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INVESTMENT FEASIBILITY ANALYSIS OF WATER STORAGE SERVICE (WSS) IN URBAN

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ABSTRACT

This study examines the feasibility of investing in a Water Storage Service (WSS) in Depok City to address the growing demand for clean drinking water. The research evaluates WSS's financial viability and sustainability, considering market, technical, financial, environmental, management, and legal aspects. Using a quantitative approach, the study employs investment evaluation criteria such as Net Present Value (NPV), Return on Investment (ROI), Internal Rate of Return (IRR), Payback Period, and Net Benefit-Cost Ratio (Net B/C). The findings indicate that the WSS initiative is financially feasible, with a positive NPV of IDR 116,553,085,906.00, ROI of 15.3, IRR of 32.06%, and a payback period of 5.7 years. Sensitivity analysis shows that the project remains viable even with a 15% reduction in sales and a 20% increase in operating costs. Despite the promising financial results, several risks were identified, including market, technical, regulatory, and business risks. The implications of this study suggest that WSS can be an effective solution to reduce reliance on bottled water and groundwater, while providing affordable, sustainable water access for Depok's growing urban population. Future research should explore how WSS can be implemented in other urban areas facing similar water scarcity issues.

KEYWORDS Clean Water, Drinking Water, Water Storage Service, Investment, Risk

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INTRODUCTION

Indonesia's rapid population growth is fueling higher demand for water, food, energy, and raw materials, while the supply of natural resources, including water, is increasingly limited (Erdiwansyah et al., 2021; Nugroho et al., 2022; Yana et al., 2022). One of the main problems faced is the low supply of clean water to the community, which has an impact on the decline in health quality. Until now, the provision of clean water in Indonesia still faces significant challenges and has not

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been fully resolved (Darmajanti et al., 2021; Djajawinata et al., 2023; Herrera, 2019). By 2025, it is estimated that half of the world's population will face water scarcity, with projections that by 2030, around 700 million people could be forced to flee due to water scarcity problems. Water is a primary need for all living things and is vital to human life. People need water for consumption, cooking, bathing, washing, and other daily needs.

The Depok City Government has established the Regional Drinking Water Company (PDAM Tirta Asasta Depok City, 2020) PT. Tirta Asasta is to meet the community's water needs, but the coverage of PDAM services until 2023 only reaches 17.60%. This is mainly due to people's dependence on groundwater, which can have a detrimental impact on the environment in the long run. In response to this problem, PT. Tirta Asasta Depok City launched an innovation in the form of a freemium business model, where premium customers who consume more than 10 m^3 of water per month will get 4 gallons of free refillable water every month. One of the innovations that supports the implementation of this business model is the establishment of the Water Storage Service (WSS) or Asasta+ Refillable Drinking Water House, which aims to improve services and provide additional benefits for the people of Depok City.

WSS is expected to be a practical and economical solution for the community, considering that 47.45% of the population of Depok City uses bottled or gallon drinking water. This innovation is expected to provide added value for customers and be an opportunity for new business expansion for PT. Tirta Asasta. To ensure the feasibility of this initiative, the company needs to conduct a comprehensive study through market analysis, as well as technical, financial, managerial, environmental, and legal aspects. Therefore, this study will focus on the feasibility analysis of Water Storage Service investment in the Depok City area, as part of a feasibility study to determine whether this project is feasible or not (Almeida et al., 2020; Smith et al., 2018).

The rapid population growth and increased urbanization in Indonesia have put tremendous pressure on water supply systems, particularly in urban areas like Depok City (Iskandar, 2021; Silver, 2024). The primary issue lies in the limited access to clean and safe drinking water, with only a small percentage of the population relying on the Regional Drinking Water Company (PDAM) for their water needs (Hertati & Rachman, 2024; Rahmawati & Firman, 2022; Ryu, 2019)This has resulted in a reliance on groundwater, which strains natural water reserves and causes long-term environmental damage. While efforts have been made to increase PDAM coverage, the service only reached 17.6% of the Depok City population in 2023. This has led to growing concerns regarding sustainable water management and the environmental consequences of over-extraction of groundwater.

One potential solution to this challenge is the introduction of a Water Storage Service (WSS), a refillable water service aimed at reducing dependence on bottled water and groundwater usage (Ssekyanzi et al., 2024; Watal, 2024). Despite the benefits, the feasibility of such an initiative requires careful evaluation of multiple factors, including market demand, financial viability, technical and environmental considerations, and legal compliance. The core research problem is to determine

whether the investment in WSS is financially viable and sustainable, while also considering the broader socio-economic and environmental impacts of such a service.

The urgency of this research arises from the ongoing water scarcity issues faced by urban populations in Indonesia, particularly in Depok City, where only a small portion of the population has access to piped drinking water services. With the increasing environmental strain from groundwater use and the growing demand for safe drinking water, exploring innovative solutions like the Water Storage Service (WSS) is critical. By evaluating the feasibility of WSS, this research provides vital insights into sustainable water management practices, potentially alleviating pressure on both the environment and public health. The findings will help guide policy decisions on how to improve water access while ensuring environmental protection and long-term sustainability.

Previous studies have explored various water supply and sustainability models, particularly in urban areas. For example, research by Kresna (2016) indicated that bottled water consumption in urban areas has risen significantly due to unreliable public water systems. This trend contributes to increased plastic waste and environmental degradation, which calls for alternative solutions like refillable water services. Similarly, studies by Djono (2011) on rural drinking water supply systems emphasize the importance of ensuring water accessibility while minimizing environmental impacts, aligning with the goals of the Water Storage Service model in Depok City.

Furthermore, research by Maulidi (2016) on market analysis of drinking water products found that refillable water depots are gaining traction due to their affordability and convenience. This trend reflects a shift in consumer preferences towards more sustainable and economical alternatives to bottled water. However, there remains a lack of comprehensive studies on the financial and environmental feasibility of implementing such services in densely populated urban settings like Depok. This gap in research underscores the need for this study to evaluate the feasibility of the WSS investment in urban water systems.

Additionally, studies by Widaridoe (2011) and Rolia et al. (2023) explored the challenges faced by water supply systems in Indonesia, highlighting issues such as water scarcity, regulatory challenges, and the need for sustainable water management practices. These studies provide a foundation for understanding the broader context in which the WSS initiative is being implemented, particularly in terms of market demand, environmental sustainability, and regulatory compliance.

Although previous research has addressed various aspects of water supply systems and the potential for refillable water services, there is limited research specifically focused on the feasibility of Water Storage Services (WSS) in urban areas like Depok City. Most studies have explored bottled water consumption trends or rural water supply systems, but few have evaluated the financial, technical, and environmental viability of implementing WSS in a city with a significant population and reliance on groundwater. This research seeks to fill this gap by assessing the feasibility of WSS as a solution for improving water access and reducing environmental impacts in Depok City.

This study introduces a novel approach by focusing on the feasibility analysis of the Water Storage Service (WSS) business model in an urban setting, specifically Depok City. While previous research has examined refillable water services and bottled water consumption, this study provides a comprehensive evaluation of the WSS model by considering market demand, technical aspects, financial viability, environmental impact, and legal compliance. The inclusion of sensitivity analysis and long-term profitability projections offers new insights into the potential for WSS to be a sustainable and economically viable solution for urban water supply challenges.

The primary objective of this research is to assess the feasibility of the Water Storage Service (WSS) investment in Depok City, focusing on its financial viability, market demand, and environmental sustainability. The study aims to determine whether the WSS business model, which includes refillable drinking water depots, can be a feasible alternative to bottled water consumption in urban areas. Additionally, the research seeks to evaluate the potential risks, including market, technical, and regulatory risks, and provide recommendations for improving the implementation of WSS in urban water supply systems.

This study's findings will benefit policymakers and business leaders by providing a detailed feasibility analysis of the Water Storage Service (WSS) model. For policymakers, the research offers valuable insights into sustainable water management practices that can reduce the reliance on bottled water and groundwater. For businesses, the study provides guidance on WSS's potential profitability and scalability in urban settings. The study also contributes to the growing body of knowledge on water supply solutions, helping to inform decisions on improving water access while minimizing environmental impacts. Moreover, the research provides recommendations for future implementation strategies and policy improvements to support the growth of sustainable water services in urban areas.

RESEARCH METHODS

The research method in this study uses quantitative, descriptive and narrative analysis. Quantitative analysis was used to analyze the feasibility of the Water Storage Service (WSS) business using investment criteria such as Net Present Value (NPV), Return On Investment (ROI), Internal Rate of Return (IRR), Payback Period, Net B/C, Sensitivity Analysis, and Projected Profit/Loss. Descriptive analysis is used to process quantitative data to see past performance and draw conclusions from these results. Narrative analysis focuses on processing data from interview results and ideas found.

In addition, the collected data has been supported by references from writings about Water Storage Service (WSS) in journals, theses, books, and others. According to Norman Blaikie in his book "Designing Social Research", hypotheses are the best approximations in answering the questions of "why" and perhaps even "how". Hypotheses are tested deductively and then proven with data or facts through research. For the research process, you can see the image below.

RESULT AND DISCUSSION

Market Aspect

Based on the results of the Real Demand Survey (RDS) of PDAM Tirta Asasta Depok City in 2020, it is known that the drinking water consumption of the people of Depok City mostly comes from bottled drinking water (gallons), with a percentage of 47.96%. Other consumption sources are water pumps, jet pumps, and bulk water sellers. Cipayung District recorded the highest rate in the use of bottled water, which was 88.74%, while other sub-districts such as Beji, Cimanggis, Cinere, Pancoran Mas, Sukmajaya, and Tapos also showed figures above 40% for bottled drinking water consumption.

In 2015-2018, the trend of using bottled drinking water (AMDK) in Depok City has increased significantly, from 27.95% in 2015 to 47.45% in 2018. Meanwhile, the use of refillable water also showed an increase, albeit smaller, from 12.09% in 2015 to 21.81% in 2016. In contrast, water consumption from drilled wells has decreased significantly, from 51.31% in 2015 to 43.99% in 2018.

From the market side, data from the Association of Indonesian Bottled Water Companies (ASPADIN) shows that in 2015, 60% of Indonesia's total bottled water production was consumed in the Greater Jakarta area, with a total consumption of around 15 billion liters. This illustrates the high demand for bottled drinking water in the region, including Depok City.

The projected drinking water demand in Depok City is based on the recommendations of the Indonesian Ministry of Health, which suggests the consumption of mineral water as much as eight glasses per day (1,840 ml). This shows that around 52% of the people of Depok City need around 2,302,851 liters of drinking water per day. Thus, both bottled drinking water and refillable water are the main choices that are in demand by the people of Depok City, along with the increasing awareness of the importance of safe drinking water consumption.

Overall, the market demand for bottled and refillable drinking water in Depok City and Greater Jakarta shows great market potential, driven by people's preference for more practical and safe water sources.

The drinking water market in Depok City, especially in the Bottled Drinking Water (AMDK) category, has a relatively high level of competition. Consumers in urban areas, especially Greater Jakarta, are faced with a wide selection of drinking water products from various brands and easily accessible refillable drinking water depots. The competition can be divided into two main categories: Bottled Drinking Water (AMDK) and Refillable Drinking Water Depots.

1. Bottled Drinking Water (AMDK)

Bottled water is a water product that is treated using specific technologies and packaged in various sizes. Some of the big brands operating in Depok City include:

- **Aqua (Danone Group)**
  As a pioneer of the bottled water business in Indonesia since 1973, Aqua has many production units around Greater Jakarta, including in Bogor, Sukabumi, and Cianjur Regencies, which rely on water supply from Gunung Gede Pangrango National Park. Aqua is also supported by official distributors such as PT. Balina Agung Perkasa, which operates in Cimanggis, Depok City.
- **Oasis (PT. Santa Rosa Indonesia)**

Oasis, which has been present since 1984, has a production unit in Cibinong, Bogor, with a water source from the Ciburial spring.

- **Sanqua (PT. Sanqua has been**
  Sanqua has been widely known in Depok City since 1996. Its production unit is on Jalan Raya Tapos, Depok. Sanqua also produces mineral water for the Vit brand, which is marketed in Greater Jakarta.
- **Prima (PT. Sinar Sosro)**
  Prima began operating in 1999 and was originally known as the Air Sosro brand. Its production units are located in Sentul and Sukabumi.
- **2 Tang (PT. The**
  The 2 Tang brand, started in 2005, is a diversification of a large company formerly known for tea products. The production unit is located in Depok City, precisely on Jalan Raya Bogor, Tapos.
- **Other Brands In addition to the**
  In addition to the big brands above, many other bottled water brands are often found on the market, such as Le Minerale, Ron 88, Cleo, Cristaline, Purelife, Pristine, Amidis, Equil, and Purance.

Since it was first introduced in 1973, bottled water products have developed with various types of water, such as mineral, alkaline, demineralized, and dew drinking water. The packaging sizes offered also vary, ranging from 220 ml to 19 liters. The price of bottled water varies based on the size of the packaging and the class of the product, both for regular and premium products.

2. Refillable Drinking Water Depot

In addition to bottled water, the refillable drinking water depot business is also the main choice for consumers in Depok City. Refillable water depots have many advantages, such as more affordable prices and wider availability. The refillable water depot market is also highly competitive, with many players offering cheaper products than bottled water.

Price and Quality Competition

The price of bottled water varies depending on the brand, packaging size, and type of water. Some premium products offer additional advantages such as alkaline water or special mineral water, which can influence consumer choices. In addition to price, product quality is also an important factor in competition, with consumers increasingly aware of the importance of choosing quality drinking water that is safe for health.

Overall, the bottled water market in Depok City is very competitive. Various major brands offer quality products and competitive prices, while refillable drinking water depots compete for market share at more affordable prices.

Marketing Strategy Plan

1. Determining Product Identification
2. Determining the Target Market
3. Identify Strengths
4. SWOT Analysis

Table 1. SWOT Factor

SWOT	No.	Internal Factors
STRONG	1	Qualified cost capital
	2	Experienced human resources in treating raw water
	3	Availability of Clean Water Sources
	4	PDAM distribution pipes are HDPE
WEAK	5	Handling of network pipe leaks
	6	Handling customer complaints
	7	Inconsistency of Clean Water Quality
	8	Minimal experience in the refillable water business
		External factors
CHANCE	1	Target Market Still Wide
	2	Support for Central and Regional Regulations
	3	Settlement Location
	4	Economic Conditions of the Community
THREAT	5	The number of drinking water refill places
	6	Public perception of PDAM
	7	Stigma of PDAM raw water sources
	8	Loyal customers, competitors

The SWOT analysis has positive and negative results from the Water Storage Service business development plan.

Table 2. SWOT Analysis Results

Result			
Positive		**Negative**	
1	Additional Benefits	1	New Losses Arise
2	Additional Customer Coverage	2	New Complaints Appear
3	Adding to the image of PDAM	3	Worsening the image of PDAM

5. Marketing Strategy

Technical Aspects

Based on the results of the Real Demand Survey conducted by PDAM Tirta Asasta Depok City in 2020, the source of drinking water consumption of the people of Depok City is divided into several categories. 47.96% of people rely on bottled drinking water (gallons). The rest comes from water pumps and bulk water sellers.

Among the sub-districts in Depok City, Cipayung District recorded the highest percentage of drinking water use in gallon bottles, which was 88.74%. Meanwhile,

other sub-districts such as Beji, Cimanggis, Cinere, Pancoran Mas, Sukmajaya, and Tapos also show a gallon of bottled water consumption above 40%.

This data illustrates that despite the various choices of water sources (such as jet pumps and bulk water sellers), bottled drinking water remains the main choice of the people of Depok City, with significant consumption in various regions. Meanwhile, groundwater is more widely used for non-consumption purposes such as bathing, washing, and watering the yard of the house.

Location Eligibility

To determine the location of the Refillable Drinking Water House, there are two main options based on the presence of a PDAM network around the location:

1. **Locations with PDAM Network**
   - **Advantages**: Locations that are already connected to the PDAM network provide several advantages, including:
     - Increase the company's revenue by optimizing existing customers.
     - Facilitate promotion and branding because free drinking water facilities can attract customers.
     - New customers who want to install PDAM can immediately become customers because the network is already available.
2. **Location Without PDAM Network**
   - **Challenge**: While there is potential to add customers, locations without a PDAM network take time to build infrastructure first. This process can reduce customer interest because they have to wait for the network to be installed.

Priority Preferred Locations for Pilot Projects

Based on the analysis above, it is more advisable to choose a location with a PDAM network for the Refillable Drinking Water House pilot project. Some of the locations considered, both in the West and East regions of Depok City, are:

Western Region:

- **Bukit Maharaja**: The potential for less than optimal clean water connection.
- **Bedahan Area**: Many new housing developments, such as Pearl Garden, R Residence, and others, exist.
- **Jalan Sanim**: Location with an existing PDAM network needs further branding.
- **Ratujaya, Cipayung**: The use of PDAM is still low, but there are many new housing units, and more approaches are needed to raise awareness.

Eastern Region:

- **Tapos, Cilangkap**: There will be network development, but there will still be a few new housing units.
- **Ciherang**: The PDAM network already exists but needs optimization to connect to new housing.
- **Jatimulya**: It is close to Grand Depok City and has a PDAM network.
- **Cimanggis**: There are already many PDAM customers, and it is an area with a good network.

Location Methods

Location determination is carried out by **a scoring method** based on several important factors, including:

Table 3. Location Determination by Scoring Method

Factor	Weight
Pipeline Isolation	14,29%
Business Place Rental Cost	7,14%
Location Traffic Density	7,14%
Population Density	28,57%
The Existence of Surrounding Businesses	7,14%
Few Competitors of Damiu Business	7,14%
Number of Existing Customers Around	28,57%
Total	**100%**

This scoring helps to prioritize the most feasible locations based on these factors, ensuring the operational success of the Refillable Drinking Water House in the selected area.

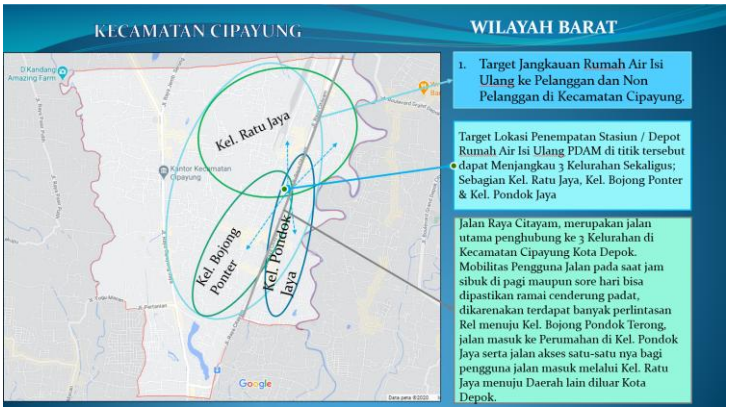

Figure 1. Analysis of Location Selection in Cipayung District

Figure 2. Location Selection Analysis in Pondok Jaya Village

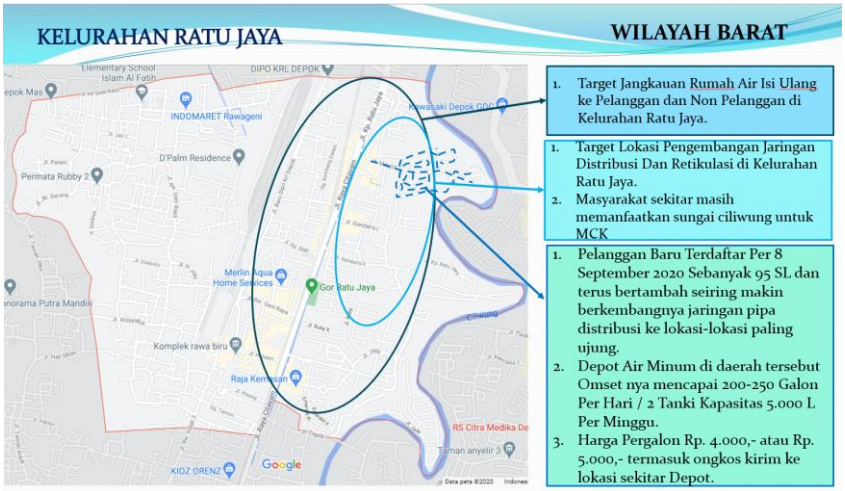

Figure 3. Analysis of Location Selection in Ratu Jaya Village

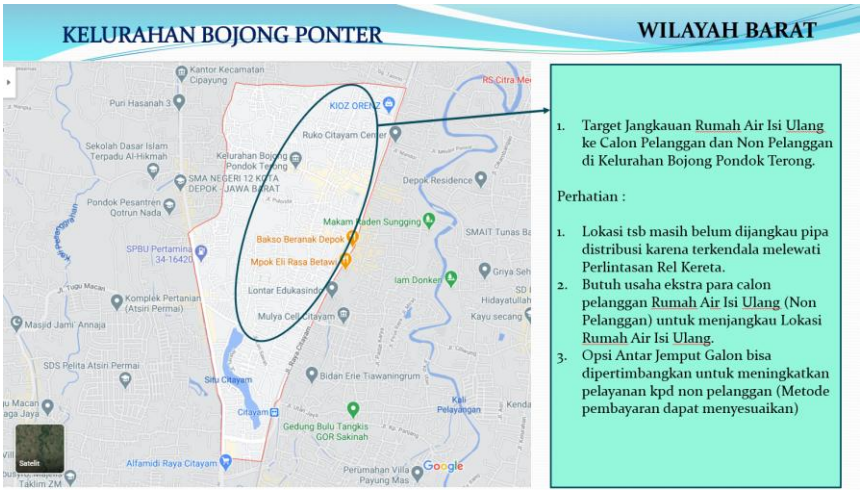

Figure 4. Location Selection Analysis in Bojong Pondok Terong Village

Figure 5. Location Selection Analysis in Mekarsari Village

Determination of Infrastructure

1. Drinking Water Treatment Unit

The drinking water treatment unit consists of:

a. 2 units of 2,200 liters of clean water tub or tank.
b. Prefilter (sand filter) to filter out coarse particles.
c. Carbon filter absorbs odors, tastes, colors, chlorine residues, and organic matter.
d. Other filters, such as filters with a maximum size of 10 microns.
e. Disinfectant devices, such as ozonization and UV devices (254 nm or 25370A). Disinfectants kill pathogenic germs.
f. Fillers, to fill drinking water into containers, and have a measuring device that can be calibrated regularly.

PT. Air Bumi Indonesia is a company that manufactures ready-to-drink water purification machines by providing a touch of cashless payment technology and a cloud-based information management system. The unit is ready to be produced by PT. There are four types of Indonesian Air Bumi as follows:

a. Type V1, to fill the tumbler with three options of water produced (hot, normal, cold). With a cashless payment system.

Figure 6. Type VI Drinking Water Machine

b. Type V2a is for filling into glasses and is designed to provide free drinking water.

Figure 7. Type V2a Drinking Water Machine

c. V2b type, to fill gallons with a cashless payment system.

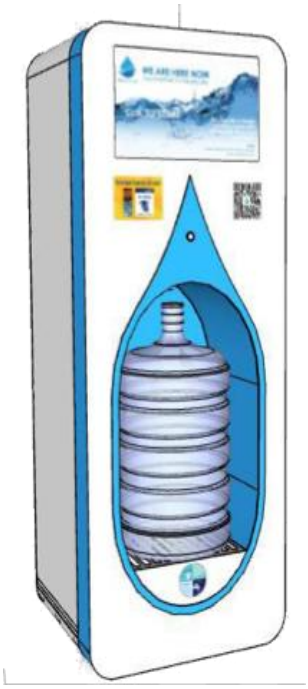

Figure 8. Type V2 b Drinking Water Machine

d. The V2c type, a machine with petrol station-like operation, is designed to provide free drinking water in rural/remote areas.

Figure 9. V2c Type Drinking Water Machine

In conclusion, the features available in the Refillable Drinking Water House unit provided by Air Bumi are as follows:

a. The Refillable Drinking Water Home Unit (type V1) has a choice of hot, normal, or cold water, especially for cup size and tumbler.
b. The interface on the unit (face display) on the machine can be made according to the PDAM's needs (for example, the latest information, advertising, or cooperation with other parties).
c. c. The Refillable Drinking Water House Unit (V1 and V2 b types) has an LCD touchscreen or LCD screen that can display information during machine use and other information (for example, PDAM advertising trailers).
d. The Refillable Drinking Water House's information technology system is still a Stand-Alone/Local Data Source that has not been integrated with other systems.
e. The Refillable Drinking Water House machine has been embedded with RFID (Radio Frequency Identification) technology, which currently only functions as visitor data identification using ID cards for cashless payment methods/electronic money.
f. The payment system for water collection can only use cashless or QR Codes; it cannot use cash like vending machines.
g. The payment system on the machine: If you want to support all vendors (E-Money, Flazz, GoPay, GrabPay, OVO, and others), you must first cooperate with a payment gateway.
h. The Scanner Unit can record and store user data on a cloud server.
i. The filtration methods used are prefiltration, 0.02 milli micron ultrafiltration, and Ultraviolet, so the efficiency of water production is greater than that of RO filtration systems, which produce a lot of wasted water.

Operational Buildings/Buildings

To support the operation of a Refillable Drinking Water House, renting a building is considered more economical than building your own. Here are six things to consider when choosing a building:

1. **Building Conditions**: Ensure the building is safe and hygienic, with good construction (floors, walls, ceilings) and tight doors. Good ventilation or air conditioning is important to maintain air quality.
2. **Building Size**: The building must be at least 10 x 6 meters to meet operational needs. The production area should be easily accessible for inspection and maintenance and have adequate lighting.
3. **Aesthetics**: The design and decoration of the building should reflect the image of the company.
4. **Parking Lot**: Make sure there is enough parking space for water tank cars.
5. **Supporting Facilities**: The building must have stable access to electricity and a good drainage system.
6. **Cleanliness and Safety**: The building site should be free of dust, trash cans, and potential sources of contamination, such as insects or rodents. The building should be kept away from places that could cause pollution.

The selection of buildings that meet these criteria will support smooth operations and maintain the quality of refillable drinking water products.

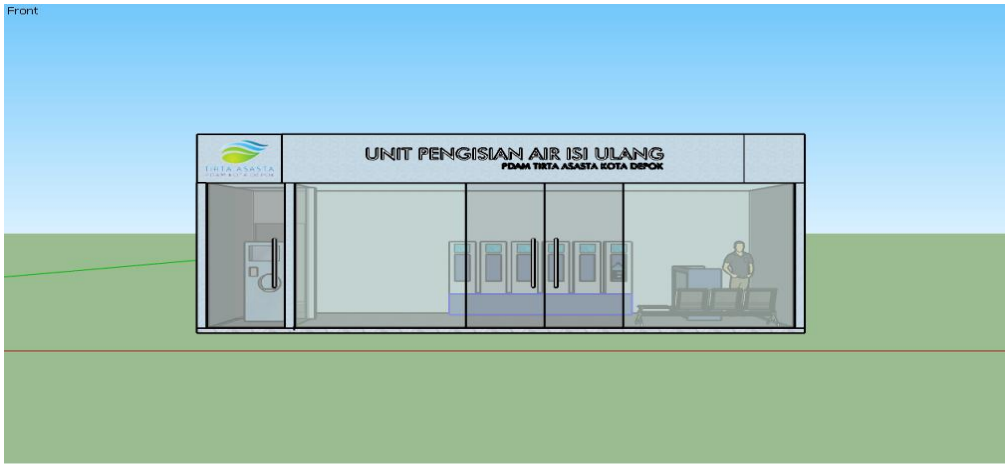

Figure 10. Front View of Operational Building Plan

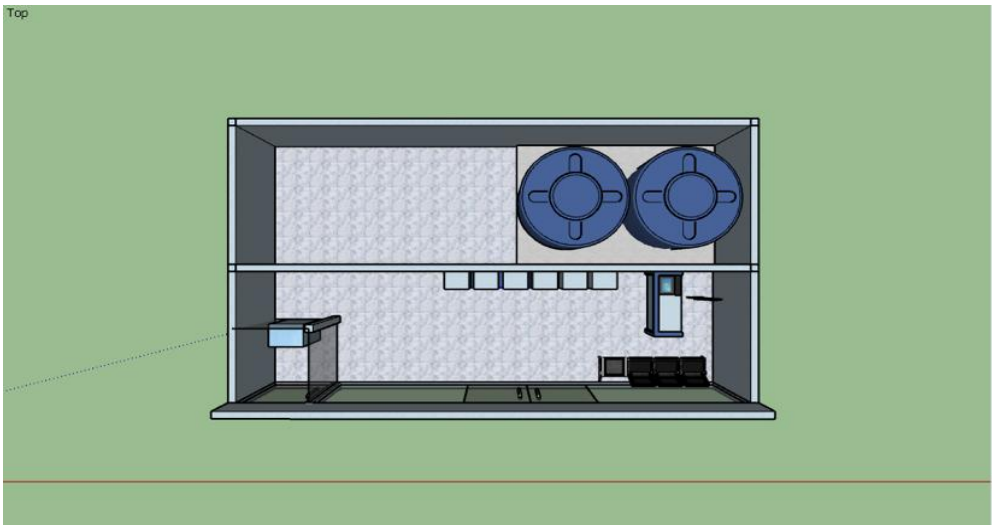

Figure 11. Operational Building Plan

Figure 12. Operational Building Perspective Drawing

Financial Aspects

Calculation of Water Storage Service (WSS) Investment

Based on the results of the Water Storage Service (WSS) investment analysis, the following is a summary of the financial criteria used to assess the feasibility of the project:

1. Investment Analysis Results (Without Sensitivity)

- **Net Present Value (NPV):** Rp. 116,553,085,906.00, greater than 0, indicates financial feasibility.
- **Return On Investment (ROI):** 15.3, greater than 1, indicates a profitable investment.
- **Internal Rate of Return (IRR):** 32.06%, greater than the discount factor of 7%, indicates a viable project.
- **Payback Period**: 5.7 years, faster than the 10-year projection, indicating a reasonable payback time.
- **Net Benefit Cost Ratio (Net B/C):** 281.3, greater than 1, indicates a large profit over cost.

2. Sensitivity Analysis

a. 15% Decrease in Sales

- **NPV**: Rp. 76,411,923,222.00, still positive.
- **ROI**: 13, remains greater than 1.
- **IRR**: 24.97%, greater than the 7% discount factor.
- **Payback Period**: 6.6 years, still feasible compared to the 10-year projection.
- **Net B/C**: 83.2, greater than 1, indicates eligibility.

Table 4. Water Storage Service Sensitivity Analysis Results (WSS) with a 15% Sales Reduction Method

No.	Investment Criteria	Value
1	Net Present Value (NPV)	IDR 76,411,923,222.00
2	Return On Investment (ROI)	13
3	Internal Rate of Return (IRR)	24,97 %
4	Payback Period	6,6
5	Net Benefit Cost Ratio (Net B/C)	83,2

b. 20% Increase in Operational Costs

- **NPV**: Rp. 96,216,647,426.00 remains positive.
- **ROI:** 14, greater than 1.
- **IRR**: 28.14%, greater than the 7% discount factor.
- **Payback Period**: 6.3 years, still faster than the 10-year projection.
- **Net B/C**: 100.4, greater than 1, indicates eligibility.

Table 5. Water Storage Sensitivity Analysis Results Service with a 20% Increase in Operational Costs

No.	Investment Criteria	Value
1	Net Present Value (NPV)	IDR 96,216,647,426.00
2	Return On Investment (ROI)	14
3	Internal Rate of Return (IRR)	28,14%
4	Payback Period	6,3
5	Net Benefit Cost Ratio (Net B/C)	100,4

3. Projected Profit/Loss (2020-2029)

The projection shows **a loss** of Rp. 187,657,000.00 in the first year, but began **to experience a profit** in the second year and beyond. **The total accumulated profit** for 10 years (2020-2029) is estimated at **Rp. 361,439,844,000.00**, showing positive results in the long term.

Table 6. Projected Profit/Loss of Water Storage Service (WSS) for the Period 2020 - 2029

URAIAN	TAHUN										
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	TOTAL
Pendapatan Air	426,864	3,414,912	6,829,824	11,952,192	18,782,016	27,319,296	37,564,032	49,516,224	63,175,872	78,542,976	297,524,208
Pendapatan Galon	78,75	10,395,000	25,798,500	30,561,300	38,419,920	42,261,912	52,299,116	57,529,028	70,313,256	77,344,582	405,001,364
Total Pendapatan Usaha	**505,614**	**13,809,912**	**32,628,324**	**42,513,492**	**57,201,936**	**69,581,208**	**89,863,148**	**107,045,252**	**133,489,128**	**155,887,558**	**702,525,572**
Biaya Produksi Air	1,378	181,913	347,288	382,016	420,218	462,24	508,464	559,31	615,241	676,765	4,154,832
Biaya Pegawai	25,8	3,096,000	6,501,600	7,086,744	7,724,551	8,419,761	9,177,539	10,003,518	10,903,834	11,885,179	74,824,525
Biaya Pemeliharaan	255	2,805,000	5,355,000	5,355,000	5,355,000	5,355,000	5,355,000	5,355,000	5,355,000	5,355,000	45,900,000
Biaya Administrasi dan Umum	399	4,470,000	8,800,680	9,346,121	9,922,488	10,531,637	11,175,536	11,856,268	12,576,044	13,337,206	92,414,980
Total Biaya Usaha	**681,178**	**10,552,913**	**21,004,568**	**22,169,881**	**23,422,257**	**24,768,638**	**26,216,538**	**27,774,095**	**29,450,119**	**31,254,151**	**217,294,336**
Laba Usaha	**-175,564**	**3,256,999**	**11,623,757**	**20,343,611**	**33,779,679**	**44,812,570**	**63,646,610**	**79,271,157**	**104,039,009**	**124,633,407**	**485,231,235**
Biaya Lain-lainnya	12,093	159,81	178,71	201,81	229,11	260,61	296,31	336,21	380,31	428,61	2,483,583
Total Biaya	**693,271**	**10,712,723**	**21,183,278**	**22,371,691**	**23,651,367**	**25,029,248**	**26,512,848**	**28,110,305**	**29,830,429**	**31,682,761**	**219,777,919**
Laba Bersih Sebelum Pajak	**-187,657**	**3,097,189**	**11,445,047**	**20,141,801**	**33,550,569**	**44,551,960**	**63,350,300**	**78,934,947**	**103,658,699**	**124,204,797**	**482,747,653**
Perakiraan Pajak	-43,891	814,25	2,905,939	5,085,903	8,444,920	11,203,143	15,911,652	19,817,789	26,009,752	31,158,352	121,307,809
Laba Bersih Setelah Pajak	**-143,766**	**2,282,940**	**8,539,107**	**15,055,898**	**25,105,649**	**33,348,818**	**47,438,647**	**59,117,157**	**77,648,947**	**93,046,445**	**361,439,844**

Based on Table 4.11 above, it shows that the projected Profit/Loss of Water Storage Service (WSS) suffered a loss in the first year of Rp. 187,657,000.00 and made a profit in the second year and the following years. The total accumulated profit for 10 years from 2020 to 2029 amounted to Rp. 361,439,844,000.00.

Environmental Aspects

Water Storage Service (WSS) greatly improves clean water services and reduces groundwater use. However, the impact on the environment and society needs to be carefully studied, especially regarding the distribution of raw materials, production processes, the use of plastics, and potential protests from competitors. A more environmentally friendly approach and the implementation of transparent business practices can support the sustainability of these projects.

Legality Aspect

The legality aspect is important in ensuring that every business program runs according to applicable regulations and avoids legal problems in the future. In the development of the Water Storage Service (WSS) by PDAM Tirta Asasta, Depok City, PDAM Tirta Asasta must comply with various regulations relating to consumer protection, water quality, depot sanitation, and technical requirements for drinking water businesses. By complying with these regulations, WSS's business can run legally and safely and avoid potential legal problems in the future.

Risk Identification

1. Market Risk

a. The existence of more affordable substitute goods.
b. The habits of loyal customers from competitors that are difficult to change.

2. Technical Risk

a. There is no ideal infrastructure supporting land.
b. High land/rental costs at the Water Storage Service (WSS) target location.
c. Difficulties in providing spare parts to expand the Refillable Drinking Water House unit, facilities, and infrastructure.

3. Regulatory Risks

Regulatory changes affect the refillable water business and business restrictions on PDAMs.

4. Business Risk

a. There is a considerable tariff gap with competitors.
b. There are 3K/ Quality, Quantity, and Continuity issues.
c. The success and failure of the branding of the Water Storage Service (WSS) that affected the image of PDAM.

CONCLUSION

In determining the overall business of Water Storage Service (WSS), based on the results of the analysis of market aspects, technical, management, organizational, environmental, and legal aspects. The Water Storage Service (WSS) business is feasible to be carried out by PT. Tirta Asasta in Depok City. Based on the results of the financial analysis, it can be seen that the investment criteria, namely NPV, ROI, IRR, Payback Period, Sensitivity Analysis, Net Benefit Cost Ratio (Net B/C), and Projected Profit/Loss, the Water Storage Service (WSS) business is considered financially viable with an NPV value of Rp. 116,553,085,906.00; an ROI value of 15.3; an IRR value of 32.06%; a Payback Period value of 5.7; a Net B/C value of 281.3; and a sensitivity analysis with a reduction scheme. Sales of 15% and an increase in operating costs of 20% are still considered financially viable. Based on the results of risk identification, several risks can be identified, such as market risk, technical risk, regulatory risk, and business risk.

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