

# CUSTOMER'S PREFERENCE ON WATER REFILLING STATION: A CONJOINT ANALYSIS

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## ABSTRACT

*Customer's Preferences on Water Refilling Stations: A Conjoint Analysis, investigated consumer preferences for water refilling products, focusing on six factors: water quality, price, service, mode of payment, product variety, and mode of orders. Data were collected from 100 respondents who ranked 16 combinations of attributes. The results show that consumers prefer distilled water from a deep well, self-service for online payment, and walk-in orders at ₱20 per gallon. Price emerged as the most influential factor, with affordability being highly valued. Key preferences include spring water for quality, ₱20 per gallon for price, pick-up service for convenience, online payment for transactions, and walk-in orders for ordering mode. Conclusions indicated that consumers prioritize cost-effectiveness, convenience, and water quality. Recommendations for water refilling station operators include offering high-quality spring water, maintaining competitive pricing, enhancing pick-up services, integrating online payment options, and promoting walk-in orders. Operators may optimize costs to keep prices low, utilize predictive models to inform strategies and focus on convenience features to align with consumer preferences and boost satisfaction. This study offers insights for better-aligning water refilling services with consumer expectations.*

**Keywords:** quantitative, water refilling, customer preference, customer satisfaction

## 1. INTRODUCTION

Safe drinking water is essential for human health, development, and well-being (World Health Organization, 2019). Consumption of contaminated water poses severe risks to individuals' health, leading to various ailments such as gastrointestinal issues, kidney damage, and other health complications (Isla, 2023). The establishment of water refilling stations serves to address this critical need (Flona, 2022). Furthermore, consumer preferences towards specific water refilling stations are influenced by various factors (Sajjadi et al., 2016). The success and appeal of water refilling stations also greatly hinge on the effectiveness of marketing strategies. Virola (2020) emphasized that product offerings, pricing structures, and promotional tactics are pivotal in attracting and retaining customers. Moreover, customer satisfaction stemming from these marketing strategies significantly impacts their decision-making process (Sri et al., 2020)

The quality of the drinking water "rovi'ed by the stations is an essential factor (Roy et al., 2023). Perception of the safety of the water is another influential factor. Many people avoid tap water due to concerns about its safety, and third-party certifications about taste and safety positively impact consumers' selection of drinking water (Waddams and Clayton, 2010, as cited in Lu et al., 2019). With a captive market, water refilling stations should be doing well in business to cater to the drinking water needs of their clients. However, data obtained through informal interviews with water refilling station owners reveal that very few used standard business practices to optimize their operations (Muyot, 2022). A previous survey also found that seven out of 10 water refill stations needed to comply with the 20-item

checklist required by the Department of Health, thereby going against consumers' basic need for safety (Go, 2022). Refill drinking water depots are in great demand in society because the price of drinking water is relatively lower; however, some studies have found that water quality in some refilling stations is unsuitable, with a risk of recontamination (Rahayu & Herniwanti, 2022). Factors such as sanitation, hygiene, and the cleanliness of the refill depots also impact consumers' choices (Amano et al., 2016).

Studying specific factors customers prefer in water refilling stations is crucial due to increasing concerns about water quality and sustainability (Sri et al., 2020). Understanding these preferences can aid in optimizing service offerings and enhancing customer satisfaction (Wavegen, 2023). Moreover, with growing competition in the water industry, identifying preferred factors can provide businesses with a competitive edge (Oraman & Turan Bal, 2019). Additionally, as consumer behavior evolves, continuous research is necessary to stay abreast of changing preferences and market dynamics (Grabbers, 2023).

### 1.1 Statement of the Problem

The current study specifically sought to answer the following:

1. What are the key factors influencing the customer's decision in choosing a water refilling service in terms of:
  - 1.1 Water Quality;
  - 1.2 Price;
  - 1.3 Service;
  - 1.4 Mode of Payment;
  - 1.5 Varieties of Products; and
  - 1.6 Mode of Order?
2. What do customers consider most important in a water refilling station among the variables considered?
3. What is the relationship between customers' observed and estimated preferences for water refilling stations?
4. What preference do customers mostly regard as ideal for a water refilling Station?

### 1.2 Scope and Delimitation

This study investigated customers' preferences for water refilling services using conjoint analysis. Respondents were selected from residents of the Municipality of Boston, Davao Oriental. Respondents were selected using the quota sampling technique. This study delimited the following factors of water refilling services.

- 1.1 Water quality – deep well water source, spring water source
- 1.2 Pricing – 20, 25, 30, 35
- 1.3 Service – not self-service, self-service, free delivery, pick-up
- 1.4 Mode of Payment – cash to cash, online payment
- 1.5 Varieties of Products – purified, distilled
- 1.6 Mode of Order – walk-in, on-call

### 1.3 Conceptual Framework

This section discusses the concepts this study explores to determine the factors associated with customer preferences for water refilling stations. The study investigated the following factors: water quality, price, service, mode of payment, variety of products, and mode of order.

**Water Quality.** Water quality is a critical factor affecting human health and welfare. According to estimates from the World Health Organization (WHO), unclean water, inadequate sanitation, and poor hygiene are responsible for up to 80% of diseases, 3.1% of fatalities (1.7 million), and 3.7% of disability-adjusted life years (54.2 million) worldwide. In rural locations where water sources are communally shared and exposed to several fecal-oral transmission channels in their local boundaries, fecal contamination of drinking water is a primary cause of water-borne diseases (Gwimbi et al., 2019).

**Price.** It is the value or money customers give up in exchange for a particular offering that would serve to satisfy their needs and wants (Kamble, 2023). According to Kagan (2023), price sensitivity varies from person to person or from one consumer to the next. Some people are willing to pay more for goods and services than others. Kamble

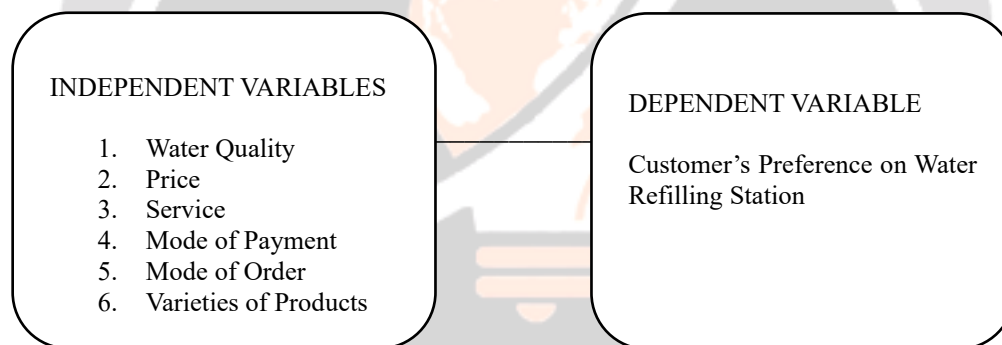
(2023) further emphasized that prices indicate the extent to which an offering is demanded and the extent to which it is supplied or available.

**Service.** Consumers satisfied with the product or service will tend to repurchase the product and use the service again. According to Tijjag et al. (2020), to achieve and create customer satisfaction, business owners must improve the service quality and provide good service to each customer.

**Mode of Payment.** It refers to how a transaction is settled, such as cash, credit/debit cards, electronic funds transfer, or mobile payments (Kenton, 2022). Different payment modes have varying acceptance and popularity levels depending on technology adoption, infrastructure, and cultural preferences (Świecka et al., 2021).

**Varieties of Products.** By offering a more comprehensive range of products, a business shows greater competency and provides a greater variety of options to potential customers, making the business more preferable (O'Connor, 2021). Various products, such as purified and distilled water, exert differing influences on customer satisfaction within the water refilling business. Factors including quality perception, taste and purity, health considerations, cost dynamics, and market demand collectively shape customer satisfaction (Farida & Setiawan, 2022).

**Mode of Order.** The order management process begins when an order is placed and ends when the customer receives their product or service (Flora, 2024). The mode of order can significantly impact customer preference in the water refilling business, whether walk-in or on-call. Walk-in orders offer immediate access and interaction, potentially leading to faster service and a sense of convenience for customers (Trotter, 2020).



*Figure 1. Conceptual Framework of the Study*

## 2. REVIEW OF RELATED LITERATURE

This portion of the paper presents a review of related literature. This chapter also includes readings from various sources in the Philippines and abroad. It aims to provide contextual insights and emphasize the paper's research gap.

### 2.1 Availability of Water Supply in the International Context

Access to safe drinking water and a hygienic way of living is a global concern, and the issue is especially serious in developing countries (Martin, 2023). Consequently, billions worldwide continue to suffer from poor access to water, sanitation, and hygiene (World Health Organization, 2015). However, more than government water distribution efforts are needed to fill this gap. Often, water services halt in major urban areas, especially in peak-use hours of the day. When it flows, the water is not drinkable straight out of the tap, especially for foreigners or those not used to drink it (Budgen, 2020).

In the current scenario, nearly 1.2 billion people lack safe drinking water, and about 2.6 billion lack adequate sanitation (Mboumboue & Njomo, 2016). Approximately 783 million people do not have clean water, and over 1.7 billion people live in river basins where water use exceeds recharge (Distefano & Kelly, 2017; Westlake, 2013). The

World Resource Institute lists thirty-six countries as extremely water-stressed countries, of which twenty-one are developing countries (Reig et al., 2013). These countries include Comoros, Dominica, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, Libya, Kyrgyzstan, East Timor, Iran, Yemen, Palestine, Jordan, Lebanon, Somaliland, Uzbekistan, Pakistan, Turkmenistan, Morocco, Mongolia, Kazakhstan, and Afghanistan (Reig et al., 2013).

Studies reveal that there has been a sixteen-fold increase in the population under water scarcity over the past century (Kummu et al., 2016). Many developing countries lack access to safe drinking water and rely on unofficial or illegal water sources (Nganyanyuka et al., 2014). For instance, In Dar es Salaam, Tanzania, most of the population purchases water from pipe connections or private boreholes, fetches water from shallow open wells or buys bottled mineral drinking water (Nganyanyuka et al., 2014). Similarly, in 2010, water refilling stations made considerable profits in the Philippines (Francisco, 2014). Metro Cebu, an essential place in the Philippines, had only 50% of its population with direct access to piped water, while the rest depended on public and privately-owned deep wells (Francisco, 2014). Similar inadequacies regarding access to safe water are observed in many developing countries. 38% of the population lacks access to basic water needs (WHO/UNICEF 2017). Access to clean drinking water is the right of every human being on earth and can be resolved by the joint effects of government and multilateral organizations that provide for lack of funds.

## 2.2 Consumer Perception of Drinking Water Sources

Consumer decision-making is a mental process. This infers that though a choice cannot be comprehended, we can determine from the visible behavior of a consumer the type of decision that has been made. A consumer goes through five stages during the purchase process: problem/need recognition, information search, and evaluation of alternatives, as well as purchase and post-purchase behavior (Kotler, 2015). People preferred tap water, commercial softeners, domestic softeners, ghana cistern, and bottled water (Sajjadi et al., 2016). Consumer perception of drinking water quality has existed for thousands of years. In the past, people believed good drinking water should be cold, nutritive, transparent, and potable, but their perception of biological and chemical water quality was not remarkable (Sedlak, 2014).

Nowadays, since the link between drinking water quality and human health has been identified, the WHO has been emphasizing that “all people, whatever their stage of development or social and economic conditions, have the right to have access to a suitable supply of safe drinking water” (Biglari et al., 2016). Although the presence of a public water distribution network is often an indicator of a suitable water supply in a developing country, it should be expected that the piped water quality is only sometimes adequate for human consumption (Mirzabeygi et al., 2016). The composition of (drinking) water varies according to the hydro-geological conditions of locations. Water contains typically high or low gasses, minerals, and natural organic matter. Therefore, groundwater or surface water has never been chemically pure H<sub>2</sub>O (Chapman et al., 2016). According to Akhtar et al. (2021), this composition is related to natural processes (weathering and soil erosion) and human activities (discharging sanitary and industrial wastewater to receiving waters).

In dry and semi-dry areas, due to extreme temperature changes during different times, natural processes such as soil erosion and rock weathering lead to changes in water quality (Li et al., 2024). Therefore, in these areas, the contents of dissolved solids, as an index for salty water, increase more than their standard amount (Sajjadi et al., 2016). Therefore, tap water quality in these areas is less favorable than drinking water, and people in these areas prefer using other water sources, such as artificially produced demineralized water (Gelca et al., 2016) or bottled water. Consumers may use one of these conditions based on their perception of accessible drinking water sources and economic conditions. According to previous studies, if any of these water sources fail to have the maximum acceptable concentration of inorganic and organic substances, consumers could face many health problems (Akhtar et al., 2021). For example, the use of an unhealthy and contaminated cistern or ghana causes increasing diseases such as cholera, diarrhea, salmonellosis, and typhoid (Javaid et al., 2022). Giardiasis has been the cause of mortality of more than 2 million people worldwide, the majority of whom were children younger than 5 years old (Lanata et al., 2013). The most prevalent contaminants of cisterns and ghanats are heavy metals and polluted runoffs from agricultural activities and precipitation (Khan & Eslamian, 2017).

## 2.3 Factors Affecting Consumer Preference on Water Products

In the field of drinking water supply, considering how consumer perceptions are formed is essential (Denantes & Donoso, 2021). Indeed, all the information received by the consumer about drinking water and the provider's service is in interaction and contributes to building a general satisfaction with water and service quality and the service provided by the water supply and sanitation provider (WSS). It is possible to reduce the difference between perceptions

and realities if there is an understanding of how perceptions are formed, and decision-makers include satisfaction with water and service quality as relevant issues when deciding on public policy (Romano & Masserini, 2020). Nilma Das (2013) A Study on Factors Affecting Consumer Purchase Decision of Water Purifier, *Indian Journal of Marketing*, A study on the topic “A Study on Factors Affecting Consumer Purchase Decision of Water Purifier,” concludes that the behavior of consumers is affected by various factors like the price of the product, technology, health and safety, brand name, marketing activities as well as their characteristics. Products offered at prices below the market rate are expected to sell in larger quantities (Sadiq et al., 2020). Numerous studies have demonstrated that pricing plays a crucial and significant role in influencing consumer purchasing decisions (Huo et al., 2021).

Several studies have investigated the factors affecting user perception of water service quality and water quality and their subjective judgment. Doria (2010, as cited in Denantes and Donoso, 2021) reviews these studies and concludes that users’ perceptions result from an interaction of multiple and diverse factors. Some of the significant factors identified in the literature are sensory information (Debbeler et al., 2018; Francis et al., 2015), risk perception (Debbeler et al., 2018), water quality (Onufrak et al., 2014), and water service continuity (DuChanois et al., 2019; Kaminsky & Kumpel, 2018), among others.

Romano and Masserini (2020) and García-Rubio et al. (2016) found that the type of provider (public, concession, or privatized) impacts user perception of water service quality. This aspect is also related to users’ trust in the water provider, which directly influences users’ perceived service quality (Doria et al., 2009, as cited in Denantes and Donoso, 2021). Spring or glacier water is also commonly called “raw” water. In its rawest form, unfiltered spring water can help your body and cells regenerate due to the naturally occurring and rich mineral content in these springs (Sahakian, 2019). Bottled spring water is sourced from natural springs or underground sources, then processed and packaged in bottles for consumption. It is known for its purity, mineral content, and refreshing taste (Chinaura, 2023).

Establishing the customer’s preferred payment methods is essential in any business’ payments function, particularly businesses with many transactions that take place remotely, such as over the internet, through payment links, or over the phone (Bayley, 2023). Accepting cash provides convenience to consumers who prefer to use physical currency or may need access to other payment methods, such as credit or debit cards. In most countries, cash payments still account for most consumer transactions; around 85% are made in cash (Aliyev, 2016). Cash payments offer anonymity and privacy, which can appeal to consumers concerned about data security or who prefer not to leave a digital footprint (Mai, 2019). Contrarily, mobile payment methods like digital wallets or mobile banking apps offer quick and seamless transactions, appealing to consumers looking for convenience and efficiency (Damen, 2023). Younger, tech-savvy consumers may prefer mobile payment options due to their familiarity with digital technology and preference for modern, innovative payment solutions (Ramli & Hamza, 2021). By offering various payment options, water refilling stations can cater to the diverse preferences of their customers, enhancing overall satisfaction and convenience.

Purified water undergoes filtration processes to remove impurities, addressing concerns about taste and odor (Vestergaard, 2024). Customers often perceive purified water as a reliable option for everyday hydration, contributing to positive satisfaction (Kubala, 2023). While not as rigorously purified as distilled water, purified water still offers a clean taste, appealing to customers seeking a balance between purity and affordability. Distilled water’s complete removal of impurities results in a taste that some consumers find superior, particularly for applications where taste neutrality is paramount, such as in medical equipment or scientific experiments. For individuals with specific health concerns or medical conditions requiring the purest form of water, such as those with compromised immune systems or certain renal issues, distilled water may be the preferred choice due to its absolute purity (Begum, 2021).

### **3. METHODOLOGY**

#### **3.1 Research Locale**

The study was conducted in Poblacion, Boston, Davao Oriental. The chosen locale stands as a node within the region. This concentration underscores the prevalence of water refilling stations in the area, thus imposing the tendency of a demographic to acquire water refilling services occasionally. Thus, this specific place is most appropriate as the research locale.



**Figure 2. Map of the Research Locale**

### 3.2 Research Design

The study used an orthogonal design and adopted a one-shot survey design. This approach involves measuring the outcome of interest only once after exposing a non-random group of participants to a certain intervention (Choueiry, 2022).

### 3.3 Research Instrument

This study utilized a research questionnaire that asked respondents to rank the most to least preferred variable combinations among strategies for evaluating water quality, price, services, mode of payment, varieties of products, and mode of order. It suggests developing levels within each attribute, such as price (20, 25, 30, 35), water quality (deep well water source and spring water source), services (not self-service, self-service, free delivery, and pick-up), mode of payment (cash to cash, online), varieties of products (purified, distilled), mode of order (walk-in, on-call). The design generated 16 combinations of six factors of at least two attributes for each factor. These combinations were generated from the orthogonal design of statistical software, which was the first approach to conjoint analysis.

## 4. RESULTS AND DISCUSSION

This chapter presents the results derived from the data collected from the respondents. Additionally, it provides a thorough analysis and interpretation of the data, organized according to the research questions outlined in the initial chapter of this paper.

**Table 1. Utilities of each attribute in terms of water quality**

Factor	Attributes	Utility Estimate	Std. Error
Water Quality	Deep Well Water	-0.25	1.496
	<b>Spring Water</b>	<b>0.25</b>	1.496

Table 1 shows the relative utilities obtained in terms of water quality and the relative importance of each attribute. The average utility scores describe the desirability of the various aspects of an attribute, with higher values suggesting that respondents had a greater preference for that aspect. The scores show a preference ranking and the degree of preference for the attributes.

As per the results, respondents most preferred spring water, which has a utility estimate of 0.25, indicating a positive preference. This suggests that consumers favor spring water over deep well water. Conversely, deep well water has a negative utility estimate of -0.25, which implies a lower preference among respondents. The standard errors for both estimates are relatively high (1.496), indicating considerable variability in the responses. Nonetheless, the positive utility of spring water suggests it is the preferred choice for water quality among the respondents.

**Table 2. Utilities of each attribute in terms of price**

Factor	Attributes	Utility Estimate	Std. Error
Price	<b>₱ 20 per gallon</b>	<b>2.25</b>	2.591
	₱ 25 per gallon	1.75	2.591
	₱ 30 per gallon	1.5	2.591
	₱ 35 per gallon	-5.5	2.591

Table 2 shows the relative utilities obtained in terms of price and the relative importance of each attribute. The table relays the desirability of the various aspects of an attribute, with higher values suggesting that respondents had a greater preference for that aspect. In terms of price, results stated that respondents most preferred ₱20 per gallon with a utility estimate of 2.25. This means respondents favored the lowest price, indicating a strong preference for cheaper prices.

The utility estimates decrease as the price increases, with ₱25 per gallon having a utility estimate of 1.75, ₱30 per gallon having a utility estimate of 1.5, and the least preferred option being ₱35 per gallon with a negative utility estimate of -5.5. This negative value suggests a significant dislike for the highest-price option. The standard errors for all estimates are relatively high (2.591), indicating considerable response variability. Nonetheless, the data indicates a preference for lower-priced options among respondents.

**Table 3. Utilities of each attribute in terms of the type of service**

Factor	Attributes	Utility Estimate	Std. Error
Service	Not self-service	0	2.591
	Self-service	-0.25	2.591
	Free delivery	-0.25	2.591
	<b>Pick-up</b>	<b>0.5</b>	2.591

Table 3 presents the relative utilities obtained in terms of the type of service and the relative importance of each attribute. The table relays the desirability of the various aspects of an attribute, with higher values suggesting that respondents had a greater preference for that aspect.

In line with this, the result states that respondents prefer the pick-up service the most, with a utility estimate 0.5. This indicates a notable preference for picking up their orders. Conversely, both self-service and free delivery options have utility estimates of -0.25, suggesting a lower preference for these services. The non-self-service option has a utility estimate of 0, indicating a neutral preference. The standard errors for all estimates are relatively high (2.591), indicating considerable response variability. Nonetheless, the data clearly shows a preference for pick-up service among respondents.

**Table 4. Utilities of each attribute in terms of mode of payment**

Factor	Attributes	Utility Estimate	Std Error
Mode of Payment	Cash	-0.5	1.994
	<b>Online</b>	<b>2.375</b>	2.338
	Either cash or online	-1.875	2.338

Table 4 shows the relative utilities obtained in terms of the mode of payment and the relative importance of each attribute. The table showcases the desirability of the various aspects of an attribute, with higher values suggesting that respondents had a greater preference for that aspect.

In terms of mode of payment, results stated that respondents most preferred the online payment option with a utility estimate of 2.375. This indicates a strong preference for paying online. On the other hand, the option for either cash or online payment has a negative utility estimate of -1.875, suggesting a significant disfavor for this flexibility. Cash payment alone also has a negative utility estimate of -0.5, indicating a lower preference than online payment. The standard errors for these estimates are relatively high (1.994 for cash and 2.338 for both online and either cash or online), indicating a considerable degree of variability in the responses. Despite this variability, the data clearly shows respondents' preference for online payment.

**Table 5. Utilities of each attribute in terms of varieties of products**

Factor	Attributes	Utility Estimate	Std. Error
Varieties of products	Purified water	-0.375	1.496
	<b>Distilled water</b>	<b>0.375</b>	1.496

Table 5 shows the relative utilities obtained in terms of product varieties and the relative importance of each attribute. The table showcases the desirability of the various aspects of an attribute, with higher values suggesting that respondents had a greater preference for that aspect.

In terms of product variety, the results stated that respondents most preferred distilled water, with a utility estimate of 0.375. This indicates a notable preference for distilled water over purified water. Conversely, purified water has a negative utility estimate of -0.375, suggesting a lower preference among respondents. The standard errors for both estimates are relatively high (1.496), indicating considerable variability in the responses. Nonetheless, the data indicates a preference for distilled water among respondents.

**Table 6. Utilities of each attribute in terms of mode of orders**

Factor	Attributes	Utility Estimate	Std. Error
Mode of orders	<b>Walk-in</b>	<b>1.667</b>	1.994
	On-call	-1.333	2.338

Table 6 shows the relative utilities obtained in terms of the mode of orders and the relative importance of each attribute. The table showcases the desirability of the various aspects of an attribute, with higher values suggesting that respondents had a greater preference for that aspect. This data provides valuable insights into consumer preferences and helps identify which attributes significantly influence their decision-making process.

In terms of mode of orders, results stated that respondents most preferred the walk-in option with a utility estimate of 1.667. This indicates a strong preference for placing orders in person. On the other hand, the on-call option has a negative utility estimate of -1.333, suggesting a significant disfavor for this ordering method. The standard errors for these estimates are relatively high (1.994 for walk-in and 2.338 for on-call), indicating a considerable degree of variability in the responses. Despite this variability, the data clearly shows respondents' preference for walk-in orders.

#### 4.1 Most Important Factor of Water Refilling

**Table 7. Important Values**

Factor	Importance Values
Source of Water	2.941
<b>Price</b>	<b>45.588</b>
Service	4.412
Mode of Payment	25.000
Varieties of Products	4.412



Mode of Orders	17.647
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Conjoint analysis did not just capture the most preferred attribute. It also determined the factors that consumers considered to be the most important. Consumers consider price the most important factor, over other factors, because it has a value of 45.588, the highest among the others. This means that among factors considered in this study, consumers consider price the most important factor when purchasing.

Further, as shown in Table 7, the mode of payment is the second most preferred factor, yielding a value of 25.000. This indicates how consumers can pay for the product, significantly influencing their purchasing decisions. The mode of orders is next, with a value of 17.647, suggesting that the method of placing orders is also a crucial consideration for consumers. Research indicates that the mode of payment significantly impacts consumer purchasing behavior, as convenience and security in payment options enhance customer satisfaction and loyalty (Zhang et al., 2023). Additionally, the mode of orders is a critical factor, with consumers preferring streamlined and user-friendly ordering processes, which can lead to increased sales and repeat business (Makela, 2018).

Service and product varieties follow, each with a value of 4.412. This equal ranking shows that consumers place similar importance on the quality of service they receive and the range of products available. However, these factors are much less critical than price and payment mode. This finding aligns with existing literature, which suggests that while service quality and product variety contribute to overall consumer satisfaction, they are often secondary to the more immediate considerations of cost and payment convenience (Ozer et al., 2013).

Lastly, the water source is the least important factor, with a value of 2.941. This suggests that while the water source is a consideration, it is not a primary concern for consumers. Existing studies corroborate this finding, indicating that consumers tend to prioritize factors such as price, payment methods, and product variety over the source of water when making purchasing decisions (Wang et al., 2018).

Table 7 also reveals that consumers ranked services and varieties of products as statistically equal, considering that their values are identical. This result shows that consumers do not classify these factors as most important compared to price. As such, we can infer that services and varieties of products can be equally considered when making purchasing decisions among the less important factors. Price is the dominant factor, guiding consumers' choices significantly more than other attributes.

#### 4.2 Relationship between Observed and Estimated Preferences

**Table 8. Correlations between observed and estimated preference**

Type of Measure	Value	Sig.
Pearson's R	0.827	0.000
Kendall's tau	0.700	0.000

Table 8 shows the linear relationship between observed and estimated preferences. The results in Table 8 indicate a L significant relationship between observed and estimated preferences, with a Pearson's R-value of 0.827 and a significance level of 0.000, and Kendall's tau value of 0.700 and a significance level of 0.000.

Observer-to-observed preference: These two variables have a significant relationship, with Pearson's R-value at 0.827 and a significance level 0.000. This suggests a strong linear correlation between observed and estimated preferences.

Observer-to-estimated preference: There is also a significant relationship between these two variables, with Kendall's tau value at 0.700 and a significance level of 0.000. This indicates a strong ordinal correlation between observed and estimated preferences.

The conclusion is that observed preferences and estimated preferences show similar patterns in their distribution shapes. The high correlation coefficients and significance levels suggest that estimated preferences can reliably predict observed preferences. This indicates that estimated preferences can effectively forecast observed preferences, accurately reflecting business operations.

### 4.3 Most Preferred Combination of Factors

**Table 9. A combination of factors mostly regarded as ideal for water refilling station**

Preference	Product Description	Utility Estimates	Rank
1	Purified water from a deep well source with free delivery for cash payments and accepting walk-in orders at ₱25/gallon.	10.250	7
2	Purified water from a deep well source in a self-service for either cash or online and accepting walk-in or on-call orders at ₱35/gallon.	-0.375	16
3	Distilled water from a deep well source in a self-service for online payment and accepting walk-in orders at ₱20/gallon.	14.375	1
4	Distilled water from a deep well source, not self-service in cash, and accepting on-call orders at ₱35/gallon.	1.000	15
5	Distilled water from a spring source, not self-service for online payment, and accepting walk-in or on-call orders at ₱25/gallon.	12.625	2
6	Purified water from a spring source with free delivery for online payment and accepting walk-in orders at ₱35/gallon.	6.375	13
7	Distilled water from a spring source in self-service for cash and accepted walk-in orders at ₱30/gallon.	11.250	3
8	Purified water from a spring source in a self-service for cash and accepting on-call orders at ₱35/gallon	7.750	11
9	Purified water from a deep well source is picked up for online payment and accepted orders at ₱30/gallon.	10.625	5
10	Distilled water from a deep well source with free delivery for cash and accepting either walk-in or on-call orders at ₱30/gallon.	8.750	10
11	A purified water from a spring source is pick-up for cash payment and accepted either walk-in or on-call orders at ₱20/gallon	10.000	8
12	Distilled water from a spring source is available for cash pick-up and accepts walk-in orders at ₱35/gallon.	5.000	14
13	Purified water from a spring source. It is not self-service for either cash or online payment and accepts walk-in orders at ₱30/gallon.	9.375	9
14	Distilled water from a deep well is the pick-up for either cash or online payment and accepted walk-orders at ₱25/gallon	10.375	6
15	A distilled water from a spring source with free delivery for either cash or online payment and accepting walk-in orders at ₱20/gallon.	7.625	12
16	A purified water from a deep well source that is not self-service in a cash payment and accepting walk-in orders at ₱20/gallon.	11.000	4

Table 9 exhibits consumer preferences for various water refilling station options, highlighting the utility estimates and rankings of different combinations of water quality, price, service, mode of payment, product varieties, and mode of order.

Consumers prefer distilled water from a deep well source in a self-service for online payment and accepting walk-in orders at ₱20 per gallon. This preference suggests that customers value the convenience of self-service and the affordability of ₱20 per gallon, even if it requires online payment. The second most preferred option is distilled water from a spring source that is not self-service, available for online payment, and accepting either walk-in or on-call orders at ₱25 per gallon. This indicates a strong preference for distilled water and a moderate acceptance of higher prices with convenience features like non-self-service.

Examining the data, we can infer that consumers prioritize the type of water (distilled over purified), the convenience of payment methods, and the type of service (self-service or not) over the price alone. The third most preferred option is distilled water from a spring source in self-service for cash payments and accepting walk-in orders at ₱30 per gallon. This further highlights the preference for distilled water and cash payment convenience.

Consumers are less interested in higher-priced options with fewer convenience features, such as purified water from a deep well source in self-service for either cash or online payments, accepting walk-in or on-call orders at ₱35

per gallon, ranked the lowest in preference. This shows that while convenience is valued, there is a threshold to the price consumers are willing to pay for these services.

Consumers are more particular about the type of water and the convenience of payment and service over the exact price per gallon. This indicates that while price sensitivity exists, it is balanced with the value provided by the service's convenience and water quality. Consumers are more willing to adjust their preferences based on these factors rather than focusing solely on the lowest price.

## 5. CONCLUSION

The study contributes to increasing awareness of the attributes that consumers mainly consider. It can help water refilling station operators position themselves in terms of water refilling products. Consumers are more particular about specific attributes of their preferences. In the local context, there are numerous businesses providing water refilling services. The outcome of the study provides significant information about the important attributes of water-refilling products. It provides a valuable preference for what most consumers want. The results show that consumers preferred distilled water from a spring water source in self-service for online payment and accepting walk-in orders at ₱20 per gallon.

1. The study results revealed that consumers have distinct preferences for specific attributes of water-refilling products. Among the various factors individually scrutinized, spring water emerged as the most favored type of water quality, reflecting a preference for its perceived purity and taste. In terms of pricing, the most attractive option was ₱20 per gallon, indicating a strong preference for affordability. When considering service types, consumers preferred the pick-up option, suggesting a desire for convenience in obtaining their water. Online payment was the most preferred mode of payment, highlighting the importance of digital convenience in consumer transactions.
2. Distilled water was the top choice regarding product variety, likely due to its high purity. Lastly, walk-in ordering was most preferred for the mode of orders, indicating that consumers value the ability to place orders in person. These preferences underscore the importance of offering high-quality, affordable, and convenient water refilling options to meet consumer demands effectively.
3. As consumers prioritized price in their decision to buy water refilling products, it reflected their emphasis on cost-effectiveness. They may believe that lower prices provide better value for their money. Therefore, price became a critical factor influencing their purchasing decision, directly impacting their perceived value and satisfaction with the product.
4. The factors or variables used in the estimation model strongly correlate with consumers' choices when buying water-refilling products. Based on these factors, the model can accurately predict consumer behavior. This alignment indicates that the model is reliable and can be used to make informed decisions or predictions about consumer preferences and behavior in the market for water refilling products.
5. In terms of the combination of factors, consumers were specifically particular about the attributes of the water-refilling products that they purchase. Given their specific preferences, if attributes are combined, it can be inferred that they favor distilled water from deep wells and prefer the convenience of online payment and self-service options, even if it means going for a lower price point. This suggests that while cost is necessary, the quality of water and convenience features play a significant role in their purchase decisions.

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