

The Impacts of Environmental Knowledge on Aqua Product Purchase: The Role of Environmental Concerns

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Abstract. The devastating effects of plastic pollution on the environment have garnered global attention. This study seeks to determine how environmental awareness and concerns influence the consumption of bottled mineral water, specifically the Aqua brand, among Bandung city residents. The primary objective is to comprehend society's environmental challenges and Aqua Products' response as the sole manufacturer responsible for addressing these issues. 400 participants who recently purchased and consumed Aqua's mineral water packaging in Bandung, West Java, Indonesia were included in the study. Polls were used to collect quantitative data using descriptive and causal research methods. Data analysis employed desk research and Smart-Partial Least Square structural equation modeling. Environmental data encompassing knowledge, issues, and purchasing habits reveal encouraging progress in environmental awareness and eco-friendly purchasing behavior among the general public. In addition, the results of testing the hypotheses indicate that environmental knowledge has a positive and significant impact on addressing environmental problems. In addition, the study establishes a significant connection between environmental concerns and purchasing behavior. However, the relationship between purchasing behavior, environmental issues, and environmental knowledge did not consistently demonstrate a significant and positive effect. The research illuminates the complex relationship between environmental consciousness, consumer behavior, and the challenges posed by plastic packaging. This study provides Aqua and other stakeholders with valuable insights for effectively addressing environmental concerns associated with their products. The investigation concludes by emphasizing the utmost significance of increasing environmental awareness and adopting eco-friendly practices in order to mitigate the negative effects of plastic pollution on the environment.

Keywords: Plastic pollution, Eco-consciousness, Aqua brand consumption, Environmental challenges, Green Practices

1. Introduction

Aqua bottled mineral water is one of the most popular mineral water brands in Indonesia, and as consumers become increasingly aware of environmental concerns, many people consider environmental factors in their purchasing decisions. Environmental knowledge includes an individual's understanding of environmental issues such as the importance of conserving nature, water resource management (Hamzah & Tanwir, 2021), and the impact of plastic waste on the environment (Kumar et al., 2017). As stated by Statista Market Insights (2023), approximately 31% of expenditure and 14% of consumption volume in the bottled water segment are expected to come from consumption outside the home, such as in bars and restaurants. The volume in the bottled water segment is expected to reach 26.94 billion liters by 2027. Volume growth of 2.0% is expected by 2024, indicating an increase in demand for bottled water products. And the average volume per person in the bottled water segment is expected to reach 90.43 liters by 2023. Changes in consumption patterns, rising incomes, and increasing urbanization in these countries have driven an increase in demand for bottled water. Better infrastructure in bottled water distribution (Abdah et al., 2020) and promotional campaigns (Heo & Muralidharan, 2019) from bottled water companies also play a role in this growth (Lehner et al., 2019).

In addition to the explanation presented, new problems such as environmental pollution are currently the concern of many countries, ranging from pollution caused by waste (Hamzah & Tanwir, 2021) and air pollution (Fu et al., 2020) to those caused by non-biodegradable plastics (Moser, 2016). The Ministry of Environment and Forestry of the Republic of Indonesia said that the total national waste in 2021 will reach 68.5 million tons. Of that amount, as much as 17%, or around 11.6 million tons, were contributed by plastic waste (CNN Indonesia, 2023). Concerns about plastic waste (Lehner et al., 2019) also have an impact on plant and animal ecosystems (Xu et al., 2023) so that they can endanger their populations in the wild (Guo et al., 2021; Abdah et al., 2020).

Anxiety about plastic waste is especially felt in big cities such as Bandung, West Java, which is one of the biggest cities in Indonesia. The fact that this type of plastic waste accounts for the second-largest volume is not surprising because plastic materials are still widely used in various human activities, starting from shopping bags and beverage bottles to food packaging (BandungBergerak.id, 2023). From the pile of plastic waste, branded bottled water products accounted for 226 thousand tons, or 7.06%. Meanwhile, 46 thousand tons, or 20.3% of the total waste generation of bottled water products branded Bottled Drinking Water, were in the form of plastic bottles and cups (CNN Indonesia, 2023). With the data on plastic waste caused by bottled drinking water, Aqua, as one of the producers, is trying to find a solution to overcome the problem. One of the efforts made by Aqua is to make circular packaging. Circular packaging is Aqua's program to make packaging with materials that can be reused, recycled, or composted by 2025, and currently, 95% of Aqua's packaging can be recycled. Aqua also collaborates with several parties to make a movement of three pillars, #bijakberplastik, namely collection, education, and innovation (Swa, 2023).

Based on the above, environmental issues have become one of the main concerns around the world. More and more people are realizing the importance of protecting the environment (Abdah et al., 2020) and considering the impact of purchasing decisions on nature (Guo et al., 2021). Bottled mineral water purchasing decisions based on environmental knowledge and environmental issues can have a more positive impact on the environment (Guo et al., 2021; Sharma & Foropon, 2019). By choosing more environmentally friendly products, consumers can reduce the environmental footprint generated by the production, use, and disposal of bottled mineral water bottles (Asif et al., 2023; Qian, 2018). Abdah et al. (2020) explained that when many consumers make sustainable purchasing decisions, such as choosing bottled mineral water with environmentally friendly packaging, it can put pressure on producers and industries to adopt more sustainable business practices across the board. Thus, sustainable purchasing decisions by consumers can be a driving force for positive change in the industry, encouraging manufacturers to adopt more sustainable business practices across the board (Heo & Muralidharan, 2019). In addition, consumer support for environmentally friendly products can make a

meaningful contribution to efforts to protect and preserve the natural environment for future generations (Borusiak et al., 2021). This can drive positive change in the industry (Khan et al., 2022) and drive innovation for more environmentally friendly solutions (Liguo et al., 2023; Meidute-Kavaliauskiene et al., 2021).

2. Literature Review

Environmental knowledge refers to the understanding and awareness of environmental problems, processes, and systems (Khan et al., 2022). It includes knowledge of various aspects of the environment, including natural resources, ecosystems, biodiversity, climate change, pollution (Heo & Muralidharan, 2019), and sustainable practices (Simanjuntak et al., 2023). Therefore, Heo & Muralidharan (2019) explain that environmental knowledge involves information about causes, impacts, and potential solutions to environmental challenges. It includes factual information, scientific concepts, and a contextual understanding of how human activities interact with nature. This knowledge can be gained through formal (Asif et al., 2022) education, personal experience, media sources, and engagement with environmental issues (Hamzah & Tanwir, 2021).

Furthermore, Liguo et al. (2023) emphasize that environmental knowledge is essential for individuals, communities, and societies to make informed decisions and take environmentally responsible actions. However, it empowers individuals to understand the interconnectedness of ecological systems, recognize the consequences of human activities on the environment, and appreciate the value of sustainable practices (Simanjuntak et al., 2023). Therefore, Hamzah & Tanwir (2021) emphasize that environmental knowledge enables individuals to adopt sustainable practices in different areas of their lives. This can include reducing energy and water consumption, practicing recycling and waste reduction, supporting renewable energy sources, and choosing environmentally friendly products (Khan et al., 2022). With environmental knowledge, individuals can actively participate in the environmental decision-making process (Heo & Muralidharan, 2019). Consumers can contribute to local and global initiatives aimed at preserving ecosystems, protecting biodiversity, and promoting sustainable development (Martinez-Martinez et al., 2019).

Heo & Muralidharan (2019) explain that environmental interconnectedness, on the other hand, recognizes that environmental components are interconnected and interdependent. Borusiak et al. (2021) emphasize the understanding that changes or disturbances in one part of the environment can have far-reaching effects on other components. These interrelationships extend across ecosystems, species, and ecological processes. The hypothesis states that there is a relationship between environmental knowledge and environmental concern (Heo & Muralidharan, 2019). In other words, it suggests that individuals with higher levels of environmental knowledge are more likely to show greater environmental concern.

One of the reasons for the importance of environmental concern is the understanding that our earth has limited resources and is vulnerable to damage (Hamzah & Tanwir, 2021). Attention to environmental issues includes an appreciation of the importance of maintaining ecosystem balance and preserving the planet for future generations (Shah et al., 2023). Borusiak et al. (2021) explained that environmental concern also involves recognizing the right of all living things to live in a healthy and safe environment. These include the protection of endangered species, the protection of natural habitats, and the responsible use of natural resources. People who have environmental problems usually participate in conservation, recycling, and energy-saving efforts. Shah et al. (2023) state that consumers can also support sustainable environmental policies and work to reduce carbon footprints. In addition, consumers can also support organizations and initiatives that work to preserve the environment, as well as spread awareness and knowledge about environmental issues to others (Heo & Muralidharan, 2019).

A "purchase decision" refers to the process undertaken by consumers to select and purchase a particular product or service (Sharma & Foropon, 2019; Guo et al., 2020). Purchasing decisions can be influenced by a variety of factors, including personal preferences, needs and wants, price, product

quality, brand, and environmental factors (Joshi & Rahman, 2015). According to K. Sharma et al. (2022), environmental factors in the context of purchasing decisions refer to the influence of social, cultural, and economic environments on consumer preferences and behavior. Environmental factors can include social norms, cultural values, trends and fashions, advertisements, and recommendations from others, as well as environmental issues (Zaremohzzabieh et al., 2021). Environmental issues are becoming increasingly important in purchasing decisions (Bhardwaj et al., 2023) due to increased awareness of environmental and sustainability impacts (Joshi & Rahman, 2019). Consumers are increasingly paying attention to environmental aspects when choosing the products or services they buy (Guo et al., 2020).

With good environmental knowledge, consumers can look for more environmentally friendly alternatives (Heo & Muralidharan, 2019). Consumers can look for products with ecological labels, sustainability certifications, or production practices that are better for the environment (Hamzah & Tanwir, 2021). This knowledge enables consumers to make more environmentally conscious purchasing decisions (Bhardwaj et al., 2023). Furthermore, Ahmed et al. (2023) explained that concern for the environment can encourage consumers to change their consumption behavior. For example, consumers might choose to purchase products with minimal packaging, use reusable fabric shopping bags, or reduce the use of disposable products (Bian & Moutinho, 2011). Purchasing decisions are influenced by the goal to reduce negative impacts on the environment (Simanjuntak et al., 2023; Chauhan et al., 2021).

Thus, environmental knowledge and concern for the environment have an important role in influencing consumer purchasing decisions (Liguo et al., 2023). Consumers who have a good understanding of environmental issues and a high level of concern for the environment tend to make more sustainable and environmentally responsible choices (Stern, 2000).

3. Methodology

3.1. Samples and data collection procedures

Before conducting the initial survey, researchers conducted a pilot study involving 30 respondents who purchased and consumed Aqua bottled mineral water in Bandung. Early research suggests that the reliability of suppressed measures can be improved (ranging from 0.818 to 0.943). Utilize purposive sampling methods due to the lack of a sample frame. For the people of Bandung who are not reachable, surveys are carried out online, and some are carried out offline. It uses online and offline survey data from February 2023 to June 2023. According to Schillewaert & Meulemeester (2005), online data collection results in faster, more accurate, and better response times overall than offline distribution while also reaching accurately identified target populations—populations that are typically difficult to reach through offline distribution. In this study, social media platforms were spread and sent to every community and society in the city of Bandung. They were referred to SurveyMonkey, an online survey platform, after enthusiastically participating in the study. The platform allows users to reply based on research needs. Consistent with Cohen's (1988) rule of thumb for the power range and G*power software, 400 samples are required for models producing medium effect measures (0.05).

3.2. Measures

The research method used in this study is a quantitative method with descriptive and causal research types. Quantitative methods aim to collect numerical data that can be analyzed statistically, while descriptive and causal types of research refer to the purpose and focus of the research (Mostafa, 2007). Furthermore, the population in this study is made up of Bandung people who have purchased Aqua bottled drinking water. Respondents were selected as a representative sample of the larger population (Hair et al., 2017). The analytical techniques used in this study include descriptive analysis and structural equation modeling (SEM) using SmartPLS software. Furthermore, descriptive analysis is used to provide a statistical picture of the variables studied, such as frequency, mean, and other data distributions (Hair et al., 2014). SEM (Structural Equation Model) is a statistical technique used to

model cause-and-effect relationships between variables in research. SmartPLS is software used to analyze data using SEM methods (Hair et al., 2017).

4. Result

4.1. Characteristics

Based on the results of several previous characteristics, it can be said that 400 respondents produced the most respondents by gender, with women accounting for 61 percent of respondents (243 people), based on age (61 percent), students accounting for 50 percent of respondents (198 people), and based on product consumption (85 percent of respondents consuming more than one bottle of Aqua product).

Table 1: Recapitulation of Respondents' Characteristic

No	Categories of Respondents	Description	Number of Respondents	Percentage
1	Gender	Man	156	39
		Woman	243	61
		17-25 Years	244	61
2	Age	26-35 Years	18	5
		>35 Years	138	34
		Student	17	4
3	Work	Student	198	50
		Workers/employees	104	26
		Miscellaneous	81	20
4	City Origin	Bandung	400	100
		Other	0	0
5	Product Consumption Amount	1 bottle	61	15

4.2. Descriptive Analysis

Consumers have selected Aqua as a product to consider for the environment, according to the results of the data analysis on the variable "Environmental Knowledge," which comes under the category of "Good" with a rounded percentage of 84 percent. Additionally, it is possible to identify those who are concerned about the environment and pick Aqua to protect it using the data analysis results for the variable "Environmental Concern," which were rated as "good" with a percentage change from 83.98. With a response rate of 78% and falling into the "good" category, the study's findings on the variable "purchase decision" indicate that consumers are thinking about buying the product Aqua because of its many advantages.

4.3. Structural Equation Model (SEM): Partial Least Square (PLS)

Every indicator has a cross-loading factor value that is higher than the values found in other constructions. Consequently, it can be said that the indicators used in this study already satisfy the requirements for discriminant validity.

Table 2: Fornell Lacker Result

Variable	Environmental Concern	Environmental Knowledge	Purchasing Decision
Environmental Concern	0,728	-	-
Environmental Knowledge	0,802	0,733	-
Purchasing Decision	0,751	0,666	0,736

The AVE roots of each construct were compared to the correlation between one other construct in the study hypothesis model to calculate the Fornel-Larcker criterion. Based on Table 2, each AVE square root's comparative value is higher than the correlation value between the constructs. Thus, it may be concluded that Fornell Lacker's findings satisfied the criteria for discriminant validity.

Table 3 HTMT Result

Variable	Environmental Concern	Environmental Knowledge	Purchasing Decision
Environmental Concern	-	-	-
Environmental Knowledge	0,898	-	-
Purchasing Decision	0,830	0,736	-

If the value of HTMT is 0.90, then a construct or variable has valid (good) or unique discriminant validity; conversely, if the value of HTMT is > 0.90 , then a construct or variable has invalid (bad) or non-unique discriminant validity (Hair et al., 2017). Based on Table 4, it can be seen that the hetero-trait correlation is worth less than 0.9. Then it can be said that the HTMT results have met the requirements of discriminant validity.

Table 4: Reliability Test Result

Variable	Composite Reliability	Value Critical	Cronbach's Alpha	Value Critical	Evaluation Type
Environmental Knowledge	0,913	$>0,7$	0,892	>0.6	Reliable
Environmental Concern	0,910		0,889		Reliable
Purchasing Decision	0,922		0,906		Reliable

According to the composite reliability values in Table 4, each variable's Cronbach's alpha value is between 0.7 and 0.6. In this manner, it is possible to draw the conclusion that the data is highly reliable (Hair et al., 2014).

4.4. Structural Measurement (Inner Model)

The inner model analysis, sometimes referred to as the model structural analysis, seeks to forecast connections between latent variables (Hair et al., 2014). The environmental concern variable's r-square value is 0.644, while the purchase decision variable's value is 0.575. With an R-Square value of 64.4 percent, the environmental concern variable can be explained by the environmental knowledge variable, while the remaining 35.6 percent is influenced by factors outside the scope of this study. With an R-Square value of 57.7 percent, the purchase decision variable may be explained by environmental knowledge and environmental concern, which are influenced by variables outside of this study by 42.3 percent and 42.3 percent, respectively. A predictive relevance of 0.608 indicates that the model has a relevant predictive value that is greater than zero.

Table 5: Path Coefficient

Variable	<i>Original Sample (O)</i>	<i>Sample Mean (M)</i>	<i>Standard Deviation (STDEV)</i>	<i>T-Statistic (O/STDEV)</i>	<i>P Values</i>
Environmental Knowledge → Environmental Concern	0,802	0,800	0,038	20,892	0,000
Environmental Concern → Purchasing Decisions	0,608	0,605	0,086	7,080	0,000
Environmental Knowledge → Purchasing Decision	0,178	0,184	0,088	2,019	0,022
Environmental Knowledge → Environmental Concern → Purchasing Decisions	0,488	0,483	0,065	7,480	0,000

According to the tested hypothesis, environmental awareness and concern have a favorable and considerable impact on aqua products. These findings are supported by the calculation of the Environmental Knowledge Hypothesis against Environmental Concern having a T-Statistical value with a total of $20.892 > 1.96$, as well as a significant value with a total of $0.000 < 0.05$ so that an H1 result is received, and with the path coefficient formed being positive $0.802 > 1.96$, also a significant value with a total of $0.000 < 0.05$, and with the path coefficient formed being positive 0.802.

Finding the impact of environmental concerns on consumers' decisions to buy Aqua Products goods was another goal of this study. According to the tested hypothesis, there is a positive and significant correlation between environmental concerns and decisions to buy aqua products. The outcome is demonstrated by the T-statistical value being $7.080 > 1.96$, the significance value being $0.0000 < 0.05$, and the path coefficient created being positive 0.608.

The study's focus lies in analyzing the interplay between environmental consciousness, concern, and their influence on consumer behavior pertaining to aqua products. The economic interpretation delves into comprehending how consumers' levels of environmental awareness and concern impact their

choices in purchasing aqua goods. It suggests that individuals who exhibit heightened awareness and concern for environmental matters wield a considerable sway over the demand for aqua products. In regard to the impact of environmental awareness and concern, the study's hypothesis substantiates a favorable effect on aqua products. This implies that consumers who possess a strong awareness of environmental issues and harbor genuine concerns are more inclined to factor in these aspects when making purchasing decisions. The robust T-Statistical value of 20.892 coupled with a significant value of 0.000 (falling below 0.05) signifies a potent connection between environmental awareness and concern. The T-Statistical value exceeding 1.96 underscores the statistical significance of the observed effect.

The positive path coefficient of 0.802 underscores a direct and affirmative correlation between environmental awareness/concern and the demand for aqua products. A higher path coefficient denotes a more pronounced influence on consumers' determinations to procure such items. The research also seeks to comprehend the correlation between consumers' environmental concerns and their proclivity to purchase aqua products. The constructive correlation coefficient of 0.608 posits that as consumers' environmental concerns intensify, their propensity to acquire aqua products also amplifies. In recent times, consumers have showcased a heightened proclivity towards eco-friendly merchandise due to an escalated cognizance of ecological challenges. This aligns with the finding that consumers' environmental awareness and concern significantly steer their purchasing behavior in the realm of aqua products. As sustainability attains greater prominence in consumer considerations, enterprises showcasing their dedication to environmental preservation are apt to attain a competitive edge. This validates the affirmative influence of environmental awareness on the demand for aqua products.

The study finds credence in the notion that consumers are progressively attuned to the ecological repercussions of their choices. Aqua products perceived as originating from ecologically conscientious practices would allure individuals who prioritize sustainable consumption. From the vantage point of behavioral economics, consumers' decisions are often swayed by non-economic factors, encompassing ethical and moral considerations. This elucidates why individuals with heightened environmental concerns may opt for purchases that harmonize with their values.

5. Discussion

Gender, age, occupation, and amount of product consumption were the 4 characteristics of respondents in this study. According to the sex characteristics of the respondents, women made up 243 respondents, or 61 percent, of the total. The fact that women make up the majority of Aqua product users and the majority of environmental activists in this survey is evidence that women care more about the environment than men do. According to the age distribution in this study, students made up 198 out of the 244 respondents, or 50 percent of the total, with employment characteristics. This age and occupation range permits respondents to be in a productive phase.

Liguo et al. (2023) and Simanjuntak et al. (2023) describe environmental knowledge as a person's fundamental understanding of what they can do to support environmental protection, which facilitates their behavioral commitment to green purchases. With a total score of 15.095, or 83.86 percent, the Environmental Knowledge variable falls into the good category according to the results of the overall descriptive analysis. With a total score of 15,117, or 83.98 percent, the Environmental Concern variable falls into the category according to the results of the overall descriptive analysis. discussion of the factors A customer goes through a series of stages when making purchases. Purchasing decisions are one of the stages of the whole mental process, along with other physical actions that take place at specific times and places and the satisfaction of specific requirements. Purchasing decisions come into the group with a total score of 14,003, or 78 percent, based on the findings of the overall descriptive study on the variable.

This study was conducted to determine the effect of environmental knowledge on environmental concerns about aqua products. Based on the hypothesis that has been tested, it produces a positive and

significant influence between environmental knowledge and environmental concern in aqua products. These results are evidenced by the calculation of the environmental knowledge hypothesis against environmental concern, which has a T-statistical value of a total of 20.892. To ascertain the impact of environmental knowledge on environmental concerns towards aqua goods, this study was done.

The second goal of this study was to ascertain how environmental knowledge affected consumers' decisions to buy aqua products. According to the investigated hypothesis, environmental knowledge has a favorable and significant impact on consumers' decisions to buy Aqua products. The T-statistical value of $2.019 > 1.96$, the significance value of $0.0220.05$, and the positive 0.178 value of the path coefficient created serve as evidence for the conclusion. The next purpose of this study is to determine the influence of environmental knowledge on purchasing decisions for aqua products. Based on the hypotheses that have been tested, there is a positive and significant influence of environmental knowledge on aqua product purchasing decisions. The results of the study were proven by having a T-statistic value of $2.019 > 1.96$, a significance value of 0.022 0.05 , and a positive path coefficient of 0.178 .

Compared to previous research, the study's ultimate aim was to assess the indirect impact of environmental knowledge on consumers' choices regarding environmentally conscious product purchases. This differs from prior studies, which might have primarily focused on the direct relationship between environmental awareness or concern and purchasing behavior. The investigated hypothesis in the current study proposes a positive and statistically significant correlation between environmental knowledge and the indirect influence it exerts on purchasing decisions related to aqua products. This suggests that consumers who possess higher levels of environmental knowledge are more likely to consider environmental concerns when making choices about purchasing aqua products. In terms of statistical analysis, the T-statistical value of 7.480 exceeding the threshold of 1.96 , along with a significance value of 0.000 below 0.05 , underscores the robustness of the observed correlation between environmental knowledge and the indirect influence on aqua product purchasing decisions. Additionally, the positive path coefficient of 0.488 signifies a direct relationship between environmental knowledge and its impact on purchasing behavior. These statistical outcomes lend support to the conclusion drawn in the study. In comparison to prior research, this study's contribution lies in its specific focus on the role of environmental knowledge in mediating the relationship between environmental concerns and purchasing decisions. While earlier research might have illuminated the direct effects of consumer awareness and concern, this study delves deeper into the mechanism through which environmental knowledge indirectly shapes purchasing behaviors. This nuanced perspective enhances our understanding of the multifaceted factors that drive eco-conscious consumer choices, and it could offer valuable insights for businesses and policymakers aiming to promote sustainable consumption.

6. Conclusion

This study will investigate the influence of environmental awareness and concern on consumer purchasing decisions, with a focus on Aqua bottled mineral water. The results of the analysis indicate that both the community and most consumers have a solid understanding of environmental issues, demonstrating commendable environmental literacy. As a conscientious effort to contribute to enhancing environmental conditions, this heightened awareness has led them to actively choose Aqua products, which are renowned for their eco-friendliness.

In addition, the study highlights the widespread environmental concern among individuals today, as demonstrated by the high level of concern exhibited by most consumers. As they are aware of the potential negative repercussions of environmental issues on society, they prefer Aqua products out of concern for the environment. Thus, environmental consciousness has emerged as a significant factor in consumer purchasing decisions. Moreover, the analysis of purchasing decisions reveals that both the public and consumers favor Aqua products. The affordability of Aqua's products is a major factor that makes them accessible to consumers from diverse backgrounds. Therefore, affordability becomes the

deciding factor in the Aqua purchase decision-making process.

The descriptive analysis concludes that the public and most consumers exhibit commendable environmental awareness and genuine concern for environmental issues. Their selection of Aqua products exemplifies their commitment to enhancing environmental conditions while remaining fiscally responsible. These findings highlight the increasing significance of environmental awareness and concern in influencing consumer behavior and the central role of affordability in influencing consumer preferences for environmentally friendly products such as Aqua bottled mineral water.

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