attractiveness and increase customer loyalty?

In this research, UCD (User Centered Design) was utilized to solve problems, and a systematic method was employed to illustrate the system. These techniques are useful for gathering preliminary data from interviewees. A gap was identified in many prior investigations. In order to combat climate change and build a more sustainable society, everyone from governments to businesses to individuals must do their part. Banks and other financial institutions play a crucial role in environmental protection by facilitating the shift to a low-carbon economy, which the community must address. Before approving loans or making investments, they should gather more environmental data. With the help of this initiative, they will be able to proactively enhance their environmental performance, which will benefit their firm in the long run. Thus, green banking is essential, it promotes sustainable growth, and it will certainly have far-reaching positive effects on banks, industries, and the environment everywhere, [3].

Results from the study of Hong Kong's commercial banks showed that, due to the fact that some archetypes are unique to banking (such as resilience in lending), a general set of business model archetypes might not be enough to cover the specifics of various industries' and sectors' operations. One of the primary goals of creating a sustainable business model archetype is to help organizations inspire and accelerate future innovation in sustainable business models. This is vital, [4].

Using data from commercial banks in Europe from 1993 to 2016, researchers also discovered that a sustainable and cost-saving business model combines (i) a revenue model that lasts with adjustments to the model that focus on assets over the long term and (ii) a revenue model that diversifies funding and revenue streams in the short term, [5]. According to the research conducted by [6], a collection of data collected for BMC shows that the digitally changed UniCredit business model has undergone several alterations. Consistent with the growing need to streamline and improve the UniCredit process, these results suggest that digital transformation is playing a significant role. We can provide more sustainable financial services by improving digital banking and reducing paper consumption, which helps safeguard forests and the environment. That agrees with what was found in the research by [7], [8], [9], [10], [11].

According to research, a new SBM should be developed to integrate various literature and industry practices that contribute to sustainability in the banking sector. The purpose of this updated model is to provide academics and industry professionals a standard against which to evaluate the sustainability efforts of financial institutions. This new approach might help the bank steer its operations in the direction of sustainability. Technology, institutional, managerial, economic, social, and environmental sustainability are the six pillars that make up the TIMESe models, [12].

Sustainability in corporate practices, however, decreases profitability, according to the research by [13]. The results are consistent with previous research that has shown how important it is for corporations to disclose ESG information strategically. Companies engage in strategic disclosure when they want to make it seem like they're doing more good than they really are. This practice is a hybrid of greenwashing and social washing. This means that the societal problem of how to successfully incorporate sustainable practices into business models is still very much alive and well. Additionally, this study is backed by [14], which demonstrates that Indonesian banks primarily care about economic indicators, ignoring social and environmental ones. Instead, they put all their energy into disclosure studies for sustainability reports, ignoring the real practices and implementation of the green banking concept. That agrees with what was found in the research by [15], [16], [17].

What makes this study unique is that the author makes predictions about the kinds of long-term business strategies that banks may use to pique consumers' attention and keep them as loyal clients. The Mix approach of decision-making may help with this by first doing qualitative analysis to address the first difficulty and then quantitative analysis to address the second. In addition to recommending sustainable business models that the banking industry may use, this study is anticipated to help address an empirical vacuum and pave the way for future research.

2 Research Method

This research looked at two things: (1) how to classify the various bank sustainable business models, and (2) how the present "financial archetype" affects customer appeal. Beginning with qualitative analysis and then moving on to quantitative analysis, this research used a mixed-method approach. An iterative mixed-method

approach is shown in Ta1. First, the model is adapted based on qualitative exploration and practitioner validation. Then, client perceptions are quantitatively tested. Expert validation (model building and change) and post-quantitative interpretation (model retention based on systemic significance rather than consumer desire alone) are two specific decision points. All of the methods used in this investigation are shown in Figure 1.

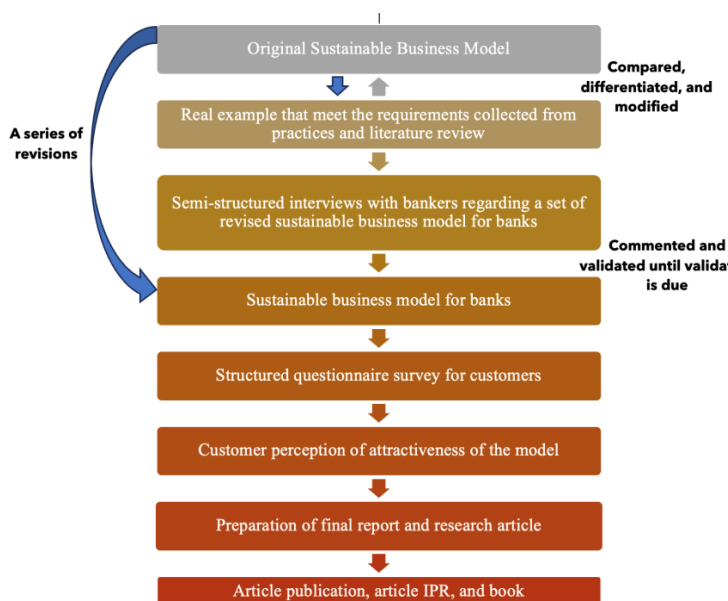


Fig. 1: Research Procedures

Source: [16]

2.1 Research Method to Develop Sustainable Business Model for Banking (Qualitative Analysis)

Part one of this study strategy included qualitative data collection. We looked into the following questions: For the long-term health of the banking sector, which environmentally friendly business model is the best option? A technique similar to the first one described in [18] was used to examine this (top of Figure 1). The purpose of establishing the selection criteria was to choose instances of innovation: Products and services that may improve the environment or local community via the introduction of new benefits or the mitigation of existing ones are considered innovations with high potential for positive change. A bank's sustainable business model development process is summarized at the top of Figure 1.

The following is a synopsis of the procedures used to resolve research question 1:

- The majority of the literature, including trade journals, sustainability sections on websites, and bank sustainability reports, was examined to

gather examples and actual practices. We selected several banks to examine their sustainability reports based on their Company Sustainability Assessments, [19].

- The original sustainable business model serves as the basis for the present categorization of sustainable banking practices. Innovative business practices that have a positive impact on society and the environment were among the selection criteria used to determine which examples were suitable. After analyzing each case, we made necessary adjustments and advancements by drawing from the original model and creating an entirely new one. When it comes to business model innovation, models should be simple, easy to understand, mutually exclusive, and informative without being too prescriptive, [18].
- The final stage was to interview informants, who were 15 bankers in Indonesia from different banks and roles, using a semi-structured interview format (Table 2, Appendix). It is more suitable and relevant to get insights from individuals who work in the banking sector as informants since the sustainable business model is mostly driven by practices, and there is less academic research accessible.

2.2 Research Method to Assess Customers' Attractiveness (Quantitative Analysis)

Quantitative methods, including structured survey analysis, made up the second half of this study strategy. We looked into the following questions: In terms of consumer interest, which model will do best? Furthermore, which approach is most likely to increase client loyalty and intent to use? Customers from traditional banks were selected for their 'non-expert' consumer viewpoint on the banking business. One practical consideration was the possibility of collecting a large sample of traditional bank clients to improve the statistical significance. For each model, the poll asked two questions to gauge consumer preference and the model's effect on intent to buy:

First Question: How appealing do you think it would be if a bank implemented Model X? Seven-point scale

Two, suppose your main bank uses this strategy (Q2). When you require other financial services, does this factor into your selection of this particular bank? rating system with five levels

When thinking about a lot of potential future alternatives from the customer's point of view, these two questions were designed using a Likert scale to make them simple and easy to answer. In

light of this, we made sure that the questions were straightforward and easy to comprehend while crafting them, [20]. Two native speakers were used for pilot testing of the questions. Customers' attitudes and intentions to buy or use something aren't always congruent, which is why Q2 was devoted to the latter, [21]. In order to provide respondents greater leeway to convey nuanced sentiments about various models, a 7-point Likert scale was used for Q1. For Q1, we opted for a 5-point scale, as, according to research, [22], [23], it adequately captures the essence of more action-oriented objectives.

For all eight models, we used the same set of questions (16 questions total, 8 pairings). The 8 pairings were given to respondents at random to minimize the possibility of sequential bias in the questioning process. Before posing these two questions, we defined each model and gave some examples. Traditional bank clients in Indonesia were surveyed by sending out questionnaires both online and by traditional mail. People in Indonesia who use banking services often and are between the ages of 18 and 64 were eligible to participate in this poll.

2.3 Significance of Results Per Model in Q1 and Q2

We used a Z test with a 95% confidence level to find out whether each model was appealing to clients (Q1) and if it would affect their choice for the bank (Q2).

2.4 Significance of Cross-Comparison of each Model in Q1 and Q2

The second step was to compare different models using one-way repeated ANOVA. This allowed us to identify the most influential model for loyalty (Q2) and the "favorite model" (Q1) for traditional banking consumers. The data were checked for violations of the sphericity assumption, which means that the variances of the differences across conditions are equal. The Mauchly test was used to confirm repeated ANOVA by looking for these violations. To find the most desired archetype or archetypes, the Tukey test was utilized as a post hoc test to evaluate values that were very close.

3 Results and Discussion

The Results of the Sustainable Business Model for Banks

You can see the results of the iterative process with chosen bankers (using a semi-structured interview

procedure) and the examination of grey literature in Table 1 (Appendix). Following this, a set of updated models was built to collect additional feedback and validation.

Every single interviewee has acknowledged, at some point or another, the potential short- or long-term triple bottom line advantages of models and examples derived from grey literature. Despite the fact that both responders are sustainability experts, no new models were suggested by them. Some of the original models [24] clearly have less practical use, while others need to be adjusted.

The least relevant models are these:

- a. "Creating value from waste" because, unlike the industrial business, which might have large and readily traceable waste streams, the supply of financial services does not generate a substantial quantity of trash, particularly when paper consumption is decreased via digitization. Paper waste is a major problem in the banking sector, but it isn't seen as crucial to the company's operations or a prime candidate for business model innovation to turn it into profit.
- b. "Providing functionality over ownership," as material possessions have no bearing on the services provided by banks. Additionally, due to the sensitive nature of financial services, joint usage becomes more difficult.

Meanwhile, models requiring modification are:

- a. Some adjustment is necessary so that the phrase "substitution with renewable energy and natural process" accurately describes the nature of the services being offered. In contrast to manufacturing, where the production process and customers may be kept distinct, the supply of services in the service sector merges the two, a trait known as "inseparability", [25]. To highlight the connection between processes and customers in providing value, the phrase "Replacing with a digital process" is used. The paper-intensive old banking system will be replaced by digital ones.
- b. In addition to "Developing scale-up solution". The banking sector may accomplish scale-up by offering sustainable financial solutions. "Sustainable financial products" is the new term given to this approach to reflect this development. A sustainable investment fund that welcomes client participation and seeks to diversify its financing is exemplified. One expanding and long-term strategy for large-scale fundraising is crowdfunding. Despite their crucial intermediate function, this research reveals that

banks are not prepared to do this at the present time.

Here, we go into the specifics of each model using data from grey literature and banker semi-structured interviews. See Table 2 (Appendix) for more analysis based on the models' values.

The following is the explanation for each model:

Model 1: Maximizing the Efficiency of Material and Energy (Technology)

- a. What does it mean? It means making do with less, which means less waste, emissions, and pollution, [24].
- b. Driver: Driving sustainable innovation in business models, this strategy prioritizes resource optimization with a zero-waste aim.
- c. Approved innovations include digitized internal papers, electronic whiteboards for transactions, online learning, video conferencing, and duplex printing.

Why is it chosen as a model?

Banks may not have a huge effect on the environment per product, but when added together, their volume makes a big difference, [26]. The high volume of paper needed to store and transmit sensitive customer information, credit records, and other financial papers has a disproportionately huge effect on the environment in the banking industry. In addition, running a bank's day-to-day operations requires an office space, which in turn requires electricity, water, and cooling materials for server computers. Reducing natural resource exploitation is one of the primary goals of this strategy, which should lead to less waste in landfills and less emissions of carbon dioxide. Less need for physical office space may be achieved by the digitization of internal procedures. Many bankers in the semi-structured interviews said this must be done, and a few even said this strategy is successful in safeguarding the environment, as it shows up in their job every day.

Process innovation, in contrast to this concept, just seeks to lessen the reliance on paper in certain tasks. This enhances the value offer and should be used across the bank. It may lead to substantial cost savings, for instance, by instituting a paperless operating policy. Sustainability is important because it promotes systemic change inside financial institutions rather than superficial changes. Since this model is primarily concerned with the internal activities of the bank, the rebound effect [27] is irrelevant. Unemployment as a result of higher production, for example, can be a concern

for societal sustainability, [28]. To that end, a societally-oriented sustainable business model like "Adopting a stewardship role" can serve as an auxiliary approach.

Model 2: Replacing with a Digital Process (Technology)

- a. Purpose: Using a digital platform to provide services in a way that reduces environmental impact and increases company resilience.
- b. Driver: This model's primary goal is to lessen the negative effects on the environment and strengthen the resilience of businesses via the innovation of service delivery through electronic media, with the goal of minimizing physical interaction.
- c. Some examples of sponsored innovation include online trading platforms, digital branches, electronic statements, robo-advisors (like Bank of America's "Merrill Edge Guided Investing"), and digital payment systems.

Why is it chosen as a model?

The product of the banking business is intangible, as it is a service industry. Consumers are not integral to the service delivery process, and everyday banking transactions mostly use paper as a means of communication. Digital banking will lessen the need for paper transactions and personal interactions between bank employees and clients. Because of this, operating space is reduced, which in turn may lead to cost and carbon emission reductions. As it replaces the conventional, in-person interaction pattern with a digital one, digitalization represents a paradigm shift in banking as a whole. At the same time, a sustainable business model that promotes digitization as a policy across banks would have a good effect on social and environmental elements, which is a win-win situation. Model 2 differs from Model 1 in that it is relevant to the service delivery model rather than the bank's internal operating procedure.

Banks provide transactional banking services to their customers in order to facilitate the monetary exchange of products, cash, or securities. This model is very applicable to this kind of company. As an example, the securities department processes a large number of trading transactions daily and provides clients with reports on a daily basis. According to one of the bankers we spoke with, electronic statements cut down on paper, labor, and stamps, which adds up to around five percent of overall operating expenses. Conversely, consumers are more likely to use digital banking to make frequent purchases due to the ease of transactions.

Banks in developing nations may find that digital banking is a viable alternative to traditional banking for the poor since it eliminates the need for costly travel and outdated infrastructure. Finally, in contrast to traditional banking, this model's end goal is to replace the branch network with "fintech" (financial technology) and build a customer-facing digital transaction platform.

Model 3: Encouraging Sufficiency (Social)

- a. What it is: a solution that makes an effort to get people to use fewer banking goods and services.
- b. Driver: To lessen the impact on reputation and boost customer loyalty, this model employs a solution that aims to decrease service consumption and prevent service overstock.
- c. A sponsored innovation example: Motivating salespeople through needs-based sales, using "compliance" as a KPI for salespeople's performance reviews, promoting responsible lending, tailoring products to each customer's risk profile, and shifting compensation away from commission and toward a fixed wage.

Why is it chosen as a model?

Banks suffer when there is an overabundance of sales of investment and credit products, which often leads to mis-selling. Heavy fines levied by regulatory bodies are one of these expenses, along with negative effects on the bank's reputation and relationships with its customers. When investors are misled into purchasing investment goods, which may happen during economic downturns, the practice becomes problematic and a societal issue. Banks are now focused on restoring confidence, especially in the wake of the 2008 financial crisis. One way they might do this is by promoting self-sufficiency via needs-based marketing. A new sales culture—and, more specifically, the proper way to manage a firm—is born out of this model, which incorporates many business areas.

There has been a recent shift away from volume-based to needs-based compensation at some financial institutions. Customer requirements, not product pressure, are the top priority, according to all private bankers surveyed. Measuring client demands and satisfaction is one example of a key performance indicator (KPI). More and more financial institutions are shifting sales personnel compensation packages to include a larger fixed wage component and a smaller variable component. But one lender is worried that business would fall when the new incentives scheme goes live.

Model 4: Using a Stewardship Role (Social)

- a. Definition: Involves all relevant parties proactively to guarantee health and well-being in the long run, [24].
- b. Driver: This model's primary goal is to improve society and the environment in order to boost the bank's brand equity, which in turn benefits the customers and the bank in the long run.
- c. Supported innovation example: student internships, social entrepreneurship assistance, contract re-employment, hiring persons with disabilities, and paid leave to encourage workers to volunteer.

Why is it chosen as a model?

Being a trust-based sector, banking places a premium on bank brands and trustworthiness. Financial institutions make concerted efforts to improve their value networks. So, this strategy helps achieve the overarching goal of making the world a better place for everyone. Because banking is a heavily regulated industry, having a positive social and environmental effect is crucial for obtaining a "license" to operate.

The most typical and conventional CSR action was determined to be "adopting a stewardship role" in the interview. On top of that, this pattern is becoming more popular among banks, which is great for their public image but also for the teamwork and dedication of their employees. One of the primary goals is to promote the idea of "doing well by doing good" among bank personnel so that the bank is seen as a responsible corporate citizen. Using philanthropic actions as simple frills for a sustainability report is not the same thing. The "creation of inclusive value" paradigm is one that, when coupled with this one, may provide positive results.

Model 5: Creation of Inclusive Value (Social)

- a. What it means: meeting a variety of requirements via providing and/or improving access to financial products and services.
- b. Motivator: This business model is socially conscious since it helps the underbanked and unbanked, as well as those who are vulnerable, by offering them new banking products and services.
- c. Innovations that have received funding include programs that help first-time homeowners, lower costs for non-governmental organizations (NGOs), loan restructuring for clients with financial problems, unsecured loans for small and medium-sized enterprises (SMEs), and banking services for underserved areas (like M-

Pesa, which is branchless banking), [29]. Business loans and unsecured overdrafts from DBS Bank are available with reduced interest rates and fee exemptions via their new Social Enterprise Special Package.

Why is it chosen as a model?

To be more inclusive in lending to less bankable consumers, this approach pushes banks to reconsider their primary business plan. An innovative business approach may help lessen this risk. Unsecured loans for SMEs that rely on credit scores and portfolio management, for instance, are able to offset the high risk involved by requiring a larger interest margin from a larger number of borrowers. As an additional instance, promoting social innovation is crucial. Businesses with a social mission may benefit from the commercial acumen that banks provide, which helps lower the risk of financing. According to one of the bankers, this archetype works well with the "Adopting a stewardship role" archetype, as it seeks to do good in the community while simultaneously expanding into new markets with the potential to bring in quick cash. More banks are expected to follow if the risk can be adequately handled with fair returns, and the model's long-term viability may hinge on entering new markets through inclusion. While "adopting a stewardship role" may help anybody, "the creation of inclusive value" primarily targets current or future clients. This is how the two models vary.

Model 6: Shifting Goals for Environment/Community (Organization)

- a. Definition: putting social and environmental advantages ahead of financial profit maximization by tight cooperation between businesses and their surrounding communities and other interested parties, [24].
- b. Driver: A potentially low-risk new market that prioritizes social and environmental benefit delivery is this model's emphasis.
- c. ASN Bank, Grameen Bank, and Triodos Bank all use this strategy to achieve their sustainability goals. This is an example of supported innovation. Another example is rural banks that are totally owned by big banks and serve as a subsidiary to assist farmers. One such example is Rural Bank Limited, a wholly owned subsidiary of Bendigo and Adelaide Bank Ltd.

Why is it chosen as a model?

This sustainable business strategy is unique because it challenges the conventional wisdom that

companies should prioritize profit maximization for their shareholders above social and environmental concerns. This concept is only used by banks when doing business with clients who have a beneficial social or environmental effect. This strategy employs a positive screening process to ensure that only sustainable businesses that contribute to society and the environment are granted banking services. Businesses' core objectives shift to prioritize social and environmental good at the system level. Having said that, this paradigm is seldom completely used by conventional banks. A banker voiced concern that the model's inherent risk and the length of time needed to see returns make it unsuitable. The "Shifting goals for society/environment" model and the "traditional banking model" may coexist in a "hybrid model," which is the more popular and practical choice. An example of a totally owned subsidiary is HSBC Rural Bank. A number of services are tailored to meet the needs of farmers by this bank. Due to the fact that a sustainable business model may initially support the new "Shifting goals for society/environment" model until it becomes financially independent, the hybrid model is a better fit for banks to operate.

The inclusion of Model 6 (Shifting aims for environment/community) was based on its system-transformational character, not on its high consumer desirability. Through positive screening and purpose-driven capital allocation, this model signifies a revolutionary change in banking aims, placing a premium on social and environmental goals, in contrast to other models that maximize current banking processes. Systemic sustainability transitions may not meet short-term consumer desires, as seen by their significantly lower attractiveness score. This highlights the necessity for institutional leadership and legislative assistance, as opposed to depending only on market demand.

Model 7: Resilience in Lending (Organization)

- a. Definition: Requirements for lending that attempt to weed out borrowers who could cause harm to society and/or the environment.
- b. Driver: To mitigate risk, this model mandates that all financial institutions require borrowers to have little to no detrimental influence on society and the environment before approving their loans.
- c. Demonstrations of supported innovation include: OECD nations that adhere to "Sustainable Lending Practices in the Provision of Official Export Credits to Low Income

Countries" [30], lending standards that take environmental and community factors into account, and the adoption of Equator Principles for project financing.

Why is it chosen as a model?

Risks to the environment can manifest in three ways, as stated in [31]: 1) financial (due to client sustainability concerns brought on by environmental regulations or shifting market conditions); 2) direct (due to borrower clients' actions) and 3) reputational (due to unfavorable press surrounding environmental issues). From a risk management standpoint, this archetype shields financial institutions from potential hits to their income statements by bringing down their capital expenditures and lessening the dangers to their reputation. Borrowers incur less environmental and social risk as a result of stringent evaluation before lending, which has an indirect effect on the credit side. The majority of global financial institutions have broad criteria for evaluation in addition to more targeted industrial strategies. Additionally, these financial institutions have a reputational team, a risk manager, and others who are involved in the approval process and have the power to veto decisions.

Model 8: Sustainable Financial Products (Organization)

- a. Definition: Going big with long-term financial instruments that let more people share in the economic rewards.
- b. Motivator: This strategy is centered on product innovation so that more people may take part in sustainable company development opportunities. Charities, state investors, consumers concerned about sustainability, etc., are among the target clients.
- c. Green obligations, sustainable mutual funds, socially responsible funds, impact investments for clients [32], supporting crowdfunding, and letters of credit for sustainable delivery are all examples of supported innovation.

Why is it chosen as a model?

Sustainability is becoming an increasingly important problem for governments, savers, and investors. Banks may take advantage of the growing sustainable development and associated regulatory markets to attract depositors and borrowers. Crowdfunding and the launch of a new fund focused on cutting-edge topics, including impact investment, are viable options for scaling up. "This is a new market with a lower risk

premium," said a banker from the sustainability department. Contrast this paradigm with innovation focused on a single product. In the banking industry, this kind of innovation is known as a "blue ocean strategy" [33] since it opens up new opportunities for company development and has a clear correlation with sustainability.

Significance of the Results of Each Model

Q1. Assume that a bank adopts (Model X), how attractive do you find it? (7-point scale)

Table 3 (Appendix) shows the results for model attractiveness, showing significant positive results for each model (the most positive results are in bold).

Q2. Assume that your primary bank adopts this model; how would it influence your preference for this bank when you have additional banking service needs? (5-point scale)

Table 4 (Appendix) shows the results for purchase intention related to the models, showing significant positive results for each model.

When analyzing the data in Table 3 (Appendix) and Table 4 (Appendix), it is important to take into account not only the statistical significance at the 95% confidence level, but also the estimated error and confidence intervals of the means. Due to the large sample size ($N = 300$), the confidence intervals around the mean are often tight, suggesting good estimation accuracy, as a result of the tiny standard errors of each estimate.

Models 2 (Replacing with a digital process), 3 (Encouraging sufficiency), and 4 (Adopting a stewardship role) all show that the mean values of attractiveness and purchase intention are still above the neutral point of the scale, even when the confidence intervals are expanded to a higher level of certainty (e.g., 99%). The results show that the sample size is not the only factor affecting the major conclusions.

Models 6 and 7, which have averages closer to the neutral point, show more variety in respondents' judgments, as seen by the significantly broader confidence intervals. Consequently, the models' practical impacts are quite weak, while being statistically significant.

In sum, confidence interval analysis enhances the substantive validity of the study results by supplementing p-value reporting with information on the stability and accuracy of estimates.

The Results of the Main Observation:

In Table 3 (Appendix) and Table 4 (Appendix), you can see the z-test results. All the models outperform the average, which is 4 on the 7-point scale and 3

on the 5-point scale. The p-value is almost zero, so it's safe to say that people generally think highly of all the models when it comes to attractiveness and purchase intention. The best three models (based on average scores) for both questions are identical: Model 2 ("Replacing with a digital process"), Model 3 ("Encouraging sufficiency"), and Model 4 ("Adopting a stewardship role").

Finding the Model with the Highest Ranking Through Cross-Comparison of Each of the Eight Established Models

Q1. Assume that a bank adopts (Model X), how attractive do you find it? (7-point scale)

The results of Mauchly's test for Q1 showed a p-value that is close to zero, indicating that the results of ANOVA are reliable, as can be seen in Table 5 and Table 6 in Appendix.

The Results of the Post Hoc Test

Since the average of all models was close to 4 on a 7-point scale, in order to determine the pairwise differences between models, as well as to examine the most preferred model, the Tukey test was conducted. From Appendix A, the results with an asterisk have a significant meaning. Table 7 summarizes the results.

Table 7. Cross-Comparison of Models in Terms of "Attractiveness"

	A1	A2	A3	A4	A5	A6	A7	A8
A1				—	+	+	+	
A2					+	+	+	+
A3					+	+	+	+
A4	+				+	+	+	+
A5	—	—	—	—				
A6	—	—	—	—				—
A7	—	—	—	—				—
A8		—	—	—		+	+	

Note:

"+" indicates that the vertical model is significantly higher than the horizontal one.

"—" indicates that the vertical model is significantly lower than the horizontal one.

Cells with shadows indicate that the results were not statistically significant.

Source: [33]

By reporting actual mean differences and confidence intervals, the results show that although several pairwise comparisons are statistically significant, the magnitude of differences varies substantially. For instance, the difference between

Model 4 and Model 6 is not only statistically significant but also practically meaningful ($\Delta M > 0.4$ on a 7-point scale), whereas differences among the top three models (Models 2, 3, and 4) are negligible and lack practical relevance despite occasional statistical significance.

The Results of the Main Observation:

- The average for Model 4 was significantly higher than the average for Models 1, 5, 6, 7, and 8.
- The average for Models 2 and 3 was significantly higher than the average for Models 5, 6, 7, and 8.
- There was no significant difference between the top three models, which were Models 2, 3, and 4.

Q2. Assume that your primary bank adopts this model; how would it influence your preference for this bank when you have additional banking service needs? (5-point scale)

The results of Mauchly's test for Q2 showed a p-value that was close to zero, indicating that the results of ANOVA were reliable, as seen in Table 8 and Table 9 in Appendix.

The Results of the Post Hoc Test

Since the average of all models was close to 3 on a 5-point scale, in order to determine the pairwise differences between models, as well as to examine the most preferred model, the Tukey test was conducted. From Appendix A, the results with an asterisk have a significant meaning. The following matrix (Table 10) summarizes these results.

Table 10. Cross-Comparison of Models in Terms of "Purchase Intention"

	A1	A2	A3	A4	A5	A6	A7	A8
A1		—		—		+	+	
A2	+				+	+	+	+
A3					+	+	+	
A4	+				+	+	+	+
A5		—	—	—		+	+	
A6	—	—	—	—	—			—
A7	—	—	—	—	—			—
A8		—		—		+	+	

Note:

"+" indicates that the vertical model is significantly higher than the horizontal one.

"—" indicates that the vertical model is significantly lower than the horizontal one.

Cells with shadows indicate that the results were not statistically significant.

Source: [33]

The inclusion of confidence intervals reveals that statistically significant differences do not always imply meaningful behavioral change. While Models 2 and 4 show moderate and practically relevant advantages over Models 6 and 7, differences among the top-ranked models remain small and practically negligible. This indicates that customer preference is clustered among leading models rather than dominated by a single option.

The Results of the Main Observation:

- a. The average for models 2 and 4 was significantly higher than the average for models 1, 5, 6, 7, and 8.
- b. The average for Model 3 was significantly higher than the average for models 5, 6, and 7.
- c. There was no significant difference between the top three models, which were models 2, 3, and 4.

The Results of General Interpretation:

Among Indonesian retail banking clients, Model 4 "Adopting a stewardship role" stands out as the most intriguing sustainable business model. Model 2, "Replacing with a digital process," and Model 3, "Encouraging efficiency," follow closely behind. Model 2, "Replacing with a digital process," and Model 4, "Adopting a stewardship role," are the models that have the greatest impact on increasing bank preference, while Model 3, "Encouraging efficiency," comes in third. Models 2, 3, and 4—the top three—did not vary much from one another. Model 7 "Resilience in lending" and Model 6 "Shifting goals for society/environment" had the lowest average scores for "attractiveness" and "purchase intention" in the poll.

Discussion and Conclusion

Here, we review the literature-based findings and provide some recommendations for future studies on banking sector sustainable business models. New models developed for the banking sector speed up innovation and systematic examination of sustainable banking practice; these models constitute the key contribution. The second step is to develop a repeatable approach for classifying sustainable business models across various sectors. Lastly, the results on the models' appeal to clients help Indonesian banks zero in on the best model for "doing good for the future" objectives.

A Set of Revised Models for Banks and Their Implications

A reevaluation of the company model is necessary in light of the growing significance of services, [34]. The role of banks as service providers in ensuring the long-term viability of an economy was the focus of this research, [35]. Redeveloping a framework for the banking business was deemed to be a good place to start using the technique employed by [24], which is mostly focused on the manufacturing industry. The banking sector made use of eight unique models that were modified utilizing this framework and comparable research methodologies. This research looked at the framework and how bank sustainable business models fit into it, and it also looked at whether a new model is necessary. When modifying original models, it's crucial to keep in mind the unique features of the service business, such as the importance of direct customer interaction and the fact that value is produced via actions involving various stakeholders, [36]. Several of the basic models from [24] are inapplicable to the banking business because of its intangible and indivisible nature, since the main value is produced via service provision. This led to the adaptation of a number of models to better suit the needs of the banking sector.

Because some of the models are very banking-specific (such as resilience in lending), the overall findings demonstrated that a collection of models is insufficiently broad to suit the distinctive operations of various sectors. Regarding one of the primary goals—the development of sustainable business models, this is of paramount importance, as it will assist organizations in both inspiring and facilitating the innovation process for future sustainable business models. It is recommended that more work be done in order to classify certain service sectors (based on the kind of service provided) or the service industry overall. In addition, there is evidence to show that creating a new business model is an iterative process that necessitates development periodically. Finally, the original work [24] offers a strong theoretical basis and technique to distinguish and categorize future sustainable business models across many sectors.

The Relationship between Sustainable Banking Model and Customer Attractiveness

The second line of inquiry sought to understand the impact of model perception on purchase intent among Indonesians using traditional banking services. With the greatest beneficial impact on attractiveness and purchasing intention, Model 4

"Adopting a stewardship role," Model 2 "Replacing with a digital process," and Model 3 "Encouraging sufficiency" score at the top. The simplicity and clarity of Models 2 and 4 are perhaps the main reasons for their widespread use. Banking services are now more accessible than ever before because of technological advancements that benefit retail clients. In addition, the "Adopting a stewardship role" concept allows the majority of consumers to see the results of bank activities. The influence of "encouraging sufficiency" in influencing the banking choices of existing customers seems to be significant. Customers are more likely to make repeat purchases when salespeople focus on their requirements. Because it is the most extreme measure, "Encouraging sufficiency" will be the most challenging for well-established institutions to put into practice. Building a trusting connection with clients may need forgoing short-term revenues to reap long-term rewards. On the other hand, this research found that innovation leads to a favorable attitude, which in turn impacts purchasing intention, as shown in Q2, [37]. It would seem that Indonesian consumers are quickly placing a premium on factors that are directly connected to their health. For a more in-depth grasp of the root causes, the next step is to triangulate the data by conducting survey-based interviews with respondents. Nevertheless, the survey findings show that there are a number of promising sustainable business models that banks may use (particularly models 2, 3, and 4), which might point the way for their future endeavors.

Conventional bank clients see banks' sustainable business models favorably, according to the data. A few of the survey questions on "attractiveness" and "purchase intention" rank Model 6, "Shifting goals for society/environment," at the bottom. This finding is in line with what we would expect from semi-structured interviews, which found that many bankers think this approach is either unneeded or impossible to put into practice. Also, while it has a low customer rating, Model 7, "resilience in lending," is a potentially significant model. But we also need to tackle a more "difficult" paradigm if we want to revolutionize the banking business.

Practical Issues for Implementing Sustainable Business Model

Two themes are derived from the semi-structured interviews conducted with banks. To begin, there is tension between long-term goals and the short-term pressures of economic motivations and objectives when it comes to implementing certain models (such as "Encouraging sufficiency"). Rather than

needs-based sales standards, sales quota pressure could be more prevalent, according to a number of bankers. The private banker who declared "no short-term, no long-term" implied that the individual would be let go if sales quotas were not met. Second, sustainable financial solutions are still not well promoted, which causes them to sit unused. The goods often have a long-term financial return (sometimes, bankers have no idea how sustainable financial products would function). Additionally, due to the niche nature of the industry, marketing expenses might outweigh possible sales income. Currently, there is a lack of efficient, sustainable communication between banks and their consumers. Sustainable business practices end up being less than ideal because of this, and the evaluation system's flaws in capturing performance in sustainable development.

Similar to 'traditional' business model innovation [38], this discovery shows that there are several obstacles and limitations on the way to a genuine and quantifiable sustainable business model in banking. A typical and noticeable limitation is "short-term" [32]. Since digitization saves money in a quantifiable way, it stands to reason that most decision-makers would rather see immediate advantages. In order to promote a sustainable banking business model going forward, it is crucial to understand how sustainable customers are. This is because customers' appeal is directly related to their degree of sustainability awareness. Achieving this goal requires not just better community sustainable education but also effective communication of the model's sustainability contribution. In order to achieve a win-win situation, customers should be informed clearly about the advantages of sustainability as well as their own long-term interests.

What is meant by Business Model Innovation?

Practical review of this study results in various interesting financial archetypes (Table 2 and Table 11 in Appendix).

Some models may resemble product or process innovation more than sustainability, as they are rooted in the present state of banking sector practice. The definition of "business model innovation" is still up for debate. In addition to product and process innovation, business model innovation is a system-based strategy, [39], [40]. Changing the organizational business model is the end goal of business model innovation, which the author defines as a mentality shift that begins with innovations (products/processes) that catalyze subsequent innovations. An innovative business

model is the end result of a long and intentional process of incorporating social and environmental advantages into ordinary benefit operations, as the writer acknowledges. "Engaging in business model innovation is a deliberate decision" [41], which further supports this and adds weight to the argument. The organization has the freedom to choose whatever kind of innovation it sees fit, yet there are times when a business model is the only viable option. Developing new business models that include ecological, social, and economic principles is likely to be necessary.

In the same vein as the sustainable business model proposed in [24], the above examples may be seen as crucial advancements that promote advances in sustainable business models. Several concepts that were regarded as actual innovations in business models were determined to be highly disruptive to the present paradigm in this research. As an example, "encouraging sufficiency" may boost trust, which in turn increases loyalty and decreases the chance of mis-selling. Green financial product sales and backing of new financial platforms like crowdfunding are other examples of "sustainable financial product" practices.

Transition Towards Sustainable Banking

There is a worldwide trend toward sustainable banking, which aims to reform the banking industry and provide a more environmentally friendly way to do business [26], [31], [42]. Examples of this kind of innovation include the somewhat risky microcredit offered by Grameen Bank to the impoverished [43] and the relatively niche ethical banking services offered by Triodos Bank to those who value social and environmental justice. An alternative to traditional banking that targets underprivileged areas is M-Pesa, a branchless bank with a concentration on developing nations, [29].

On the other hand, we have seen a slow but steady movement in the Indonesian banking sector toward more innovative business models, rather than a dramatic upheaval like what other well-established industries have experienced, [44]. One typical explanation is discussed in [45], which seems to be relevant to Indonesia. To start, since it would involve meddling in their customers' day-to-day operations, the major participants in Indonesia's banking sector—large-scale national banks—are not eager to proactively filter out non-sustainable businesses when lending, [45]. The second reason banks are moving at a snail's pace is that environmentalists haven't put much pressure on them, and the banking sector tends to see itself as an eco-friendly one with little direct influence on

the environment, [45]. Sustainability, on the other hand, may cause some changes to how a company operates and incur some expenses in the near term, so it may not be a top priority.

Our interviews revealed several things, including the fact that big banks, in line with the literature on business model experiments, [38], [44], prefer to launch small-scale innovation initiatives as pilot schemes to test a "radical business model" with acceptable risks. Fintech, blockchain, P2P lending, and other forms of fast-paced innovation pose a threat to traditional banking businesses and could speed up the innovation process in the banking industry. This is because these technologies enable disintermediation, which poses a threat to traditional banking.

4 Limitation

Several limitations are included in this investigation. The first step in developing the model is reviewing relevant historical data and providing concrete instances of its use. Therefore, fresh radical innovations (i.e., new models) are hard to forecast. For certain models, including 2, 4, and 7, this is "business as usual" according to the respondents. It should be mentioned that Model 8 "Sustainable financial product" and Model 3 "Encouraging sufficiency" are more current and have the potential to steer the company in a more sustainable path. Secondly, we polled our Indonesian clientele. The findings may have been impacted by cultural norms and practices in the area, but they are nevertheless applicable to both developed and developing nations. The effects of "unsustainability," including air pollution, may have shaped Indonesia's perspective on sustainability, making the country more optimistic and forward-thinking. However, several European banks, including the Netherlands' Triodos Bank and ASN Bank, go beyond only focusing on sustainable business, suggesting that "sustainable banking" may be further along in its development in Europe. Third, because the banking business is the only subject of this research, its findings may not apply to other sectors. Fourth, one potential drawback is that we created our own attractiveness and buy intention scales to fit the needs of this research. Lastly, interviews were conducted using the convenience sample approach. All respondents were medium to senior staff members, and it is worth noting that a few of them were not regarded as sustainability specialists. Consequently, their viewpoint may have been limited. Consequently,

the viewpoint will be filled up by speaking with specialists in sustainable finance, activists, and academia.

5 Contribution and Opportunity for Future Study

This study expands the sustainable to the financial sector as a whole, [24]. The banking sector has a new suite of sustainable business models that have been tested with clients. We further construct methodology to build a model for certain sectors, which can be used to other industries. Additional research may be used to create a model that applies to both the personal service business and the service sector overall. There is room to investigate more model improvements that might help change the industry's perception, and it is acknowledged that efforts to develop new business models should be sustainable and iterative, [38], [44]. It would be very beneficial to determine how different bank client categories vary in perception and purchasing intention. Since banks are known to be rather conservative when it comes to innovation, the interview findings shed light on the practical obstacles to establishing a viable business strategy in this sector. One last essential but difficult area of study is how banks' sustainable business models really affect the triple bottom line.

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References:

- [1] Hoque A. Fintech's game-changing opportunities for SMEs: A study on selected SMEs in Bangladesh. *Asian Economic and Financial Review* [Internet]. 2023;13(5):308–19.
- [2] Kasmawati, Y., Mudjijah, S., Ujiandari, R., & Artanta, P. B.. Greenpreneurship Development For The Young Generation: Increasing The Economic Value Of Coconut Fiber Waste. In: ICCD. 2024. p. 66-70. <https://doi.org/10.33068/iccd.v6i1.732>.
- [3] Mir AA, Bhat AA. Green banking and sustainability—a review. *Arab Gulf Journal of Scientific Research*. 2022;40(3):247–63. <https://doi.org/10.1108/AGJSR-04-2022-0017>.
- [4] Yip AWH, Bocken NMP. Sustainable business model archetypes for the banking industry. *J Clean Prod*. 2018;174:150–69. <https://doi.org/10.1016/j.jclepro.2017.10.190>.
- [5] Badunenko O, Kumbhakar SC, Lozano-Vivas A. Achieving a sustainable cost-efficient business model in banking: The case of European commercial banks. *Eur J Oper Res*. 2021;293(2):773–85. doi: 10.1016/j.ejor.2020.12.039.
- [6] Stalmachova K, Chinoracky R, Strenitzerova M. Changes in business models caused by digital transformation and the COVID-19 pandemic and possibilities of their measurement—case study. *Sustainability*. 2021;14(1):127. <https://doi.org/10.3390/su14010127>.
- [7] Sharma M, Choubey A. Green banking initiatives: a qualitative study on Indian banking sector. *Environ Dev Sustain*. 2022;24(1):293–319. <https://doi.org/10.1007/s10668-021-01426-9>.
- [8] Grijalvo M, García-Wang C. Sustainable business model for climate finance. Key drivers for the commercial banking sector. *J Bus Res*. 2023;155:113446. doi: 10.1016/j.jbusres.2022.113446.
- [9] Nosratabadi S, Pinter G, Mosavi A, Semperger S. Sustainable banking; evaluation of the European business models. *Sustainability*. 2020;12(6):2314. <https://doi.org/10.3390/su12062314>.
- [10] Hossain MA, Rahman MM, Hossain MS, Karim MR. The effects of green banking practices on financial performance of listed banking companies in Bangladesh. *Canadian Journal of Business and Information Studies*. 2020;2(6):120–8.
- [11] Marczevska M, Kostrzewski M. Sustainable business models: A bibliometric performance analysis. *Energies (Basel)*. 2020;13(22):6062. <https://doi.org/10.3390/en13226062>.
- [12] Van BC, Gan C, Nguyen C. TIMESe: A New Reference Model for Measuring the Sustainability Performance of Banks. Available at SSRN 4639332. 2023. <http://dx.doi.org/10.2139/ssrn.4639332>.
- [13] Cerciello M, Busato F, Taddeo S. The effect of sustainable business practices on profitability. *Accounting for strategic disclosure. Corp Soc Responsib Environ Manag*. 2023;30(2):802–19. <https://doi.org/10.1002/csr.2389>.

- [14] Gunawan J, Permatasari P, Sharma U. Exploring sustainability and green banking disclosures: a study of banking sector. *Environ Dev Sustain.* 2022;24(9):11153–94. <https://doi.org/10.1007/s10668-021-01901-3>.
- [15] Kumar, J., Rani, G., Rani, M., & Rani, V. Do green banking practices improve the sustainability performance of banking institutions? The mediating role of green finance. *Social Responsibility Journal*, 2024, 20.10: 1990-2007. <https://doi.org/10.1108/SRJ-02-2024-0096>.
- [16] BOSE, Sudipta; KHAN, Habib Zaman; MONEM, Reza M. Does green banking performance pay off? Evidence from a unique regulatory setting in Bangladesh. *Corporate Governance: An International Review*, 2021, 29.2: 162-187. <https://doi.org/10.1111/corg.12349>.
- [17] Pramasari TD, Widaninggar N, Rachman R. Digital Economy: The Shifting of Traditional to Digital Spending and Saving-Investing Platforms and the Future of Banking Business Model. *WSEAS Transactions on Computer Research*. 2025;13:542–57.
- [18] Ferlito R, Faraci R. Business model innovation for sustainability: a new framework. *Innovation & Management Review.* 2022;19(3):222–36. <https://doi.org/10.1108/INMR-07-2021-0125>.
- [19] De Cuyper L, Clarysse B, Wright M. Doing good while making profits: A typology of business models for social ventures. *Strategic Entrepreneurship Journal.* 2024;18(2):258–85. <https://doi.org/10.1002/sej.1502>.
- [20] Coleman P. Validity and reliability within qualitative research for the caring sciences. *Int J Caring Sci.* 2022;14(3):2041–5, [Online]. <https://oro.open.ac.uk/81588/> (Accessed Date: October 12, 2025).
- [21] La Barbera F, Ajzen I. Moderating role of perceived behavioral control in the theory of planned behavior: A preregistered study. *Journal of Theoretical Social Psychology.* 2021;5(1):35–45. <https://doi.org/10.1002/jts5.83>.
- [22] Bourdeau BL, Cronin JJ, Voorhees CM. Customer loyalty: A refined conceptualization, measurement, and model. *Journal of Retailing and Consumer Services.* 2024;81:104020. <https://doi.org/10.1016/j.jretconser.2024.104020>.
- [23] Fotova Čiković K, Lozić J. Application of data envelopment analysis (DEA) in information and communication technologies. *Tehnički glasnik.* 2022;16(1):129–34. <https://doi.org/10.31803/tg-20210906103816>.
- [24] Bocken NMP, Short SW, Rana P, Evans S. A literature and practice review to develop sustainable business model archetypes. *J Clean Prod.* 2014;65:42–56. doi: 10.1016/j.jclepro.2013.11.039.
- [25] Christiansen, James. Building the innovative organization: Management systems that encourage innovation. Springer, 2000. ISBN: 978-0-312-23283-2.
- [26] Jeucken M. Sustainability in finance: Banking on the planet. Eburon Uitgeverij BV; 2004. ISBN: 978-9059720367.
- [27] Herring H, Sorrell S. Energy efficiency and sustainable consumption. *The Rebound Effect*, Hampshire. 2009;1–266. <https://doi.org/10.1057/9780230583108>
- [28] Ashford NA, Hall RP, Ashford RH. The crisis in employment and consumer demand: Reconciliation with environmental sustainability. *Environ Innov Soc Transit.* 2012;2:1–22. doi: 10.1016/j.eist.2012.01.002.
- [29] Batchelor S. Changing the financial landscape of Africa: An unusual story of evidence-informed innovation, intentional policy influence and private sector engagement. *IDS Bull.* 2012;43(5):84–90. <https://doi.org/10.1111/j.1759-5436.2012.00367.x>.
- [30] Loser CM. External debt sustainability: guidelines for low-and middle-income countries. Vol. 26. UN; 2004, [Online]. <https://g24.org/wp-content/uploads/2024/07/UNCTAD-Paper-Series-External-Debt-Sustainability-Guidelines-for-Low-and-Middle-Income-Countries-03.2004.pdf> Accessed Date: October 12, 2025).
- [31] Jeucken M. Sustainable finance and banking: The financial sector and the future of the planet. Routledge; 2010. ISBN: 1-85383-766-0.
- [32] Bocken NMP. Sustainable venture capital–catalyst for sustainable start-up success? *J Clean Prod.* 2015;108:647–58. doi: 10.1016/j.jclepro.2015.05.079.
- [33] Chan Kim W, Mauborgne R. Blue Ocean Strategy: How to create uncontested market space and make the competition irrelevant. 2015, [Online]. <https://www.octara.com/bosb26916.pdf> (Accessed Date: October 12, 2025).

- [34] Sheehan J. Understanding service sector innovation. *Commun ACM*. 2006;49(7):42–7. <https://doi.org/10.1145/1139922.1139946>.
- [35] Alexander K. Stability and sustainability in banking reform: are environmental risks missing in Basel III? 2014, [Online]. https://www.ius.uzh.ch/dam/jcr:00000000-39e6-3af1-ffff-ffffb4eb9b84/Environmental_risks_missing_in_Basel_III.pdf (Accessed Date: October 12, 2025).
- [36] Gummesson E. Extending the service-dominant logic: from customer centricity to balanced centricity. *J Acad Mark Sci*. 2008;36(1):15–7. <https://doi.org/10.1007/s11747-007-0065-x>.
- [37] Ajzen I. The theory of planned behaviour: Reactions and reflections. Vol. 26, *Psychology & health*. Taylor & Francis; 2011. p. 1113–27. <https://doi.org/10.1080/08870446.2011.613995>.
- [38] Chesbrough H. Business model innovation: opportunities and barriers. *Long Range Plann*. 2010;43(2–3):354–63. <https://doi.org/10.1016/j.lrp.2009.07.010>.
- [39] Laukkanen M, Patala S. Analysing barriers to sustainable business model innovations: Innovation systems approach. *International Journal of Innovation Management*. 2014;18(06):1440010. <https://doi.org/10.1142/S1363919614400106>.
- [40] Peric M, Djurkin J. Systems thinking and alternative business model for responsible tourist destination. *Kybernetes*. 2014;43(3/4):480–96. <https://doi.org/10.1108/K-07-2013-0132>.
- [41] Lüdeke-Freund F, Massa L, Bocken N, Brent A, Musango J. Business models for shared value. *Network for Business Sustainability: South Africa*. 2016;1–98.
- [42] Jeucken M, Bouma JJ. The changing environment of banks. In: *Sustainable banking*. Routledge; 2017. p. 24–38, [Online]. <https://www.taylorfrancis.com/chapters/edit/10.4324/9781351282406-2/changing-environment-banks-marcel-jeucken-jan-jaap-bouma> (Accessed Date: October 12, 2025).
- [43] Yunus M, Moingeon B, Lehmann-Ortega L. Building social business models: Lessons from the Grameen experience. *Long Range Plann*. 2010;43(2–3):308–25. <https://doi.org/10.1016/j.lrp.2009.12.005>.
- [44] Weissbrod I, Bocken NMP. Developing sustainable business experimentation capability—A case study. *J Clean Prod*. 2017;142:2663–76. doi: 10.1016/j.jclepro.2016.11.009.
- [45] Jeucken M. Sustainable finance and banking: Slow starters are gaining pace. *Διαθέσιμο: http://www.sustainability-in-finance.com/ifi.pdf*. 2001; https://doi.org/10.1007/978-3-319-92228-7_19.

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- Triska Dewi Pramasari carried out Conceptualization, Data curation, Validation research, and Writing - review & editing article.
- Nanda Widaninggar has implemented Funding acquisition and Writing - original draft.
- Nur Faiza has organized and executed Methodology and Supervision research.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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APPENDIX

Table 1. Sustainable Business Model for Banks

Sustainable Business Model	Description
Technology	1. Maximizing the efficiency of material and energy
	2. Replacing with a digital process (modified)
Social	3. Encouraging sufficiency
	4. Using a stewardship role
Organization	5. Creation of inclusive value (new)
	6. Reuse for the benefit of society/environment
	7. Resilience in lending (new)
	8. Sustainable financial products

Source: [23]

Table 2. Value Analysis of Eight Sustainable Finance Business Models

Model	Value Proportion	Value Creation & Delivery	Value Capture	Differences From Mainstream Banking Business Models
Maximizing the efficiency of material and energy	Services that use fewer resources and generate less waste and emissions than services providing similar functions.	The focus is on the innovation of the internal operation process.	The costs can be reduced through improving operational efficiency, resulting in increased profits.	Banks are intended to implement strategies in all banks to maximize material and energy efficiency, not a partial approach.
Replacing with a digital process	Reducing environmental impact and improving business resilience in terms of speed, convenience, costs, and accuracy by using electronic media in the service delivery process.	Innovation in service delivery design (e.g., delivery platforms) improves speed, convenience, costs, and accuracy of service delivery to customers.	Profits increase by providing greater convenience to customers, which can encourage more frequent transactions. Cost-saving can be achieved by reducing labor and expenses.	Banks continue to innovate with digital processes to interact with customers, with a target of minimizing or eliminating the traditional branch network through fintech.
Encouraging Sufficiency	A solution that seeks to reduce demand (previously often overstated) through accurate assessment of customers' needs and reducing the mis-selling of financial products and moral hazard in lending. The focus is on customers and the rewards system.	This may involve changes in frontline sales staff remuneration to a large portion of fixed salary, promoting need-based sales through proper product matching, and encouraging responsible borrowing.	Customer satisfaction and loyalty may increase, which can generate more business. Compliance risk decreases and reduces the possibility of sanctions by the regulator. Social benefits are achieved: customers receive what they really need in the right quantity and quality.	Banks leave the "selling more" approach by replacing it with superior services/products in accordance with customers' needs.
Adopting a stewardship role	Providing services aims to sincerely and proactively involve stakeholders to ensure long-term well-being. Broader benefits for stakeholders often	Ensuring that activities and partners focus on delivering stakeholder well-being. The value chain is designed to	Stewardship strategy can result in brand value, potential cost savings, and securing business in the future. Stakeholder well-being generates long-	Besides traditional CSR activities, banks tend to use a shared value approach to increase and provide their core business benefits, for example,

Model	Value Proportion	Value Creation & Delivery	Value Capture	Differences From Mainstream Banking Business Models
	become an important aspect of value proportion by better engaging customers.	provide environmental and social benefits.	term business benefits. For example, healthy and happy staff may take less sick leave and become more productive.	re-employing retired staff on a part-time basis.
Creation of inclusive value	Inclusive value is created through product and service innovation that serves previously underserved markets or high-risk customers.	Process innovation is a key to reducing related risks, for example, using a credit scoring method and portfolio management to manage risks in providing SME loans.	Increased market share. More business opportunities can be obtained through customer loyalty when customers become more profitable in the future. Social benefits are also achieved.	Banks help themselves by helping the disadvantaged, who may become their loyal customer in the long term. Moreover, this means more short-term business if the risks can be controlled.
Shifting goals for environment/community	Creating environmental and social benefits through specialization in providing banking services in accordance with customers' needs.	Banks use sustainability as a criterion for selecting customers, becoming experts in providing banking services for a certain segment, and achieving economic scale.	Only providing banking service to sustainable companies and disadvantaged communities, including "positive screening" based on social and environmental benchmarks.	Banks categorize their business more accurately into only sustainable business, not merely using the current negative screening approach.
Resilience in lending	Using a loan approval process innovation with sustainable criteria to filter non-sustainable businesses (negative screening).	As sustainability risk decreases, capital costs and potential non-performing loans can also be reduced.	Lending to customers with low or no sustainability risk. This can directly reduce financial resources for a company with harmful sustainability impacts.	Banks use a more comprehensive system to filter unsustainable borrowers in each aspect, including commercial and individual customers.
Sustainable financial products	Asset-side and liability-side products are made for savers/investors and borrowers, respectively.	Product innovation opens new markets in sustainable finance and supports sustainable development.	Product innovation allows participation in sustainability that can provide a platform for savers and borrowers in order to gain financial profits in sustainable business.	Banks focus on new market demand for sustainable business by providing new financial platforms to customers.

Source: [23]

Table 3. Model Attractiveness (7-Point Scale; N ¼ 300)

Model	Average score	SD	Average score - 4	z-score	Significance (p-value)
Model 1 - Minimizing the efficiency of materials and energy	4.913	1.2120.913		13.022	<0.00001*
Model 2 - Replacing with a digital process	4.971	1.1790.971		14.13028	< 0.00001*
Model 3 - Encouraging efficiency	4.964	1.1760.964		14.30512	< 0.00001*
Model 4 - Adopting a stewardship role	5.085	1.1851.084		15.8432	< 0.00001*
Model 5 - Creation of inclusive value	4.738	1.1320.738		11.28667	<0.00001*
Model 6 Shifting goals for environment/community	4.623	1.1480.614		9.256733	<0.00001*
Model 7 - Resilience in lending	4.71	1.1390.72		10.73903	<0.00001*
Model 8 - Sustainable financial products	4.84	0.9930.82		14.49197	<0.00001*

Notes. *Referring to significant results
Source: [33]

Table 4. Purchase Intention for Models (5-Point Scale; N ¼ 300)

Model	Average score	SD	Average score - 3	z-score	Significance (p-value)
Model 1 - Minimizing the efficiency of materials and energy	3.331	0.9010.331		6.350855	<0.00001*
Model 2 - Replacing with a digital process	3.474	0.9150.474		9.052598	<0.00001*
Model 3 - Encouraging efficiency	3.421	0.8910.421		8.173724	<0.00001*
Model 4 - Adopting a stewardship role	3.494	0.8680.494		9.848917	<0.00001*
Model 5 - Creation of inclusive value	3.308	0.87 0.308		6.118984	<0.00001*
Model 6 Shifting goals for environment/community	3.148	0.9120.14		2.7979290	.002567*
Model 7 - Resilience in lending	3.134	0.9090.134		2.5370360	.00569*
Model 8 - Sustainable financial products	3.331	0.8150.331		7.021829	<0.00001*

Source: [33]

Table 5. The Results of Post Hoc Test (Mauchly's Test of Sphericity) for "Attractiveness"

Within-Subjects Effects	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon ^b Greenhouse-Geisser Huynh-Feldt Lower-bound
Attractiveness	0.748	86.447	270.0000	.932	0.955 0.143

Testing the null hypothesis that the error covariance matrix of the orthonormally normalized transformed dependent variables is proportional to the identity matrix.

a Design: Intercept in Design Subject: Attractiveness.

b Can be used to adjust the degrees of freedom for a mean significance test. The corrected test is presented in the Within-Subjects Effects Test Table

Source: [33]

Table 6. The Results of the Within-Subjects Effects Test for "Attractiveness"

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Attractiveness	Sphericity Assumed	52.89	7.1	7.55	11.26	0.000
	Greenhouse-Geisser	52.89	6.52	8.12	11.26	0.000
	Huynh-Feldt	52.89	6.68	7.92	11.26	0.000
	Lower-bound	52.89	1.000	52.88	11.26	0.001
Error (Attractiveness)	Sphericity Assumed	1404.12	2094	0.672		
	Greenhouse-Geisser	1404.12	1949.12	0.721		
	Huynh-Feldt	1404.12	1997.19	0.704		
	Lower-bound	1404.12	299.00	4.697		

Source: [33]

Table 8. The Results of Post Hoc (Mauchly's Test of Sphericity) for "Purchase Intention"

Within-Subjects Effects	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon ^b	
					Greenhouse-Geisser	Huynh-Feldt Lower-bound
Purchase Intention	0.740	89.741	270.000	0.921	0.944	0.143

Testing the null hypothesis that the error covariance matrix of the orthonormally normalized transformed dependent variables is proportional to the identity matrix.

a Design: Intercept in Design Subject: Attractiveness.

b Can be used to adjust the degrees of freedom for a mean significance test. The corrected test is presented in the Within-Subjects Effects Test Table

Source: [33]

Table 9. The Results of the Within-Subjects Effects Test for "Purchase Intention"

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Purchase Intention	Sphericity Assumed	38.45	7	5.493	12.78	0.000
	Greenhouse-Geisser	38.45	6.44	5.971	12.78	0.000
	Huynh-Feldt	38.45	6.59	5.829	12.78	0.000
	Lower-bound	38.45	1.000	38.446	12.78	0.000
Error (Purchase Intention)	Sphericity Assumed	899.56	2094	0.431		
	Greenhouse-Geisser	899.56	1925.38	0.468		
	Huynh-Feldt	899.56	1972.31	0.455		
	Lower-bound	899.56	299.00	3.010		

Source: [33]

Table 11. Sustainable Business Model for Banks

Model Grouping		Examples of Supported Innovations
Technical	Maximizing the efficiency of material and energy	Performing digitalization on internal documents, electronic whiteboards, and teleconferencing
	Replacing with a digital process	Online trading, e-banking, e-statement, robo-advisor, digital payment
Social	Encouraging sufficiency	Needs-based selling, encouraging responsible lending, reducing the commission portion in the remuneration of sales staff, and using "compliance" as a KPI
	Using a stewardship role	Re-employing retired staff, providing endorsement for social enterprises, and providing paid leave for volunteers
	Creation of inclusive values	Supporting first-time home ownership, micro financing, and offering unsecured loans for SMEs
Organization	Shifting goals for society/environment	The examples of banks that follow this model are Triodos Bank, Grameen Bank.
	Resilience in lending	- E&S (Environment and Social) Assessment by Standard Chartered (negative screening) - Equator Principle (especially for project financing)
	Sustainable financial products	Green obligation, crowdfunding platforms, socially responsible funds, and impact investing.

Source: [37]