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SURVEY ANALYSIS OF REAL DEMAND OF THE NON CUSTOMER COMMUNITY IN PERUMDA TIRTAULI PEMATANGSIANTAR CITY

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ABSTRACT

This research aims to find out the real demand survey of the non-customer community of Perumda Tirta Uli, Pematang Siantar City, as well as to find out the reasons why they are not willing to register as customers of the company. The research design is a descriptive method with an in-depth survey. Data collection techniques through questionnaires, interviews and documentaries. Data analysis techniques with stages of data tabulation, data compilation, data analysis of demand factors, supply, socio-economics, customer willingness to pay for water and customer ability to pay water bills. The research results concluded: (1) the reason people were not willing to register as customers was because from the start they had used drilled wells (35%), because installation costs were high (19%), and distribution pipes were far away (6%). while the percentage of reasons for the water not being clear is low (6%), water distribution is often jammed (16%) and the reason for not being able to pay is only (14%). non-customers who have never applied for installing a water connection pipe (92.06%), only 7.94% have applied but it was canceled. It is recommended that the use of drilled wells must be controlled by the regional government through public awareness outreach and/or the issuance of Regional Regulations, so that underground water extraction (ABT) is not excessive.
Keywords: Real Demand Survey, Non Pelanggan, Perumda Tirtauli

ABSTRAK

Penelitian ini bertujuan untuk mengetahui *Survei permintaan nyata masyarakat* Non Pelanggan Perumda Tirta Uli Kota Pematangsiantar yang sekaligus untuk mengetahui alasan mereka tidak bersedia terdaftar menjadi pelanggan pada perusahaan tersebut. Desain penelitian adalah metode deskriptif dengan survey mendalam. Teknik pengumpulan data melalui kuesioner, wawancara dan dokumenter. Teknik analisis data dengan tahapan tabulasi data, kompilasi data, analisis data faktor permintaan, penawaran, sosial ekonomi, kesedian pelanggan membayar air dan kemampuan pelanggan untuk membayar rekening air. Hasil penelitian menyimpulkan: (1) alasan masyarakat tidak bersedia terdaftar menjadi pelanggan karena dari awal mereka sudah menggunakan sumur bor (35%), karena biaya pasang tinggi (19%), serta pipa distribusi yang jauh (6%). Sedangkan alasan air kurang jernih persentase rendah (6 %), pendistribusian air sering macet (16%) dan alasan tidak sanggup bayar hanya (14%). non pelanggan yang belum pernah mengajukan pemasangan pipa sambungan air (92,06%), hanya 7,94% sudah pernah mengajukan tetapi batal. Direkomendasikan bahwa, penggunaan sumur bor harus dikendalikan oleh pemerintah daerah melalui sosialisasi penyadaran masyarakat dan atau penerbitan Peraturan Daerah, agar pengambilan air bawah tanah (ABT) tidak secara berlebih.
Kata Kunci : Real Demand Survey, Non Pelanggan, Perumda Tirtauli

INTRODUCTION

The provider of clean water sources in Indonesia and serving the distribution of clean water is the Regional Public Drinking Water Company which is located in almost all regions. The Regional Drinking Water Public Company is the main provider of clean water services belonging to the city/regency government in accordance with Law Number 12 of 2004, that the responsibility for planning, construction and

operation and maintenance of drinking water facilities and infrastructure is in the hands of the City/Regency government.

Tirtauli regional public company (Perumda) is a regional company that manages drinking water in Pematang Siantar City and distributes it to the community for household needs, the business world, agencies/institutions and social institutions. Along with the increasing number of residents in Pematang Siantar City, with an average growth of around 1.356 percent/year and also the increasing number of households, the need for clean water also increases. The number of Perumda Tirta Uli Pematang Siantar drinking water customers in 2021 is 70,558 customers and it is estimated that this number will continue to increase along with population growth.

The amount of the company's revenue flow cannot be separated from the water tariff charged to customers. Although Perumda Tirta Uli Pematangsiantar has been able to review drinking water tariffs as regulated in Permendagri No. 23 of 2006, but Perumda Tirta Uli Pematang Siantar from 2009 to 2022 has never carried out a review of these rates.

Perumda Tirta Uli Pematang Siantar, which manages water sources into clean drinking water, continues to strive to serve all customers as well as possible through smooth water distribution, good water quality, efficient payment systems and efficient water tariffs. Satisfaction with the level of service at Perumda Tirta Uli can be seen from the increasing number of customers, namely 70,588 customers with growth of 1.26% in 2021. Even though this company has tried to provide sufficient drinking water for the needs of the Pematang Siantar community, in reality there are still a number of households that have not become drinking water customers from Perumda Tirta Uli Pematang Siantar. They still continue to consume drinking water taken from machine-drilled wells or from shallow wells built around the houses where they live.

Based on the description above, it is necessary to carry out an in-depth study of the response factors of non-customer communities who live within the company's service area, but until now they are not willing to be registered as drinking water customers at Perumda Tirta Uli Pematang Siantar.

Research Questions

The problem in this research is: what are the factors in the community's response so that they are not willing to become drinking water customers at Perumda Tirta Uli Pematang Siantar?.

Research puIDRoses

The puIDRose of this RDS research was to find out and analyze why non-drinking water customer households are not yet willing to participate as drinking water customers at Perumda Tirta Uli Pematang Siantar. It is hoped that the results of this research will be of benefit to Perumda Tita Uli Pematang Siantar, among other things, as information for considerations for the board of directors to formulate an implementation model for customer service so that it spreads to people who have not yet become customers and changes their attitude so that they are willing and willing to become customers of the company.

Research Scope

The scope of discussion in this study is limited to analysis through a Real Demand Survey (RDS) study of non-customer households so that up to now they do not want to become drinking water customers at Perumda Tirta Uli, with indicators: High Installation Costs; Water Distribution Often Congested; Unable to Pay; Distant Distribution Pipelines; Drilling Wells is More Economical; PAM water is less clear; From the beginning they have used drilled wells.

THEORETICAL BASIS

Demand and Supply

Demand is defined as the quantity of goods or services desired and purchased by considering the factors that influence that demand (Gasper, 2005). In relation to water demand, the water demand function is a functional relationship between price and other factors and the volume of water needed. The demand for drinking water is influenced by several factors, including tariffs or water prices per cubic meter, people's income as consumers, water quality, and other water prices. In relation to prices or water tariffs, prices greatly influence demand, where if prices increase, the quantity of goods demanded decreases, assuming ceteris paribus. As a basic necessity, the demand for drinking water, as an exception, does not follow the law of demand but the law of supply, where even though the price rises, demand continues to rise along with population growth.

Supply is the number of goods that a company is willing to offer by considering factors that influence the supply such as: the price of the good, the price of other similar goods, production costs, the technology used, the number of companies that produce similar goods, estimates of availability. these goods, as well as various

other factors (Salvatore, 2015). Drinking water as an economic good, the demand for it as a normal good is elastic (changes in price are proportional to changes in supply), so that companies can gain profits, in determining drinking water tariffs they must consider the factors that influence the supply of water.

Use Value and Consumer Satisfaction

Consumers consume or buy the water needed to achieve the satisfaction they obtain. Total consumer satisfaction is the sum of the utility of a number of goods consumed, while additional use value (marginal utility) is the change in total use value due to changes in one unit of goods consumed. Maximum consumer satisfaction occurs when the additional use value of each additional unit of goods consumed is equal to the amount of money or price paid (Salvatore, 2015). This use value theory approach can explain the use value and satisfaction of drinking water customers. People who are drinking water customers always try to maximize satisfaction with drinking water consumption from the amount of money paid per each meter of drinking water consumed.

Drinking Water Treatment

Various water sources meet needs, but specifically for human needs, not all water sources directly meet the requirements for use as drinking water according to health standards. Therefore, to produce water that meets drinking requirements, it needs to be processed or purified properly. Purifying water to become drinking water that meets drinking water standards places more emphasis on the process of cleaning water from pollution in the form of color changes, mineral content, microbes and turbidity (PDAM Pekalongan, 2018), so water treatment is a combination of physical, chemical and biological processes. Meanwhile, water treatment places more emphasis on the process of cleaning water from organic, radioactive and contamination contaminants.

The puIDRose of producing drinking water of a quality that is comfortable for human consumption is to use sedimentation, filtration and chlorimation methods (Hadioetomo, 1981). Meanwhile, Winarno (1986) said that the process for producing drinking water that is suitable for human consumption depends on the quality of the water, the method of processing and purifying the water which can be done by settling, coagulating, filtering, aerating, chlorinating and softening the water. If the water comes from a river, the processing process can be carried out by coagulation, fliculation, settling, filtering and disinfection. Coagulation aims to add coagulant and stir it quickly so that it is dispersed into the water and the particles clump together into deltas so they can easily be deposited or filtered during the settling process. Meanwhile, disinfection aims to kill microorganisms in the water. Processing water sourced from springs to become drinking water suitable for consumption, the treatment process is carried out, namely conditioning and disinfection, while the treatment of artesian well water is carried out namely aeration, sand filtering and infection. Various efforts are made by companies in the drinking water processing process to obtain clean drinking water according to drinking standards which is then distributed to the customer community, and all water treatment processes as described previously will certainly cost relatively large amounts of money.

Water Treatment Costs

The cost of drinking water treatment depends greatly on the water treatment process carried out by the regional drinking water company (PERUMDA) in each region and city, and also the availability of natural water resources as well as the distance to the region and city, as well as the quality of water provided by nature. The availability of water resources used is an environmental component and is an initial endowment (Todaro, 2005), namely the availability of resources as a gift from nature in each location.

Water quality is the main element that determines processing methods, construction of processing buildings, chemical materials to be used and other costs. High levels of contamination must be removed using chemicals, machine tools, electricity and other costs, which will ultimately increase processing costs. Therefore, it can be said that the content of pollutants is positively correlated with processing costs, meaning that the higher the level of pollution that must be removed, the higher the processing costs that the company must incur. The large costs incurred to process water raw materials to become clean water according to human needs are an opportunity cost for drinking water that could have been used for other puIDRoses (Payaman S., 2010).

Determination of Drinking Water Tariffs (Prices)

The calculation of drinking water tariffs by Perumda Air Minum is based on several things, namely: (1) Affordability and fairness; (2) Quality of service; (3). Cost recovery; (4) Water use efficiency, and (5) Transparency and

Accountability. The amount of drinking water tariff that is still in effect is based on the Decree of the Mayor of Pematang Siantar Number: 690-587/WK/2002 concerning Drinking and Non-Drinking Water Tariffs. The amount of drinking water tariffs has not been reviewed until 2022 even though there is an opportunity to review it in accordance with Minister of Home Affairs Regulation No. 23 of 2006 concerning Review of Drinking Water Tariffs. The calculation of clean water tariffs is carried out using the following procedure: Calculate the basic costs to determine the basic tariff; Calculating subsidies to determine low rates; Calculating the full rate; and Setting agreement rates. An example of a calculation using the full clean water tariff calculation method is as follows:

Table 1. Determination Formula for Full Rates

No	Description	Unit	Period	Notation	Formulas
a	Base Rate	IDR/m^3	Y	TD	Data is taken from the results of formula number 2.b above
b	Current asset	IDR /Thn	X	AL	The number of components of current assets
c	Long Term Investment	IDR /Thn	X	IJP	The number of long-term investment components
d	Fixed Assets (book value)	IDR /Thn	X	AT	Total fixed asset components + depreciation
e	Productive Assets	IDR /Thn	X	AP	AP = AL + IJP + AT
f	Profit Rate	IDR /Thn	Y	TK	TK = 100% x AP
g	Water Volume Sold to Full & Special Tariff Customer groups	m^3/ year	X	VTTPK	Historical data
h	Average profit rate	IDR/m^3	Y	RTK	RTK = TK / VTTPK
i	Total subsidy	IDR/T year	Y	TSb	Data is taken from the results of formula number 3.e above
j	Average cross subsidy	IDR/m^3	Y	RsBs	RsBs = TK / VTTPK
k	Full rate	IDR/m^3	Y	TP	TP = TD + RTK + RsBs

Description: X (Base year); Y (Projection Year).

From the description above, the structure and variations of tariffs based on consumption block provisions, customer groups and tariff types can be determined as follows:

Table 2.
Tariff Structure and Variations Based on Consumption Block Provisions, Customer Groups, and Tariff Types

Customer	Consumption Block	
	Blok I	Blok II
	(Up to 10 m3)	(above 10 m3)
Group I	Low Rates	Base Rate
Group II	Base Rate	Base Rate
Group III	Full Rate	Tarif Penuh
Special Group	Based on Agreement	

Source: Perumda Tirta Uli, 2022.

RESEARCH METHODS

Research Design

This research was designed using a descriptive method with a survey to collect data from customers and non-customers of drinking water from Perumda Tirta Uli Pematang Siantar City.

Types of Data, sources and Data Collection Methods

The type of data needed in this research is primary data and secondary data. Primary data collection was carried out using questionnaire techniques and survey guides. With the questionnaire technique, respondents are free to choose the answers that have been listed, whether

closed, semi-open or open answers. Through the guided survey technique, respondents are given the freedom to provide answers to questions guided by the surveyor. Secondary data was collected from BPS data, the Pematang Siantar book in Figures for the last 5 years, while company profile data was obtained directly from the documentation of the Perumda Tirta Uli Pematang Siantar Office.

Population and Sample

The population in this research is all non-customer communities who live in the existing service area around the drinking water service area in 8 sub-districts in Pematang Siantar City and 1 more in the Perumnas area of Simalungun Regency, which is close to the city of Pematang Siantar. Determining the number of samples in the Service Area was determined to be 63 households. Sampling was carried out using convenience sampling techniques, namely non-customer households that were sought by researchers and were found more quickly and had the ability to answer as respondents (Nazir, 1988). The non-customer sample strata in each service area are:

Table 3
Number of Non-Customer Household Samples According to the Tirtauli Regional Public Service Area, Pematang Siantar City

Service Area	Number of Samples (people)	Percentage (%)
Siantar Marihat	9	14,28
Siantar Marimbun	10	15,87
Siantar Selatan	4	6,35
Siantar Barat	6	9,52
Siantar Utara	8	12,70
Siantar Timur	8	12,70
Siantar Martoba	10	15,87
Siantar Sitalasari	7	11,11
Perumnas	4	6,35
Total	63	100

Sumber: Hasil Olahan, 2022.

Data Analysis Techniques

Data processing up to data analysis is carried out in stages: data tabulation, data compilation, data description, factor analysis of the willingness and ability of households to register as drinking water customers at Perumda Tirta Uli in the future.

RESEARCH RESULTS AND DISCUSSION

General Overview of Pematang Siantar City

Based on the 2021 BPS Pematang Siantar book, the city of Pematang Siantar is located on the line 20 53' 20"-30 01' 00" North Latitude and 990 1'-9906'35" East Longitude and is in the middle of Simalungun Regency. The area of Pematang Siantar City is 79,971 km2 and is located at 400-500 meters above sea level. Pematang City is located in the middle of Simalungun Regency. This city is divided into 8 sub-districts and 53 sub-districts. Population growth over the last 10 years from 2010 – 2020 was 1.356 percent per year. The population in 2021 will be 268,254 people and 59,627 households.

Development of Drinking Water Customers in 2015-2021

Table 4 shows that in 2016 drinking water customers from Perumda Tirta Uli decreased by -10.14%, but in 2017 and 2018 the number of customers increased, namely 5.64% in 2017 and 2.09% in 2018. In 2019 customers did not experience any growth at all. In 2020 the number of customers increased again, namely 66,842 customers or an increase of 4.690% and in 2021 there was another increase of 1.26%, so that in 2021 the number of customers will be 70,588 households.

Table 4. Number of Customers of Perumda Tirta Uli Pematang Siantar

Year	Household	Companies, Hotels, Lodgings	Worship/Social Places	Institution	Total	%
2015	57.989	1547	548	689	68.774	-
2016	59.018	1528	569	680	61.795	- 10,14
2017	16.524	1520	583	651	65.278	5,64
2018	63.832	1567	589	696	66.644	2,09

2019	63.832	1567	589	646	66.644	0
2020	66.842	1601	594	674	69.711	4,60
2021	67.767	1537	588	666	70.588	1,26

Source: Pematang Siantar City Central Statistics Agency Various years, 2022

Table 5. Service Coverage Data for Perumda Tirta Uli Pematang Siantar

Service Location	Year				
	2018	2019	2020	2021	2022
	(%)				
Pematangsiantar City	91,40	92,40	95,40	97,20	-

Source: Perumda Tirtauli Pematang Siantar, 2022.

From Table 5 it is known that the state of service coverage since 2018-2021 has continued to increase year on year from 91.40% in 2019, rising to 92.40% in 2019, 95.40% in 2020, rising to 97.20% in 2021. It was concluded that only around 2.80% more households were not yet clean water customers from Perumda Tirta. Uli Pematang Siantar.

Profile of Perumda Tirta Uli Pematang Siantar

Its initial establishment was in 1916 and is managed by the Siantar State plantation which is located on Jalan Merdeka, precisely Simarito Field. In the next development, in 1978 its name was changed to Tirta Uli Regional Drinking Water Company (PERUMDA) Pematang Siantar, with the Decree of the Mayor of Pematang Siantar Number 97/10BP/WK, which is currently called Perumda Tirta Uli Pematang Siantar. The vision of Perumda Tirta Uli Pematang Siantar City is: "To become an advanced regional public company with excellent service quality and participate in improving community welfare

Table 6 shows that, in 2015-2021, Perumda Tirta Uli's drinking water production increased from 19,147,748.00 (m3) in 2015 to 19,862,417.13 (m3) in 2021. Drinking Water Production was distributed by Perumda Tirta Uli in 2015. -2021 also experienced an increase from 14,893,160.00 (m3) in 2015, increasing to 19,720,480.01 (m3) in 2021. Meanwhile, the value of Drinking Water Production in 2015-2021 has increased from IDR. 59,217,033,440 to IDR. 59,851,416,690 in 2021.

Table 6. Tirta Uli Perumda Drinking Water Production Data and Value (IDR) 2015 - 2021

Year	Production (m3)	Channeled (m3)	Remaining (m3)	Value (IDR)
2015	19.147.748,00	14.893.160,00	4.524.588,00	59.217.033.440
2016	20.714.480,41	14.562.864,00	6.151.616,00	56.019.401.770
2017	16.696.871,00	14.043.465,00	2.653.406,00	57.749.194.980
2018	19.817.566,92	19.710.130,70	107.436,22	50.953.792.670
2019	34.247.582,35	19.709.493,70	14.538.088,65	50.953.881.671
2020	19.780.996,56	13.999.187,00	5.781.809,56	62.229.682.900
2021	19.862.417,13	19.720.480,01	141.937,12	59.851.416.690

Source: Perumda Tirta Uli (processed), 2022.

Survey Results on Real Demand for Non-Customers for Drinking Water

Respondent Characteristics

The characteristics of Non-Customer Respondents from the 63 Non-Customers selected as Respondents in this survey will be described first.

Characteristics of Non - Customer respondents based on gender consisted of 36 people (57%) men and 27 people (43%) women. The number of male respondents was 36 people, with details from Siantar Marihat District as many as 3 people, Siantar Marimbun as many as 5 people, Siantar Selatan as many as 3 people, Siantar Barat as many as 4 people, Siantar Utara as many as 7 people, Siantar Timur as many as 5 people, Siantar Martoba as many as 4 people, Siantar Sitalasari as many as 3 respondents, and Perumnas District as many as 2 people. Meanwhile, 27 (43%) respondents were female, with details from Siantar Marihat District as many as 3 people, Siantar Marimbun as many as 5 people, Siantar Selatan as many as 4 people, Siantar Barat as many as 6 people, Siantar Utara as many as 8 people, Siantar Timur as many as 8 people, Siantar Martoba as many as 10 people, Siantar Sitalasari as many as 7 people, and

Perumnas sub-district as many as 4 people. The total number of respondents was 63 people.

Based on respondents' answers according to level of education, it is known that most of the answers were from SMA/Vocational Education Level as many as 41 (65%) people, D3/S1/S2 as many as 10 (16%) people, SMP as many as 8 (13%) people and Elementary School as many as 4 (6%) respondents. The characteristics of respondents based on age were known to be 2 (3%) people aged < 30 years, 19 (30%) people aged 41 - 50 years, 14 (22%) people aged 51 - 60 years and 11 people aged 61 - 70 (17%) people.

The characteristics of respondents based on occupation show that there are 6 (10%) ASN, 1 (2%) POLRI, 1 (2%) BUMN employee, 7 (11%) private sector, 30 (48%) entrepreneurs. people, Farmers as many as 2 (3%) people. Characteristics of respondents with income 1,000 – 1,999 as many as 11 people (17%), 2,000-2,999 as many as 18 (29%), 3,000,000-3,999,000 as many as 13 (21%) people, 4,000,000 - 4,999,000 as many as 13 (21%), IDR 5,000,000 - IDR 5,999,000 for 2 (3%) people, IDR 6,000,000 - IDR 6,999,000 for 1 (2%), IDR 7,000,000 - IDR 7,999,000 for 4 (6%) people, IDR 9,000,000 - IDR 9,999,000 for 1 (2%) person.

The size of the respondent's house with a house size of 0-100 m2 was 41 (65%) people, 101-200 m2 was 21 (33%) people, 301 - 400 was 1 (2%) person. Non-Customer Occupied House Category. The house category occupied by 63 respondents was divided into 2 in each research area. In the permanent housing category there were 54 (86%) respondents and in the semi-permanent category there were 9 (14%) units. Non-Customer Home Ownership Status. Based on the ownership status of houses in the self-owned category, there are 52 (83%) people, rental houses are 11 (17%) people.

Characteristics of permanent residents in the houses of respondents in category 1: 2 (3%) permanent residents, 13 (21%) 2 permanent residents, 11 (17%) 3 permanent residents, 17 (17) permanent residents 27%) people, 5 permanent residents as many as 11 (17%) people, 6 permanent residents as many as 4 (6%), houses with more than 7 people permanent residents as many as 5 (8%) people.

The average level of expenditure of respondents is known. Respondents with an average expenditure of 1,000,000-1,999,000 are 25 (40%) people, 2,000,000-2,990,000, - 23 (37%) people, 3,000,000-3,999,000 ,- as many as 10 (16%) people, 4,000,000 – 4,990,000,- as many as 3 (5%) people, 5,000,000–5,990,000,- as many as 2 (3%) people. So the average expenditure of respondents as a whole is dominated by between 1,000,000-1,990,000 as much as 40% of the total number of respondents.

Based on respondents' answers regarding the distance from non-customer wells to septic tanks. Respondents in the well to septic tank distance category were 1-2 m as many as 24 (38%) people, 3 - 4 m as many as 8 (13%) people, 5 - 6 m as many as 6 (10 %) people, 7 – 8 m as many as 5 (8%) people, 9 – 10 m as many as 10 (16%) people, distance from well to septic tank above 10 m as many as 10 people (16%).

Reasons why non-customers don't become customers

Respondent's answer about the reasons for not becoming a customer. The first reason is that: from the start they have used Drilled Wells, this reason was 22 (35%) of the respondents. For this reason, there are 4 people in Siantar Marihat, 5 people in Siantar Marimbun, 3 people in South Siantar, 3 people in West Siantar, 3 people in East Siantar, 3 people in Siantar Martoba and 1 person in Perumnas. The reason for high installation costs is that overall the respondents answered 12 (19%) respondents, of which there were 1 person in Siantar Marihat, 1 person in South Siantar, 2 people in North Siantar, 2 people in East Siantar, 3 people in Siantar Martoba, 1 person at Siantar Sitalasari and 2 people at Perumnas.

Table 7. Reasons why non-customers do not become customers (people)

Region Service	From the start, we have used drilled wells	High Installation Costs	Frequent traffic jams	Unable to Pay	Remote Distribution Pipe	Drilling Wells is More Economical	Well water Clear	PAM water is not clear
S. Marihat	4	1	0	1	0	0	0	0
S. Marimbun	5	0	0	0	3	0	0	2
S. Selatan	3	1	0	0	0	0	0	0
S. Barat	3	0	1	2	0	0	0	0
S. Utara	0	2	2	0	1	1	0	2

S. Timur	3	2	2	1	0	0	0	0
S. Martoba	3	3	1	2	0	1	0	0
S. Sitalasari	0	1	3	3	0	0	0	0
Perumnas	1	2	1	0	0	0	0	0
Total	22	12	10	9	4	2	0	4
Persentase (%)	35	19	16	14	6	3	0	6

Source: Primary Data (processed), 2022.

The reasons for respondents who stated that water distribution was often congested were a total of 10 (16%) respondents, where these reasons were obtained from the answers of 1 respondent in West Siantar, 2 people in North Siantar, 2 people in East Siantar, 1 person in Siantar Martoba, 3 people at Siantar Sitalasari and 1 person at Perumnas. The reason why respondents did not become customers was because they could not afford to pay. There were 9 (14%) respondents where this reason was found, 1 person in Siantar Marihat, 2 people in West Siantar, 1 person in East Siantar, 2 people in Siantar Martoba and 3 people in Siantar Sitalasari.

Distribution pipes that are far away are one of the reasons why respondents do not become customers. This can be seen in the table above. Overall, there are 4 (6%) respondents, 3 people in Siantar Marimbun and 1 person in Siantar Utara. The reason that drilled wells are more economical overall is 2 (3%) where this answer was obtained by 1 person in North Siantar and 1 person in Siantar Martoba. With the reason that PAM water is less clear, the overall answer was 4 respondents (6%), of which 2 people were in Siantar Marimbun and 2 people were in Siantar Utara. In this case, the most common reason from the total answer of 63 respondents was that from the start they had used drilled wells by 35%.

Water Usage

Table 8. Non-customer cubic meter (M3) water use per day

Region	5 - < 10	10 - < 20	20 - < 30	30 - < 40	40 - <50	50 >	Total
S. Marihat	1	5	0	0	0	0	6
S. Marimbun	0	9	1	0	0	0	10
S. Selatan	0	4	0	0	0	0	4
S. Barat	0	1	1	3	0	1	6
S. Utara	3	5	0	0	0	0	8
S. Timur	2	4	2	0	0	0	8
S. Martoba	0	4	5	1	0	0	10
S. Sitalasari	1	2	-	2	0	2	7
Perumnas	0	1	2	1	0	0	4
Total	7	35	11	7	0	3	63
Persentase (%)	11	56	17	11	0	5	100

Source: Primary Data (processed), 2022.

Table 8 presents data on water usage by 63 respondents at the research location, which is classified into several m3 size ranges. Water usage <10 m3 per day was 7 (11%) respondents, 10-20 m3 per day was 35 (56%) respondents, 21-30 m3 per day was 11 (17%) respondents, 31-40 m3 per day as many as 7 (11%) respondents and water usage of 51-60 m3 per day as many as 3 (5%) respondents. The majority is dominated by respondents who use 10-20 m3 of water per day, amounting to 56%.

Submission of Non-Customer Community Drinking Water Installation to Perumda Tirta Uli

The data in Table 9 shows the number of applications for drinking water installations by non-customers to Perumda Tirta Uli Pematangsiantar. Based on the results of the answers from all 63 respondents, applications for installing drinking water pipes to Perumda Tirta Uli Pematangsiantar in the research area were divided into 2, namely, 5 people had submitted applications for water installation with a percentage of 7.94% (but ultimately canceled) and never submitted applications. installation of drinking water pipe connections was 92.06% as presented in table 9 below:

Table 9
Application for Non-Customer Drinking Water Installation to Perumda Tirta Uli (Person)

Service Area	Once	Never	Total
Siantar Marihat	0	6	6
Siantar Marimbun	0	10	10
Siantar Selatan	0	4	4
Siantar Barat	0	6	6
Siantar Utara	0	8	8
Siantar Timur	1	7	8
Siantar Martoba	2	8	10
Siantar Sitalasari	2	5	7
Perumnas	-	4	4
Total	5	58	63
Percentage (%)	7,94	92,06	100

Source: Primary Data (processed), 2022.

Comparison of Non-Customer Electricity Expenditures with Customer Clean Water Usage Costs

The average cost of using clean water by customers of Perumda Tirta Uli is IDR 119,202.2161 per month, while electricity costs by non-customers are IDR 218,476.19 per month. This condition explains that the two types of clean water expenditure by customers to the company amount to 54.56% of the electricity expenditure paid by non-customers. This means that electricity costs incurred by non-customers are still greater than the amount spent to pay for clean water costs borne by customers. It was concluded that there is still very large potential for non-customer communities to register to become clean water customers at Perumda Tirta Uli Pematangsiantar.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be formulated: (1) From the answers of non-customer respondents regarding the reasons for not being willing to register as customers of Perumda Tirta Uli Pematang Siantar, namely: firstly, that they have used drilled wells from the start, and because installation costs are high; (2) Reasons given by respondents who stated that the percentage of water distribution is often congested is low (%); (3) The reason why respondents did not become customers was because they were unable to pay was also a low percentage (%); (4) Distribution pipes that are far away are one of the reasons why respondents do not become customers, and (5) the reason for the water being less clear is that overall the respondent's answer is a low percentage (%); and (6) In this case, the most common reason from a total of 63 respondents was that 35% of them had used drilled wells from the start.

Starting from the conclusion, the following suggestions are given: The most common reason from the overall answers of respondents who said they were not willing to become customers of Perumda Tirtauli was because from the start they had used drilled wells, this must be addressed by the Pematangsiantar City Government through socialization in groundwater extraction so that they respect conservation principles. because it can damage the environment if drilling is carried out in locations that do not respect conservation principles, especially excessive groundwater extraction.

BIBLIOGRAPHY

Arista, D., & Hasbiah, A. W. (2019). Analisis Kebutuhan Nyata Berdasarkan Pemakaian Air Minum Dan Sikap Masyarakat Yang Belum Terlayani Terhadap Pelayanan Air Minum Di Kota Bandung (Doctoral dissertation, Fakultas Teknik Unpas).

Fitria, A., Siswanto, S., & Sandhyavitri, A. (2013). Analisa Willingness To Pay (WTP) dan Kebutuhan Air Bersih di Kecamatan Rengat Kabupaten Indragiri Hulu (Doctoral dissertation, Riau University).

Hanley, N. and Splash, C.L. (1993) Cost of Benefit Analysis and the Environment. Edward Elgar Publishing Ltd., Cheltenham.

I Komang Sukendra & I Kadek Surya Atmaja, 2020. Instrumen Penelitian, Mahameru Press, Pontianak.

Iman Soeharto, (2001). Studi Kelayakan Proyek Industri, Jakarta, Penerbit: Erlangga (Anggota IKAPI).

Irianti Sri (2016). Determinants of House drink hold Drinking-Water Sourrce in Indonesia: An Analysis of the 2007

Indonesia Family Life Survey, Cogen Medicine Volume 3, 2016.

Novita, M. D., & Marsono, B. D. (2019). Perencanaan Sistem Distribusi Air Minum Kecamatan Arjasa Kabupaten Jember. Jurnal Teknik ITS, 8(2), D112-D117.

PDAM Pekalongan, (2018). Real Demand Survey PDAM, Pusat Pengembangan Manajemen Akuntansi, Fakultas Ekonomi Universitas Pekalongan.

Permendagri No. 23 tahun 2006 Tentang Peninjauan Tarif Air Minum

Putri, N. R., Fauzi, M., & Sandhyavitri, A. (2014). Analisis Willingness To Pay (WTP) Dan Kebutuhan Air Bersih Di Kota Pekanbaru (Doctoral dissertation, Riau University).

Purba, D. S., Tarigan, V., & Tarigan, W. J. (2021). Analisis Kinerja PDAM Di Sumatera Utara Ditinjau Dari Aspek Keuangan. Jurnal Bisnis dan Kewirausahaan, 17(2), 200-218

Raina, F. A. (2023). Analisis Willingness to Connect (WTC) dengan Pendekatan Regresi Spasial (Studi Kasus: Perumda" JSH") (Doctoral dissertation, Institut Teknologi Sepuluh Nopember).

Robert S. Pindyck, Daniel L. Rubinfield, (2001). Microeconomics. Third Edition: Prentice Hall International, Inc,

Runtunuwu, P. C. H., & Tanjung, F. (2023). Analisis Manajemen Tingkat Pengelolaan Air Bersih Di Maluku Utara (Studi Kasus Kabupaten Halmahera Selatan). Jurnal Ekonomi Manajemen Akuntansi Keuangan Bisnis Digital, 2(1), 37-50**.**

Salvatore, Dominick, (2005). Ekonomi Manajerial Buku 2. Jakarta: Salemba. Empat.

Sandhyavitri, A., Putri, N. R., Fauzi, M., & Sitikno, S. (2016). Analisis kesediaan masyarakat untuk membayar (willingness to pay) biaya pengadaan air bersih (pdam) di kota pekanbaru. Jurnal Teknik Sipil dan Perencanaan, 18(2), 75-86.

Siga Juang, K. S. (2021). Upaya Peningkatan Pelayanan Sistem Penyediaan Air Minum Di Zona I Perumda Air Minum Wair Puan Kabupaten Sikka (Doctoral dissertation, ITN Malang).

Sugiarti, R. (2018). Pengembangan Sistem Distribusi Air Bersih Di Kecamatan Dawarblandong, Kabupaten Mojokerto. Jurnal Purifikasi, 18(2), 77-86.

Sugiyono, (2016). Metode Penelitian Kuantitatif, Kualitatif dan R&D. Bandung: PT. Alfabeta.

Suparmoko M, (2019). Valuasi Ekonomi, Sumber Daya Alam & Lingkungan, Edisi Pertama, Bandung.

Suratmojo, S., Mukhlis, M., & Lestari, E. P. (2022). Strategi PDAM Dalam Peningkatan Pelayanan Air Bersih Di Pulau Bunguran Besar Kabupaten Natun. Journal on Education, 5(1), 1394-1414.

Sutrisno, C. R. (2016). Potensi Pelanggan Pdam Kota Pekalongan (Survei di Kecamatan Pekalongan Barat). Jurnal Ekonomi dan Bisnis, 19(2).

Tomasoa, S. K., & Jacobs, S. L. (2017). Analisis faktor yang mempengaruhi tingkat konsumsi air bersih pdam di kota ambon. Jurnal Eksekutif Vol, 14(1), 160-182.

Vincent Gaspersz, (2005), Ekonomi Manajerial, Pembuatan Keputusan Bisnis Jurnal, Jakarta, PT.Gramedia Pustaka Utama.

Widodo, I. R., & Indarjanto, H. W. (2017). Peningkatan Pelayanan Penyediaan Air Minum Kota Blitar. Jurnal Teknik ITS, 6(2), C369-C374.

www.bisnissyariah.co.id, Formula Perhitungan dan Mekanisme Penetapan Tarif Pada BUMD Air Minum.