

Triangle Syariah Justice Ecosystem: Constructing Business Model of Pension Fund

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Keywords

Digital
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Abstract

The objective of this paper is to redesign the Indonesian pension fund's business model and management system, and develop new strategies to balance profits, affordability, and sustainability. The authors consider the Malaysian pension system and adapt the INTERDAP application used by PT. Angkasa Pura II. Through this qualitative case study, we apply the foundations of the Triangle Syariah Justice Ecosystem (TSJE) to digitize the pension system and support green investment in the long run by modeling the business strategy, facilitating the business model and supplier relationship management, and creating mutually beneficial management among stakeholders. The study found that Malaysia's pension system has an investment purpose, while that of Indonesia only provides pension loans based on previously agreed cumulative contributions. Malaysia encourages people across the country to save on severance funds, and the pension system is still managed conventionally. Malaysia requires a pension contribution of 23 percent of the employee's base salary, while Indonesia requires a meagre 3 percent. This affects the contribution of pension funds to Gross Domestic Product (GDP), with Malaysia's pension fund accounting for 60 percent of GDP but Indonesia's accounting for only 6 percent. The authors also consider that to become a developed country, pension funds need to reach 60 percent of GDP by 2045, because 42 percent of the total supply of funds in the infrastructure sector originates from pension funds. The practical implications of this study are on access to information, security, and transparency in the management of pension funds through a digital system supervised by the Syariah Regulator, alongside the Indonesian government's efforts to realize support for the green economy.

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1. Introduction

Early in 2020, the Covid-19 pandemic outbreak caused financial instability, which led to unpredictable currency exchange rates and money movements. The rate of return on investment and overall financial success of non-bank financial institutions, particularly pension funds, are significantly impacted by this. At the same time, consumer behavior and ecosystems are changing faster than initially predicted due to global commitment to a green economy and digital penetration. Every facet of market activity today, including that of the financial sector, has been digitized. The green economy is now a part of the commitment to guaranteeing sustainability on a global scale.

A retirement agenda is always set based on an agreement between the employer and the employee. Contracts usually take the form of ordinances, commonly referred to as pension fund regulations, that apply to both employees and employers. Pension regulations are therefore part of collective bargaining agreements (Kusmayanti, et al., 2021).

Pension payments not only provide income security to retired individuals, but also motivate employees to improve their performance. Employees can rest assured that they will have access to a post-retirement service program; this is especially important for those who think that retirement will reduce their productivity. On the other hand, for employees approaching retirement age, they are motivated by the fact that their performance is still being evaluated by the company.

The management of pension funds is very beneficial from a business point of view. Contributions are interest free, which increases profits, which are then invested in various sectors. The existence of a pension program funding system can form the accumulation of funds needed to maintain the income continuity of old-age program participants (Meilani 2015).

However, there are several problems with Indonesian pension funds. First, not all participants understand that their pension fund is invested and that the return on investment achieves a certain rate of return; second, the Syariah Pension Fund is not included in the Indonesian Pension Fund Act; and third, investment portfolio restrictions are in place, ostensibly as a cautionary measure but ultimately limiting options for investment.

Pension funds play a very important role in nation-building. Despite this, Indonesia's pension savings contribute very little to the country's Gross Domestic Product (GDP), reaching only 6.03 percent. This is low in comparison to neighboring countries such as Malaysia, where 60 percent of GDP is based on pension savings

(Juliasari, 2020). In general, the Malaysian pension system is an arrangement that contributes to a fund designed to provide pensions to employers and employees, usually upon retirement. Malaysia's retirement income strategy aims to reduce poverty in the elderly by ensuring financial well-being in old age, because there is otherwise a risk that pension support will not be sufficient to provide the elderly with sufficient income in old age (Ali, et al., 2021).

One path for improving management of pension funds is the pursuance of financial inclusion under Syariah to promote transparency. Unfortunately, Indonesia's Islamic financial literacy and penetration index is less than 9 percent (Alghifari, 2022). The level of Islamic financial inclusion is still low in Indonesia at only 9.1 percent, well below the country's traditional financial inclusion rate of 76.72 percent (OJK, 2022) as well as Malaysia's Islamic financial market share of 30 percent. Therefore, awareness raising efforts that are easily accessible are urgently needed, especially for workers who are about to retire. Digital media is one solution to increase financial inclusion under the Syariah Act and is believed to promote the creation of transparency in information related to managed pension funds.

Following the example of Malaysia, which has turned its pension fund into a form of investment, this study attempts to present a means of investment in a built digital system. Sustainable energy sources and clean technologies, in particular, are considered green investments. These investments comprise a variety of technologies at various stages of maturity and need for an array of different funding strategies. For pension funds to achieve stable inflation adjustments, we are interested in low-risk investments that provide a source of later income. Therefore, green bonds are attracting attention as an asset class. Despite this, green bonds currently lack environmental policy support, resulting in low allocation of pension funds to green assets in Indonesia. In addition, other challenges that occur in the governance of the allocation of pension funds in Indonesia are the problem of low market liquidity measures, regulatory barriers, lack of knowledge and expertise on related investment risks.

The impact of digitalization and the transition to a green economy require a strong portfolio investment strategy. Post-retirement savings as a simple response to disasters and climate change average only 2 percent of monthly net salary. This should be increased to 10 percent. In addition, Indonesia is committed to supporting green investment: job creation, mitigating disasters and climate change, transitioning to renewable energy, and reducing carbon emissions by 2023, ultimately culminating in zero carbon emissions by 2060 (Chygryn, 2020).

This study develops new business models, management systems, and strategies for pension funds in Indonesia. These funds would incorporate Syariah-based digitalization, Syariah leading to a balance of adequate profits, affordable financing, and sustainable pension programs through the implementation of Triangle Justice Syariah Ecosystems (TJSE), which supports green investment in Indonesian pension fund management.

2. Literature Review

Examples of pension fund business models implemented in Indonesia are PT. TASPEN for civil servants and Badan Penyelenggara Jaminan Sosial Ketenagakerjaan (BPJS Ketenagakerjaan, or the Employment Social Security Administration, which will be referred to here as BPJS Employment) for private employees. PT. TASPEN (Persero), or the Civil Service Savings and Insurance Fund, is an Indonesian state-owned enterprise engaged in old-age savings insurance and pension funds for civil servants and state officials. TASPEN was appointed as the provider of pension payments based on the Decree of the Minister of Finance Number: 79/KMK.03/1990 dated January 22, 1990, and the letter of the Minister of Home Affairs Number: 842.1-099 dated February 12, 1990. Contributions that must be paid by participants are 4.75 percent of their monthly income (covering basic salary and family allowance).

BPJS Employment contributions are deducted from employees' monthly income (covering basic salary and family allowance). The deductions for each employee are different, as the amount depends on the salary earned. The bigger the employee's salary, the bigger the BPJS deductions. The purpose of BPJS Employment is to provide old-age insurance for both wage recipients and non-wage recipients. Contributions paid every month can later be disbursed on the condition that participants are no longer working or are experiencing unemployment. Many people when not working use their BPJS Employment funds, but other participants leave the funds alone to use in old age. To enjoy these facilities, employees must first become BPJS Employment participants, which is usually taken care of by their workplace. It should be noted that not all BPJS Employment contributions are borne by employees: some contributions are paid by the company (Yandani, 2016).

BPJS Employment's Pension Guarantee facility is intended only for wage earners (Purba, 2022). The guarantee works through monthly contributions of company contributions equal to 2 percent of the participant's salary and employee

deductions representing 1 percent of salary. Based on sources from the official website bpjsketenagakerjaan.go.id, there are several benefits offered through this program: (1) participants who have paid a minimum contribution over 15 years or 180 months will receive monthly cash payments when entering retirement age until they die; (2) registered heirs will also receive monthly payments until they die or remarry; (3) participants who experience a disability due to a work accident will receive monthly cash assistance with a density rate (the level of compliance with contribution payments by participants) of at least 80 percent; and (4) children who become the participant's heirs will also receive monthly cash payments until the age of 23 years.

When accessing the funds, BPJS Employment participants will receive payments every month with a maximum value of 40 percent of pre-retirement wages. For example, in a simulated calculation of the BPJS Employment pension fund, an employee earns a monthly income of Rp. 10 million. Therefore, the contributions that must be paid are: (1) company contributions of 2 percent x Rp. 10 million = Rp. 200,000 and (2) deductions from the employee's salary of 1 percent x Rp. 10 million = Rp. 100,000. In this scenario, the total pension contribution to be paid for this participant every month is Rp. 300,000. Indonesian pension schemes are regulated by Government Regulation no. 18 of 2019 and currently use a pay-as-you-go system. For civil servants, then, the government pays 100% of their pensions; this is known as a defined benefit (Prasetyo & Rahardjo, 2022).

In the Melbourne Mercer Global Pension Index (MMGPI) research, Indonesia's pension insurance system scores 52.5, falling category C. Malaysia occupies the position above it, with a score of 60.6. The aspect of the Malaysian pension fund management system that will be applied in this study is that Malaysia's fund's main goal is investment. In other words, it is not designed as a cash contribution system that requires monthly payments and salary deductions. According to Ali, et al. (2021), both private sector employees and civil servants enter into agreements with either the Employees Provident Fund (EPF) or the Employee Savings Fund Association (KWSP), with the pension funds to be used for one of these investment purposes: education, marriage, *umrah*, gadgets, vehicles, houses, entertainment, vacations, furniture, fashion, or other investments or purchases, with the calculation of risk and return.

In Indonesia, there are several types of pension fund payment application systems that have been operated digitally and the benefits are felt simultaneously by all members of the organization. INTERDAP (Integrated Information on

Pension Fund) is a pension fund payment application used by PT. Angkasa Pura II (Persero). It is digital-based and is one of the pension fund payment systems that provides satisfaction to beneficiaries, uses the principles of good governance, and is based on targets for workers and companies from data and information processing systems (Sari, 2019). However, INTERDAP is based on conventional principles, not Syariah, and aims for to green investment. It uses the QL server method and Microsoft Visual Basic 6.0, integrating participation, administration, accounting, investment, human resources, and finance. This can be a solution for transparently delivering information on pension benefits so that it reaches its participants after entering retirement (Sari, Wandanya & Hanifah, 2019). The aspect of INTERDAP that will be applied in this research is digitalization.

The new conceptual business framework used in this research is the Triangle Syariah Justice Ecosystem (TSJE). This model designs a digitalized management of pension funds in Indonesia that is -based with long-term green investment goals. First, this model adopts the INTERDAP system implemented by PT. Angkasa Pura II, correcting all existing deficiencies. Second, the management of pension funds is run based on Syariah, because it is considered safer, more reliable, and transparent (profit sharing) by paying attention to investment orientation, not just potential high returns. Both the Employer Pension Fund (DPPK) and Financial Institution Pension Fund (DPLK), which run and manage the Defined Contribution Pension Program (PPIP) and Defined Benefit Pension Program (PPMP), must comply with Syariah principles and be free from prohibited elements, such as the elements of *maysir*, *gharar*, *usury*, *ryswah*, and falsehood. Contracts or *ijab qabul* ties made between two or more parties must also be performed according to Syariah principles: grant contracts, *bi syarth* grant contracts, *muqayyadah* grant contracts, *wakalah* contracts, *wakalah bil ujarah* contracts, and *muqayyadah* contracts (Yuliani, 2017). Meanwhile, participants' contributions are to be invested in green investment instruments that are justified by Syariah and support the Indonesian government's commitment to carbon tax management and trading by 2025, which is currently be initiated through a Ministerial Regulation from the Minister of Finance. Pension fund participants can choose themselves or allow the fund manager to choose one or more green investment themes: coping with disasters and climate change; renewable energy transition; SDGs: carbon emission 2023 and zero emission 2060; and creating environmental project jobs (Seran, 2022).

3. Method

3.1. Triangle Syariah Justice Ecosystem (TSJE)

Qualitative, case study, and observational research methods were applied in this study. We observe that syariah management and pensions have not been well marketed in Indonesia, especially in comparison to pension fund management in Malaysia. The authors took the initiative to design a digital pension fund management policy based on Syariah principles, as well as to apply the relevant pension fund management pattern in Malaysia. We adapt PT. Angkasa Pura II's INTERDAP to determine the benefits of using a digital data and information processing system in a pension fund.

While INTERDAP still uses conventional methods of management, it can be presented as a reference application to integrate the management of syariah-based pension funds by adhering to the guidelines established by the Financial Services Authority (OJK) in partnership with the Indonesian Ulema Council (MUI). The following guidelines have been established:

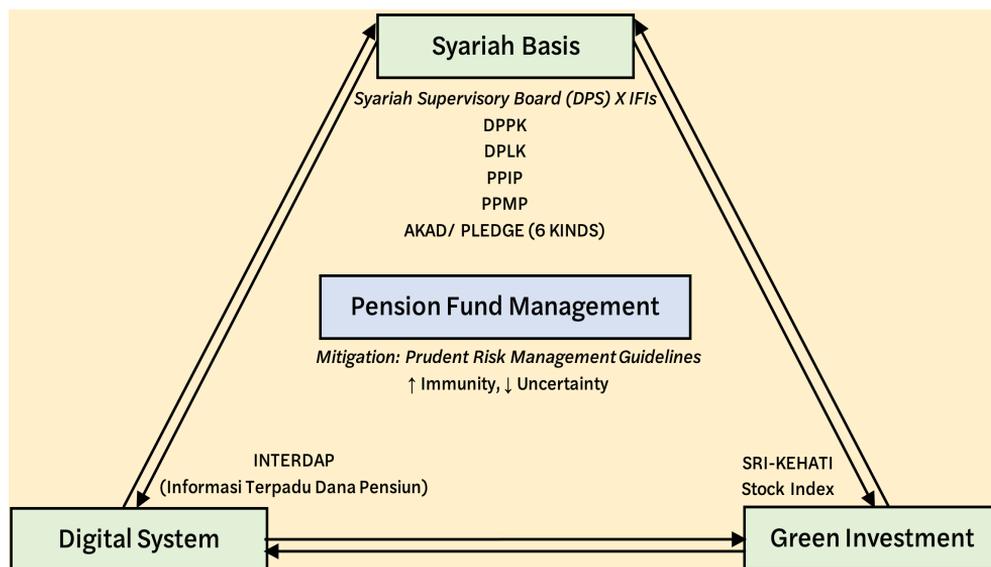
- a. OJK regulates the implementation of Syariah pension funds in Regulation Number 33/POJK.05/2016 concerning the Implementation of Pension Programs Based on Syariah Principles.
- b. Syariah pension funds are defined as pension funds whose management is guided by Islamic law and fatwas issued by the MUI's National Syariah Council.
- c. Every management fund must have a Syariah Supervisory Board, according to OJK regulations. Its responsibility is to ensure that no syariah principles are violated in the administration of the pension program.
- d. The MUI National Syariah Council has also issued a fatwa concerning the establishment of syariah pension funds. Fatwa Number 88/DSN-MUI/XI/2013 on General Guidelines for the Implementation of a Syariah-Based Pension Program.
- e. The MUI National Syariah Council fatwa sets the regulations for managing money that must not break syariah principles; for example, if funds are invested in shares, the shares must be on the IDX Syariah Securities List. Furthermore, this fatwa governs the beneficiaries and the contract used.

We advocate that cash control consistent with Syariah laws can be managed in the form of green investment. Consistent with Brodjonegoro (2002) and associates' research, the background of investment output that is ultimately aimed at harming the environment is a considerable impediment to additional

investment made through pension funds. Most green investments at the moment are uncompetitive, owing in element that they often consist of novel technology that requires backing and has not yet been commercialized. However, they may be also uncompetitive due to market failures, with existing, black technology mispriced because of unaccounted-for pollutants and fossil fuels being appreciably subsidized. Consequently, regulations are required to inspire the commercialization of the latest technologies (R&D tax credit, elevated depreciation, investment incentives, authorities support for project capital budget, and output-level assistance like feed-in tariffs, and so forth), as well as to address market disasters via carbon pricing. Such aid should be sufficiently sturdy to influence the bottom line, sufficiently lengthy to remain for a sustained period, and robust enough to supply this sort of investment-grade coverage (with regulatory frameworks established).

The general mapping of the Triangle Syariah Justice Ecosystem (TSJE) in this research is as follows:

Figure 1. Improvement of Regulation and Supervision of Effective Articulation of Pension Funds



3.2. Idea Sources

To identify problems and observe important elements, the researchers undertook a complete literature review. We attempt to simplify the challenges and conclusions of prior investigations in Table 1.

Table 1. Reference literature

Sources	Scope	Element	Yield
Sari, Herva Emilda, et al (2019)	A proper payment system can provide satisfaction to both workers and the company, but it has not been executed in line with the aims of the employee pension payment system.	Use the INTERDAP application from PT. Angkasa Pura II	Using Visual Basic 6.0, the system, work procedures, and all other elements has been extremely effectively planned and integrated. However, because the archive is still manual, an application or program that can access and use associated office archives digitally is still required.
Efrita Norman; Enah Pahlawati (2021)	Pension funds can be managed according to syariah	Syariah Pension Fund Management	The premise for distinguishing Islamic pension funds from conventional ones is that the syariah pension price range has numerous religious benefits, including having an agreement in every transaction; having a syariah supervisory board; and when contributors are late in paying their contributions, they may be punished, with the proceeds from punishment to be allotted for social good, adding an element of assisting (atta'awun) fellow humans.

<p>Danu Alit Aji Pamungkas (2018)</p>	<p>Islamic law used in the management of the pension fund of Universitas Muhammadiyah Surakarta.</p>	<p>Pension Fund Management in Perspective Islamic Law</p>	<p>The contract utilized in the management of the pension fund for Universitas Muhammadiyah Surakarta is a mudharabah, wakalah, and grant contract. Mudharabah contracts are utilized between pension funds and participants, as well as pension funds and investors; wakalah contracts are used between the employer and the pension fund; and grant contracts are used between employers and participants.</p>
<p>Della Groce; Kaminker; Stewart (2011)</p>	<p>Pension funds can contribute to the OECD's continued efforts to engage the private sector in green growth financing.</p>	<p>Pension Funds' Role in Financing Green Growth Initiatives</p>	<p>The paper provides policy suggestions: provide a history of favorable environmental scope; increase the right funding car and sell a liquid market; assist funding in green infrastructure; cast-off investment boundaries; offer training and steerage to investors, and beautify pension fund control.</p>
<p>Hanung Harimba Rachman (2018)</p>	<p>An overview of emission conditions in Indonesia, green investment policies, investment and funding needs, banking support for investment</p>	<p>Green Investment Directions and Policies</p>	<p>The creation of environmentally friendly technology, the growth of priority industries, and the use of potential new and renewable energy sources.</p>

Global Green Growth Institute (GGGI) (2022)	Five results of green growth	Green growth training kit	Five outcomes of green growth: sustainable economic growth, healthy natural capital providing ecosystem services, equitable and inclusive growth, social, economic, and environmental resilience
Bappenas (2022)	Indonesia Green Growth Program	Indonesia Green Growth Program	New green technologies and worldwide competitiveness. Funding in a financial system without the capacity to integrate with larger markets would require 7-10 times more work than well-connected conventional funding. The green boom software assists Indonesia in achieving investment competitiveness, which could eradicate poverty and guarantee social inclusion, environmental sustainability, and aid efficiency.
Nina Paklina (2018)	Effect of Digitalization on Monetary Offerings	Private Pension Sector Oversight	In step with the findings of this survey, fraud, robbery of pension belongings, non-public facts breaches, and cyberattacks must be the top priority for

			oversight. Numerous jurisdictions have implemented hazard-focused and era-neutral regulatory and supervisory procedures. Generation-enabled solutions important instruments that would enhance the usual efficacy of supervisory oversight.
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3.3. Implementation Procedure

The application of PT. Angkasa Pura II’s INTERDAP in management of pension funds is modified in this study. To encourage transparency and clarity in the distribution of pension finances, this application will incorporate syariah-compliant features. Indonesia’s Financial Services Authority (OJK), in coordination with the Indonesian Ulema Council (MUI), has produced regulations that serve as the foundation for the application of syariah law. *Mudharabah*, *wakalah*, and *hibah* (grant) are the types of contracts that can be used in the operation of pension funds. Contracts called *mudharabah* are utilized between pension funds and investors as well as pension funds and investees; *wakalah* contracts bind employers and pension funds; while grant contracts are used between employers and participants.

By implementing a syariah approach to fund management, the digital system can make it easier for users to allocate their pension funds to be invested in green investment, as the instruments used can be explained directly.

Table 2. Differences in the Scheme of the Pension Fund System in Malaysia and Indonesia

Malaysia: Employee Provident Fund (EPF)	Indonesia: BPJS Employment
<ul style="list-style-type: none"> • National mandatory savings – private sector • Contribute longer • More careful de-accumulation of assets 	There are no nationally binding rules.

Retirement Age: 60 years (Hussein, 2019)		Retirement Age: 56 years
Employee Provident Fund Act 1991		
<p>Contribution size: 23 percent of employee salary</p> <ul style="list-style-type: none"> • 11 percent from employees • ≤12% percent from company <p>Formula: dues percentage × work period × months × last salary</p> <p>Assumption: Total funds in retirement account 23% × 28 × 12 × Rp.10,000,000 = 772,800,000 divided into 2: Retirement Savings Account I 70% × Rp.772,800,000 = Rp.540,960,000 Retirement Savings Account II 30% × Rp.772,800,000 = Rp.231,840,000</p>		<p>Contribution size: 3 percent of employee salary</p> <ul style="list-style-type: none"> • 1 percent from employees • 2 percent from company <p>Formula: dues percentage × work period × months × last salary</p> <p>Assumption: Total pension fund contribution: 3% × 28 × 12 × Rp.10,000,000 = 100,800,000</p> <p>Formula: maximum withdraw × last salary</p> <p>Maximum benefit earned per month: 40% × 10,000,000 = Rp.4,000,000</p>
<p>“Beyond Savings” Initiative February 1, 2008 → Changes (↑ member financial security) Life expectancy ↑, family ties ↓, medical expenses ↑</p>		
1.	Employee aged 55-75 years old	<p>Contribution rate reduced by 50 percent</p> <ul style="list-style-type: none"> • ≤5.5 percent from employees • ≤6 percent from company
2.	Employee aged 55 years	<p>Basic Savings MYR 120,000 (Rp. 403,719,708)</p> <p>The total savings of employees during the retirement deduction is unknown at the end.</p>
3.	Withdrawal options (1 November 2007)	<p>Before: - Monthly payments/withdrawals from savings</p> <p>After: → Flexibility: withdraw part of savings</p> <p>Maximum withdrawal of 40 percent of accumulated pension contributions</p>

		<p>at any time</p> <ul style="list-style-type: none"> ➔ Prevent members from withdrawing money at once ➔ Not practical in long term financial security ➔ (Research) Withdrawal at once spent within 10 years; life expectancy 75 ➔ Accumulated savings are spent too quickly and prematurely ➔ Balance that is not withdrawn at the age of 80 is transferred to the Un-claimed Money Keeper ➔ Multipurpose savings fund (with-drawal ➔ housing, education, medical expenses) 	
4.	2 Withdrawal Accounts (January 2007)	<p>Retirement Savings Account I</p> <ul style="list-style-type: none"> • 70% of monthly contribution ➔ pension financing • Minimum overall withdrawal age: 55 years old/ become incapacitated/ leave the country • Withdrawal delays: (1) resume contributions; (2) withdraw savings dividends/year • January 31, 2008 <p>Savings over MYR 55,000 (Rp. 185,161,268) ➔ investment in external fund manager (approved by Ministry of Finance)</p> <ul style="list-style-type: none"> • February 1, 2008 <p>Only 20% of the balance is >Basic Savings</p> <ul style="list-style-type: none"> ➔ investment in products from approved investment institutions (43 companies) • EPF does not cover investment losses in external fund managers <p>Retirement Savings Account II</p> <ul style="list-style-type: none"> • 30 percent of monthly contribution: <ul style="list-style-type: none"> - Housing (loans and balance determination) - Treatment - Education - Other goals (age: 50 years) • Minimum withdrawal age: 50 years old <p>Withdrawal frequency ➔ destination (restriction)</p>	Only in the form of a Retirement Account

4. Results and Discussion

4.1. Employee Provident Fund

A crucial tenet of Malaysia's pension system is the Employee Provident Fund (EPF). Based on the official website of the Employee Provident Fund Board of Malaysia, EPF had assets of MYR 476 billion (€104.8 billion) as of July 2022. A wide range of social security purposes is served by EPF, funded by employee contributions equal to 23 percent of salary (11 percent from employees, 12 percent from employers), which is managed by the government. The employer may choose to pay a higher rate of contribution than the required minimum of 12 percent.

The majority of the fund's assets are invested in low-risk fixed income instruments, such as government bonds, loans, and money market products, which have enabled it to grow at a stable rate for decades. Investments in EPF assets are subject to quantitative regulations. Up to 25% of the portfolio should be allocated to domestic stocks, with at least 70% allocated to low-risk fixed-income products. The Ministry of Finance must give its blessing to any foreign investment. EPF is currently aiming to further diversify its asset allocation to justify the fund's expansion and enhance its risk/return profile, and are searching for fresh investment opportunities through foreign investment schemes.

4.2. Syariah Pension Fund

Indirectly, with increasing public awareness about Syariah pension funds, it will open up potential sources of long-term development funding. Therefore, the state is intensively conducting socialization regarding this Syariah pension fund. It is very likely that pension fund management entities will switch from conventional and apply Syariah due to the more people learn about the guidelines and principles of the contract, the more they will realize that Allah's promise in the Qur'an regarding the level of benefits received is far greater than the harm. By employing a management approach devoid of *maysir*, *gharar*, *riba*, *ryswah*, and *bathil*, all of which are forbidden by Islam, a fund is complying with Islamic directives. As a result, contributions made by the participants, which raise money, must be invested in Syariah-compliant financial assets. For example, the securities of businesses represented by the Jakarta Islamic Index. Syariah investment trust portfolios come in a variety of forms already: syariah stocks, syariah investment trusts, syariah bonds, and

mudharaba deposits. The MUI fatwa states that investments may only be made in justifiable things.

The most striking difference between Islamic pension funds and traditional pension funds lies in the contracts used. Islamic pension funds use contracts in all transactions, while traditional pension funds do not use contracts in transactions. Contracts that contain syariah pension funds and their uses include:

- a) *Bi syarth* grant: an agreement that governs the payment of contributions by the participant's employer.
- b) *Muqayyadah* grants: employers and participants who are paying contributions use both *bi syarth* grant contracts and *muqayyadah* grants.
- c) *Wakalah*: a legal agreement utilized between the employer or participant and the pension fund.
- d) *Wakalah bil ujah*: a legal document that is used to communicate between an employer or participant and the pension fund that manages the pension program based on syariah principles.
- e) *Mudharabah*: the method through which pension funds collaborate with investment managers to develop pension programs based on syariah principles.
- f) *Ijarah*: a legal framework utilized by pension funds to coordinate Syariah-compliant pension plans with the help of actuaries, custodian banks, investment consultants, and/or public accountants.

The guidelines for organizing a pension program based on Syariah principles are the Word of God in QS. Al-Hasyr [59]: 18, QS. An-Nisa' [4]: 29, QS. Al-Baqarah [2]: 275, QS. Ali-Imran [3]: 130, QS. Al-Maidah [5]: 1, QS. An-Nisa' [4]: 58, and QS. Luqman [31]: 34, in addition to the Hadith of the Prophet narrated by Abu Hurairah, Nu'man bin Basyir, Muslim from Abu Musa al-Ash'ari, Tirmidhi from 'Amr bin 'Auf, Tirmidhi, Hakim, *Atsar* Companions, and *Qaul Ulama*. In addition, there is a fiqh rule which states that all forms of muamalah are permissible unless there is an argument that forbids it. All harmful elements must be removed. The actions or policies of the *imam* (government) towards the people must be *mashlahat* oriented. Based on the Syar'i Standards (AAOIFI), on the basis of being free of usury and *gharar*, Islamic pension funds must separate the assets and liabilities of the syariah unit from the assets and liabilities of non-syariah units. In addition, the importance of the position of the Syariah Supervisory Board (DPS) is stated in article 21 of POJK No.33/POJK.05/2016. Based on the article, every pension fund that organizes a syariah pension fund is required to

have at least 1 DPS in charge of supervising operations in order not to violate Syariah principles. DPS must obtain a recommendation from the MUI DSN and through the OJK fit and proper test. On the other hand, *gharar* does not damage the legality of the contract even though it is dominant, including grants and wills. This is further discussed in DSN MUI Fatwa No. 10/DSN-MUI/IV/2000 regarding Wakalah, DSN MUI Fatwa No. 52/DSN-MUI/III/2006 regarding Wakalah bil Ujah Agreement on Syariah Insurance and Reinsurance, and the DSN MUI Fatwa No. 53/DSN-MUI/III/2006 regarding the Tabarru' Agreement on Syariah Insurance and Reinsurance.

4.3. Return and Risk Perspective in Green Investment

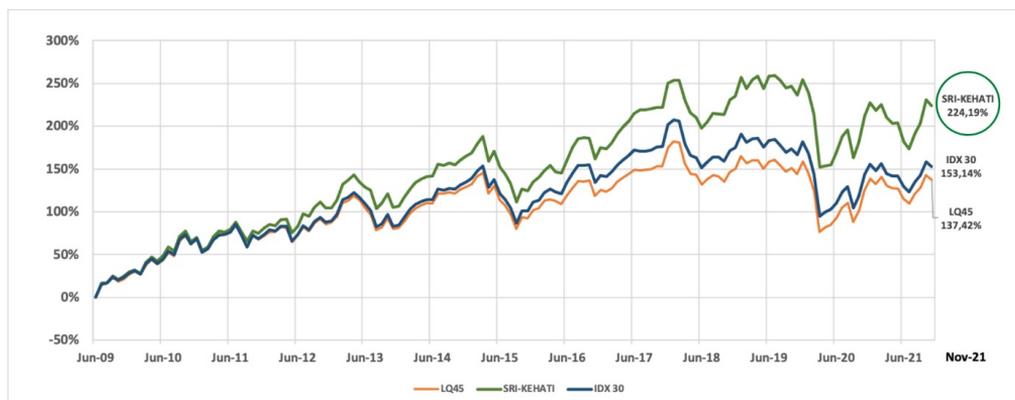
Numerous varieties of investment are desired by green initiatives at various tiers of improvement, especially ones involving complicated technologies and sustainable electricity assets (from new technologies to already extensively deployed technology). Such projects are available to institutional buyers through equity (consisting of indexes and mutual price range), fixed earnings (especially green bonds), and alternative investments (together with personal equity and direct investment via green infrastructure finances). Green bonds are an appealing asset, particularly for institutional buyers interested in socially responsible investments, as pension funds are searching for low-risk investments that provide a steady flow of income adjusted for inflation. Notwithstanding interest in those goods, the pension price range continues to allocate most effectively a small component of their belongings (much less than 1 percent) to such green property. There are several reasons for this (Della and Stewart, 2011).

Based on Chițimiea (2021), the benefits of green investment are as follows:

- a) Green growth is a strategy for attaining several objectives at once that moves Indonesia closer to truly sustainable development.
- b) Offer a workable framework for national development objectives such as East-West integration, food, and energy security, disaster preparedness, and climate change mitigation.
- c) Green growth encourages goals that benefit the economy, jobs, the underprivileged, and the environment.
- d) Green growth concepts and methods will help decision-makers assess policies and initiatives more thoroughly so that the economy, society, and environment can all benefit.

From the INTERDAP system that was built based on the conventional system, we strive to integrate the system based on syariah. This idea emerged based on the Malaysia’s EPF, due to it being one of the best-managed pension funds in Southeast Asia.

Figure 2. Comparison of Performance Stock Index of SRI-KEHATI, IDX 30 and LQ45 in 2009-2021



Based on the return and risk perspective in Figure 2, green investment can be made in Indonesia through the Sustainable and Responsible Investment (SRI) stock index at the Indonesian Biodiversity Foundation (KEHATI) for grants on investment returns in the forestry, agriculture, and marine sectors. SRI-KEHATI is a United States grant to Indonesia in the form of an endowment fund, with made in the capital market (stocks and bonds). The SRI-KEHATI stock index is the only reference for investment principles that focus on Environmental, Social, and Good Governance (ESG) in Indonesia. Four types of portfolios can be used by investors in investing their pension funds, namely: (1) KEHATI Lestari Mutual Fund (RDKL) managed by PT. Bahana TCW Investment Management, with 12 companies. (2) SRI-KEHATI Stock Index, with the 25 best publicly listed companies; (3) ESG Quality 45 IDX (Indonesia Stock Exchange/ BEI) Kehati (ESGQ 45) with 45 selected companies; and (4) ESG Sector Leaders IDX Kehati (ESG SL IDX KEHATI) with 48 selected companies representing their fields. Based on the results recorded every June on the official website of the Indonesia Stock Exchange (IDX) between 2009 and 2021, historically the SRI-KEHATI index has performed better than IDX30, Liquid 45 (LQ45), Jakarta Islamic Index (JII), and Jakarta Composite Index (JCI). Therefore, investors can be optimistic about their potential for income from pension fund investment activities in the future.

4.4. Business Model Canvas

A strategic management tool known as the Business Model Canvas (BMC) is used to swiftly and clearly describe and express business ideas or concepts. The pension fund application’s business model canvas is shown in this table.

Table 3. The New Business Model Canvas of Pension Fund

BMC of TSJE Pension Fund				
⁹ Key partners	⁶ Key activities	¹ Value proposition	⁵ Customer relationships	² Customer segments
*MUI *OJK *Website developers *App developer *Stakeholders *Syariah banks *DPPK *DPLK	*Website development and maintenance *Platform developer *Pension Management	*Syariah base *Discoverability *Easy access *Community development *Transparency *Accountability *Trust	*MPC (Membership, Points, Coupon) *Promo *Customer support: FAQ and support via website, phone, WA, and email *Social media, blogs, newsletter *Involvement through open source projects *Loyalty bonus	*Employees of the private sector and government sector
	⁷ Key resources		³ Channels	
	*Customer trust *Human resources *Capital structure * Experts *Investor *Office activity		*Appstore *Google Play *Mobile *Website	
⁸ Cost structure			⁴ Revenue streams	
*Platform costs - Risk management fee - System development/maintenance - Screening fees - Investment instruments *Company costs - Operational costs - Staff - R&D - Salary - Pension roadmap - Marketing			*Pension fund *Investment instrument *Transactional costs *Fees for additional services *Platform fees and subscription	

Notes:

Value proposition= 1

Value turnover= 2, 3, 4, 5

Value generation= 6, 7, 8, 9

The core activity for the pension fund application development team is the value proposition. In other words, the main resource is the developer. The application needs a foundational infrastructure that explains why customers should be interested in using this application. The next element is to determine the customer segment that will become the target market. In this case, the customer segments of this research are the employees of the private sector and government sector who have fixed incomes and are later expected to become users of this service. Channels are a way to be able to convey products to consumers (also called value propositions). Therefore, the channels described above are considered to be able to channel this system properly.

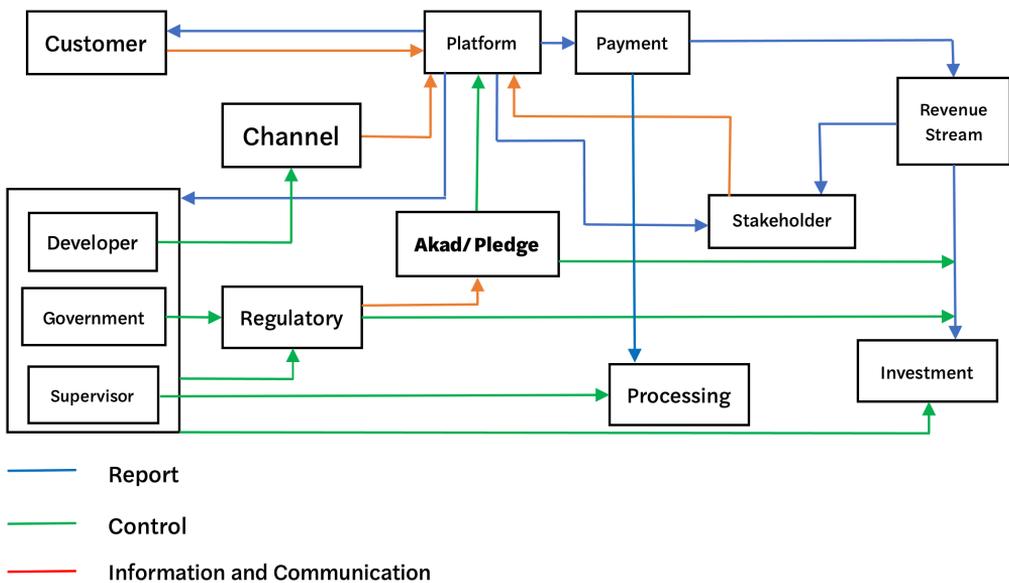
The most effective way to interact with current and potential customers is through building strong customer relationships. The ways to hook users above that have been described can be considered as efforts to effectively interact with users or potential users. All activities related to business productivity and products, as well as generating value propositions, are called key activities. In this stage, the company must explain how to create a business value proposition by carrying out activities to improve product recognition. On the other hand, the revenue stream is income that has been deducted from the costs incurred. This is a very crucial element of the BMC, so it must be managed as much as possible to increase business revenue. From raw materials and products to performance, all must be used properly.

A partition in the BMC called 'key resource' comprises a list of planned resources that the company needs to own to realize its value offer. All resources must prioritize customer trust while supporting it through other factors. This has a significant impact on the consistency and continuity of the business over time, including by improving the effectiveness and efficiency of important decisions. The business financing structure is the final but no less significant component of the BMC. Effective management of capital is crucial, and guarantees that clients are receiving the proper value proposition. In this case, the cost structure is separated into two categories: firm costs, which are expected to be able to create cash flow in the system, and platform costs.

4.5. Pension Fund Metrics

A pension fund application is a subscription-based digital solution for managing pension funds. The user will be given information about the agreement or pledge used by the application before being confirmed as an official user. Contributions that have been automatically deposited through the relevant bank will be disclosed to registered users here. These apps encourage the government and associated institutions to act as overseers to guarantee top performance throughout the process. Figure 3 below provides a summary of pension fund metrics.

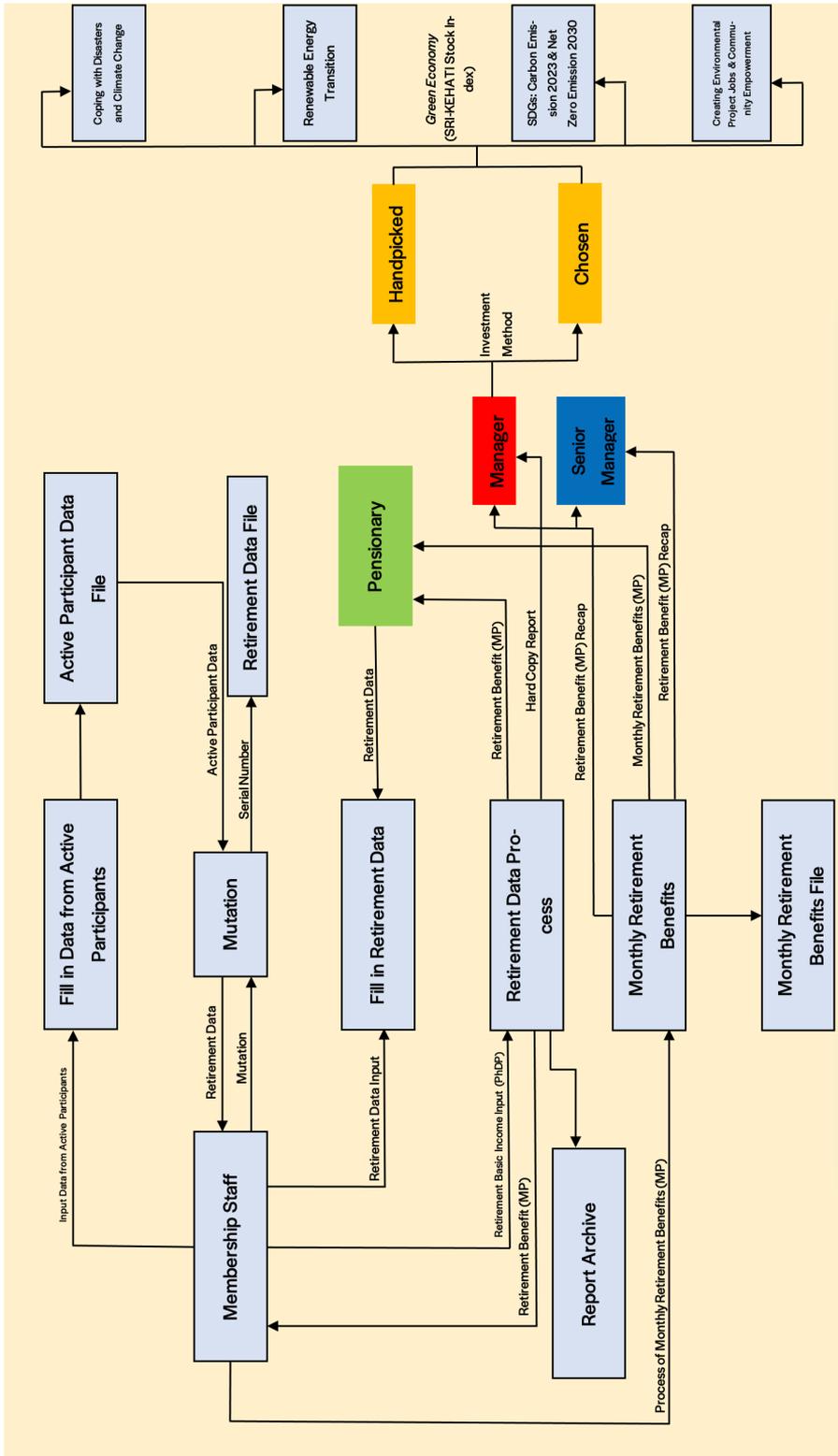
Figure 3. The New Pension Fund Metrics



4.5. New Business Model and Strategy of the TSJE Pension Fund

From the discussion above, what is needed is a strategy to build a new system its infrastructure. The discussion in this paper refers to the syariah system so that pensioners receive pension benefits that are managed and applied in a digital system within the syariah corridor, supervised by relevant agencies for active participants and transferred for those who become retirees. The authors map out the business model in the application in Figure 4. The system and procedures will be well organized and fully integrated, using syariah-based digital software, and the collected pension funds can be allocated to support green investment.

Figure 4. New Business Model and Strategy of TSJE Pension Fund



5. Conclusion

The Covid-19 pandemic outbreak in early 2020 generated financial instability that resulted in erratic money flows and exchange rates. This has a significant impact on the rate of return on investment and overall financial success of non-bank financial organizations, especially pension funds. At the same time, global commitment to a green economy and digital penetration are altering ecosystems and consumer behavior quicker than previously anticipated. Digitalization has permeated every aspect of market activity today, including that of the financial industry. The commitment to ensuring sustainability on a global scale now includes the green economy. The financial sector needs new business models and strategies to respond quickly to changes as a result of the ecosystem's transition. By implementing a syariah-based financial system, a safer and better pension fund might be created in Indonesia, given the wide market segmentation and Indonesia's predominantly Muslim population. The benefits of syariah pension funds include the opportunity for Islamic financial institutions to grow from profits made, the comfort of participation in syariah-compliant pension plans for Muslims, and security due to fatwa issued by MUI. The money raised from the pension scheme is managed via halal investments, such as those made in the Islamic stock and bond markets and money market. Customers can thus use solutions that are approved by Islam rather than enrolling themselves with conventionally based pension schemes.

This research uses a case study of the conventional PT. Angkasa Pura II pension payment information system, INTERDAP. Although it has not been executed in accordance with the goals of the pension payment system for employees, the current implementation of the payment system can nonetheless satisfy both employees and the business itself with the proper payment structure. INTERDAP can act as a problem solver in the delivery of information on pension benefits to employees, helping participants understand the process of pension payments

INTERDAP can also be used to support green investment. By 2022, the total financial market assets from pension funds will contribute 6 percent of Indonesia's GDP, a significant element in light of Indonesia's commitment to supporting green investment in mitigating disasters and climate change, transitioning to renewable energy, and reducing carbon emissions. This in turn creates more jobs and further green investment. OJK and IDX are currently preparing regulations, infrastructure, and human resources for the implementation of a carbon market by registering members of the carbon exchange. By 2025, full carbon trading should be able

to be carried out through the carbon exchange, expanding the cap & trade and cap & tax sectors at stages according to sector readiness, and implementing the Ministerial Regulation from the Finance Minister for carbon tax management in other sectors. INTERDAP will also follow the Syariah system. PT. Angkasa Pura II is the Financial Institution Pension Fund (DPLK) or shahibul mal, and other parties will carry out contract management activities with six criteria: grants, syarth grants, muqayyadah grants, wakalah, wakalah bil ujah, and mudharabah.

5.1. Research Contribution

This research contributes to the new business model and strategy of the pension fund financial industry in Indonesia by implementing the TSJE strategy, combining digitalization, green investment, and syariah. The case study was conducted by comparing the systems used in Indonesia and Malaysia. First, as a security for their retirement, workers seek pension savings, but the process for making contributions is also important. If a proper payment system is used, both the employees and the business itself can be satisfied (Clark, 2016). Payment of pension funds is very complicated if done manually, so a digital system provides convenience and speed in data processing.

In terms of financial capacity, the role of the pension fund sector is considered very important, and sustainable financing is needed. In 2022, the total assets of the financial market will be around 20 percent of Indonesia's normal GDP, while if viewed as an economic benchmark, nominal GDP will reach more than USD20,000. Community pension funds need to be increased to 10 percent of take-home pay. Pension funds can also be used for long-term green economy funding. Savings in the form of pensions as a simple response to disasters or climate change in Indonesia only reach an average of 2 percent per take-home pay each month, the government must increase it to 10 percent.

The government and policymakers deemed it necessary to redesign the pension fund management system to achieve a balance between sufficient profits, affordable funding, and sustainable programs. In particular, several root causes cause the growth of pension funds in Indonesia not to be as fast as expected. The first is about transparency. To build trust, all investment policies and performance must be communicated to stakeholders. Not all participants understand that their pension funds are actually invested that the investment generates a certain rate of return. An example is BPJS Employment, which has tried to achieve transparency by providing participants with access to this information, albeit at a limited level

and quality. Therefore, education and awareness raising of participants about pension schemes, administration, and management are also important. Second, the limitation of the investment portfolio, which was originally intended as a sign of caution in the management of pension funds, has resulted in a limited selection of investment instruments. The government needs to reconsider the approach to find a middle point between safety and a good rate of return on investment.

Third, inadequate contributions to cover long-term benefits. The government needs to redesign the program to make it sustainable. The old system implemented defined benefits which over time, there was a mismatch between the funds needed for the best practice of providing benefits and the real funds that had been collected so that it became a financial burden for the management of pension funds. This happened to the Taspen and Asabri pension plans. The government is reviewing the appropriate institutional arrangements to manage the Taspen and Asabri mandatory pension programs. So far, the government sees three options: first, the existing funds are managed by state-owned enterprises; second, create a special institution mandated by law; and third, place the management of these funds in a unit under a single ministry, such as the Ministry of Finance. This would lead to Indonesia achieving similar levels of pension benefits as participants receive in Malaysia, where after 20 years of service, retired employees will receive a pension that is 55.2 times their monthly salary. When added to the severance pay (five times the monthly salary), the total money received by retired employees in Malaysia reaches 60.2 times the monthly salary.

5.2. Theoretical and Practical Implications

The fundamental weakness of Indonesia's pension fund sector is that literacy in the non-bank financial sector in general and in the pension fund sector in particular has increased but remains very low compared to neighboring countries, while inadequate technical expertise, especially in the actuarial and investment fields, has led to weak corporate risk management in both industries. In addition, efforts to strengthen market behavior highlight the need for regulatory and supervisory reforms. Community pension funds need to be increased to 10 percent of take-home pay or net salary, as the total value of Indonesia's pension funds currently represents just 6 percent of GDP. To become a developed country, pension funds must reach 60% of GDP in 2045. This figure is far from expected and it is necessary to strengthen investment governance to accelerate the inflow of pension funds. Pension funds are a source of sustainable national development funds. Pension

funds are crucial to the infrastructure sector, where the private sector (through pension funds) contributes 42 percent of the total required funds. However, currently, the pension fund program is only able to raise Rp. 955 trillion of the total Rp. 2,707 trillion contributed by the private sector.

The practical implications of this research are threefold. First, a case study on the use of INTERDAP determined the benefits of a digital data and information processing system in a pension fund. The system is used for all purposes: accounting, investment, finance, human and general resources, and participation and administration, and supports the principles of good pension fund governance. Second, on Syariah investment, there are several policy recommendations, including the establishment of a Green Investment Bank in Indonesia. Third, it is also advised that the government and officers aid investment in green infrastructure, eliminate root limitations to funding, educate consumers, boost governance, create suitable investment instruments, and foster a liquid marketplace.

The development of the green economy has to be centered on environmental development objectives like preventing weather trade, defensive biodiversity, decreasing environmental pollutants, and using new and renewable electricity resources. This big goal can be achieved through small steps that are consistently carried out by all producers both at the company and household levels, namely the use of environmentally friendly substances, low intensity of input substances, application of the concept of decreasing, reusing, recycling, and recovering, low energy intensity, human sources who have a level of competence of their field and have a perception, especially aid efficiency, the volume of water used decreases and meets environmental nice, consistent with the Ministry of Enterprise. Climate change adaptation, the transition to renewable energy, the SDGs of carbon emission 2023 and zero emissions 2060, and the creation of environmental project jobs are among the investment outputs of green pension funds.

Third, the application of Syariah to pension fund organizations in Indonesia is very possible because this country has great potential and opportunities in the form of market segmentation with the largest Muslim population in the world. This would entail utilizing a plan devoid of characteristics that are forbidden in Islam, such as *maysir*, *gharar*, *usury*, *ryswah*, and *batil*. As a result, the monies raised through participant contributions must be invested in syariah-compliant financial products, such as in syariah-compliant securities through businesses included in the Jakarta Islamic Index (JII). Existing syariah investment instrument portfolios include *Mudharabah* Deposits, Syariah Shares, Syariah Mutual Funds, and Syariah Bonds. Both the Employer Pension Fund (DPPK) and the Financial Institution

Pension Fund (DPLK) must meet the six requirements for a good Islamic contract when managing the funds. Syariah-compliant investment plans are required for Syariah-compliant Pension Funds. In 2021, there was just one Syariah Pension Fund in Indonesia, managed by PT. Indonesian Principals.

5.3. Limitations and Future Research

The limitation of this research is that it is still in the form of a new business model concept and strategy. Looking at conventional systems allowed the identification of many problems. The pension fund system in Indonesia is also very small, far below Malaysia. Therefore, digital, green investment and Syariah-based integration strategies are needed. Research that can be done in the future is how to make this application real and used by the wider community through collaboration with a reliable IT team. The system provides convenience and speed in data processing. However, this must also be accompanied by an increase in the ability of participants who use the system. Therefore, there is a need for study regarding the introduction of the system, so that in operating the system the user does not feel confused.

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