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e-ISSN: 2651-5318
Journal Homepage: <http://dergipark.org.tr/joeep>



Araştırma Makalesi • Research Article

Consumer Preferences for Gas Station Toilet Cleanliness: A Demographic Comparison *

Akaryakıt İstasyonlarında Tuvalet Temizliği Konusundaki Tüketici Tercihleri: Demografik Bir Karşılaştırma

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MAKALE BİLGİSİ

Makale Geçmişi:

Başvuru tarihi: 4 Ekim 2024

Düzeltilme tarihi: 9 Mayıs 2025

Kabul tarihi: 12 Haziran 2025

Anahtar Kelimeler:

Tüketici Tercihleri

Sosyal Sorumluluk Projeleri

Tuvalet Temizliği

ARTICLE INFO

Article history:

Received: Oct 4, 2024

Received in revised form: May 9, 2025

Accepted: June 12, 2025

Keywords:

Consumer Preferences,

Social Responsibility Projects,

Toilet Cleanliness

ÖZ

Hizmet kalitesi, tüketicilerin deneyimlerini şekillendiren temel faktörlerden biridir. Özellikle COVID-19 sonrası kritik derecede önemli hale gelen hijyen, hizmet kalitesini doğrudan etkilemeye başlamış ve tüketicilerin hizmet tercihlerini şekillendirmiştir. Günümüzde restoranlar, oteller ve havalimanları gibi kamuya açık alanlarda hijyen standartlarının müşteri memnuniyeti üzerindeki etkisi giderek daha fazla araştırılmaktadır. Bu bağlamda, akaryakıt istasyonlarındaki tuvalet temizliğinin tüketici tercihlerinde nasıl farklılık gösterdiğinin belirlenmesi önemli bir konudur. Bu çalışma, demografik faktörlere göre akaryakıt istasyonlarında tuvalet temizliği algısı ve satın alma kararlarındaki farklılıkları incelemeyi amaçlamaktadır. Araştırma kapsamında 387 katılımcıya anket uygulanmış ve elde edilen veriler istatistiksel yöntemlerle analiz edilmiştir. Hipotezleri test etmek için bağımsız örneklem t-testi ve tek yönlü ANOVA kullanılmıştır. Sonuçlar, tuvalet temizliği algısının demografik faktörlere göre değiştiğini göstermektedir. Bu çalışmanın hem akademisyenler hem de uygulamacılar için önemli içgörüler sağlayarak hizmet kalitesi ve tüketici davranışları üzerine katkıda bulunması beklenmektedir.

ABSTRACT

Service quality is one of the most important factors shaping the consumer experience. Hygiene, which has become critical especially after COVID-19, has started to have a direct impact on service quality and to shape consumers' service preferences. Today, the effect of hygiene standards on customer satisfaction in public areas such as restaurants, hotels and airports is increasingly being investigated. In this context, determining how the cleanliness of toilets at gas stations differs in consumer preferences is an important issue. This study aims to examine the differences in the perception of toilet cleanliness and purchasing decisions at gas stations according to demographic factors. A survey was conducted with 387 participants, and the collected data were analyzed using statistical methods. An independent samples t-test and one-way ANOVA were used to test the hypotheses. The results indicate that perceptions of toilet cleanliness vary based on demographic factors. It is expected that this study will contribute to service quality and consumer behavior by providing important insights for both academics and practitioners.

1. Introduction

Public areas that do not have adequate hygiene conditions

are no longer an individual problem but a public problem (Kimutai et al., 2023). Hygiene is generally accepted as a

* Ethics committee permission was given by Afyon Kocatepe University Social and Human Sciences Scientific Research and Publication Ethics Board for the survey application of this study, with the decision dated 20.12.2023 and numbered 2023/401.

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Atıf/Cite as: Uyar, A., Uyar, K. & Akan, Ş. (2025). Consumer Preferences for Gas Station Toilet Cleanliness: A Demographic Comparison. *Journal of Emerging Economies and Policy*, 10(1), 582-592.

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fundamental component of both the service quality of common areas and public health (Corradi et al., 2023; Maroko et al., 2021). The pandemic that began in 2020 has once again made the world aware of the importance of cleanliness and hygiene. As hygiene has become so critical, various institutions and governments strive to keep this issue on the agenda through social responsibility and inform the public. One of the most important activities in this context is the use of public toilets. Access to clean toilets for individuals and the efforts of those operating these facilities have become critical to public health. Inadequate access to private sanitation facilities has led millions of people to rely on outdoor public toilets, increasing the risk of microbial transmission and the spread of infectious diseases (WHO, 2019).

The cleanliness issue in toilets has prompted businesses to focus on this area. Progress in consumer awareness and regulatory requirements have forced institutions to conduct “clean toilet campaigns” in a spirit of social responsibility. For example, clean toilet campaigns have been conducted in the underdeveloped regions of India under the Swachh Bharat Mission (SBM) (Anju, 2021: 67-70). The Clean India Mission for Villages, implemented between 2014 and 2019, aimed to promote the construction of toilets, prevent open defecation, and improve hygiene awareness and practices (Sengupta et al. 2019). The “Islamic Toilet Etiquette” campaign in Malaysia also attempts to meet the needs and preferences of different user groups through cultural and religious factors and has the task of raising people's awareness (Vishwakarma, 2016: 110-122). Although these campaigns focus on different cultural and regional needs, similar trends are also seen in Turkey. In this direction, especially in recent years, gas stations have begun to show increased sensitivity to this issue, particularly concerning toilet hygiene and cleanliness. Numerous projects related to toilet hygiene have been initiated, spreading nationwide.

Although numerous projects on toilet hygiene have been conducted both in Turkey and worldwide, the number of studies remains limited. Alan (2015) evaluated the corporate social responsibility (CSR) activities of three fuel companies listed among the top 10 in Fortune Turkey's 2013 list of the 500 largest companies, focusing on the extent of their use of social media and its impact on visibility. Altuntaş (2020), in his study conducted with MCDM methods, stated that one of the effective factors in fuel selection is that toilets are free. Akyüz (2008) in his study emphasised the importance of having toilets at petrol stations. Therefore, there is currently no comprehensive study that evaluates toilet cleanliness at gas stations from a consumer perspective. The research aims to fill this gap, bringing attention to toilet hygiene and providing recommendations to businesses in this regard. As part of the study, car users were asked questions about toilet hygiene at gas stations. Detailed information about toilet cleanliness, equipment, and practices was collected, and their effects on purchasing decisions were analyzed according to demographic factors. The results obtained were discussed

from both consumer and business perspectives.

This study makes several valuable contributions to literature. First, it fills a significant gap by exploring the relation between toilet hygiene at gas stations and customer preferences, shedding light on how cleanliness influences consumer behavior. Second, it offers a fresh perspective by examining the impact of toilet cleanliness on demographic variables. The findings will provide key insights into how evolving consumer expectations should be considered in service quality management. Finally, this study offers practical managerial implications for fuel companies and policymakers, serving as a valuable resource for strategy development.

2. Literature

Toilet hygiene is a critical factor in maintaining personal and public health. Ensuring that public toilets are cleaned hygienically helps prevent the spread of disease and microbes. Dirty toilets can lead to a variety of illnesses, including diarrhea, urinary tract infections, respiratory infections, and digestive problems (Areksan, 2023). Poor toilet hygiene can result in the persistence of pathogens and odors that can be transmitted through inhalation and contaminated surfaces (Xu et al. 2022: 1690). Additionally, inadequate toilet management in workplaces, faulty equipment, and insufficient maintenance services can pose obstacles to proper hygiene practices (Maroko et al., 2021: 1-25).

Hygiene in public toilets is not just a health necessity but also a crucial factor in service quality (Chandra et al., 2018). Businesses providing toilet services in public spaces need to create a clean environment, position equipment and materials in a user-friendly manner, and train their staff while conducting regular inspections (Eser, 2019). According to the service quality framework, cleanliness and hygiene are considered essential components under the “tangibles” dimension of the SERVQUAL model. Bitner (1992) emphasized that the physical environment has a significant effect on service quality and customer preferences through the concept of ‘servicescape.’ Hygiene is one of the main factors within this physical environment.

In recent years, consumers have placed increasing importance on toilet hygiene due to public health publications and awareness campaigns. These concerns have particularly increased during the COVID-19 pandemic. The pandemic has made hygiene concerns a dominant factor in shaping consumer behavior. As people have become more cautious in shared spaces like public toilets, their expectations for hygiene have risen to unprecedented levels (Galoni et al., 2020). Numerous studies in the literature confirm that consumers have become increasingly sensitive to hygiene and cleanliness in the aftermath of this period (Aytaç et al., 2023; Kumari & Bhateja, 2024; Rajamani et al., 2022).

Many studies indicate that the key factor influencing the

overall cleanliness perception of businesses is toilet cleanliness (Barber, 2009: 309-320). Consumers tend to believe that if a business's toilets are clean, the rest of the premises are also clean. Cross-industry studies underline the importance of this topic. For instance, over 80% of consumers express that they would not choose a facility with dirty toilets again (QSR, 2013). In comparison, in retail stores, this percentage is slightly lower: 38% of customers report they would not shop again in a store with unclean toilets (Hyunju, 2019: 191-208). In terms of tourism and national development, toilet cleanliness is considered a significant factor. In 2015, the People's Republic of China launched the 'Toilet Revolution' campaign with the aim of reviving Chinese tourism and improving social hygiene by establishing clean toilets. As part of the campaign, 68,000 improved bathrooms were opened in tourist areas, and provincial competitions were organized for the best toilets in tourist locations (CNN, 2017). In Malaysia, 'Clean Toilet Campaign Seminars' were organized to raise awareness about community hygiene (Rahim, 2005: 71-84). In Tanzania, the 'Nyumba ni Choo' campaign aimed to improve toilet facilities and increase toilet construction rates through mass communication strategies, reaching hundreds of thousands of people to promote clean toilets and enhance the country's image in this regard (Czerniewska, 2023:1-10). In the United States, cleanliness and hygiene have been equated with patriotism through the initiation of a 'patriotic hygiene campaign.' The campaign emphasizes personal hygiene as a prerequisite for the cleanliness of the country (Hu and Hu, 2013:111-126).

In Turkey, numerous studies have been conducted, particularly in the field of education, regarding clean toilet facilities. One example is the "Hygienic Toilet, Healthy Future" project initiated by Domestos to enhance hygiene awareness in schools. The project organized training for parents and caretakers in 23 schools and addressed material shortages in school toilets. At the end of the project, a 25% increase in toilet use was observed (Domestos, 2018). In recent years, gas stations in particular have also carried out various activities related to toilet cleanliness as part of their social responsibility projects. Brands such as Opet, Sunpet, Petline, and Shell have taken part in toilet hygiene initiatives (MarketingTürkiye, 2016). Although these initiatives highlight the importance of hygiene in the gas retail sector, no studies have specifically examined their impact on consumers at a theoretical and academic level.

Although, studies have examined the impact of hygiene on factors such as service quality, it is crucial to understand how different consumer groups perceive hygiene-related factors. Research indicates that hygiene expectations vary significantly based on demographic variables (Eriksson, 2022; Tumwebaze, 2013; Zulfiqar, 2023). Recognizing these differences can provide valuable insights into how businesses can develop policies and strategies to meet the hygiene expectations of different consumer groups. This study aims to fill this gap by exploring the role of toilet cleanliness in consumer preferences at gas stations. By

analyzing consumer behavior at gas stations in Turkey, it will help gas station operators optimize their hygiene practices to align with consumer expectations.

3. Research Hypotheses

The research hypotheses are presented in Table 1. The first hypothesis of the study assumes that consumers' attitudes toward toilet cleanliness and their purchasing decisions at gas stations vary based on demographic characteristics. Studies in the literature suggests that cleanliness affects consumer behavior and purchase decisions (Hoffman et al., 2003; Barber & Scarcelli, 2009; QSR, 2013; Hyunju & Jarrett, 2019). The impact of cleanliness on consumer experiences in the service sector is quite evident. Simunović (2018) found that customers at gas stations consider factors such as interior decoration, mobility, cleanliness, and staff accessibility as important in creating a comfortable and pleasant shopping environment (Šimunović, 2018). Similarly, Hameed (2020) identified factors that enhance the quality of gas stations, including the presence of clean toilets, as well as services such as credit card payments, car window cleaning, and quick washing (Hameed, 2020: 53-55). Furthermore, a study on customer satisfaction revealed that modern payment technologies, personal attention from service personnel, promotions, a sense of security, timely service delivery, customer feedback, and trust in privacy policies influence customer satisfaction at gas stations. The cleanliness of the toilets was also found to be a significant factor in customer satisfaction (Kinderis, 2023: 6-16). However, not all consumers place the same level of importance on cleanliness. Individual differences significantly change consumer expectations across different groups. Previous findings suggest that demographic factors play an important role in shaping expectations (Eriksson et al., 2022; Tumwebaze, 2013; Santos et al., 2021; Zulfiqar, 2023). Based on these findings, the following hypotheses were developed to examine how toilet cleanliness perceptions and purchasing decisions vary across different demographic groups;

Table 1. Research Hypotheses

H1: Consumers' attitudes toward toilet cleanliness at gas stations vary based on demographic characteristics.
H1a: Consumers' attitudes toward toilet cleanliness differ by gender.
H1b: Consumers' attitudes toward toilet cleanliness differ by income level.
H1c: Consumers' attitudes toward toilet cleanliness differ by education level.
H2: Consumers' purchasing decisions based on hygiene factors differ according to demographic characteristics.
H2a: Consumers' purchasing decisions based on hygiene factors differ by gender.
H2b: Consumers' purchasing decisions based on hygiene factors differ by income level.
H2c: Consumers' purchasing decisions based on hygiene factors differ by education level.

4. Methodology

This study aims to determine the impact of clean toilet campaigns developed by gas stations on consumer preferences for public health. It is a positivist study that uses the deductive method, focusing on quantitative data, hypothesis testing, and objective assessments. Additionally, it is an explanatory study that explains the relationship between the social responsibility activities carried out by companies and consumers' perceptions. The study utilized a survey as the data collection method. The survey questionnaire consisted of three sections. The first section gathered participants' opinions on general cleanliness practices in gas station restrooms, including their appearance, equipment, materials, and staff practices. The second section asked participants about the impact of toilet cleanliness in companies on their purchase decisions. The final section contained questions about participant demographics. The questions in the first section of the survey were adapted from a study on consumer perceptions of toilet cleanliness in foodservice settings, conducted by Çoban et al. (2019). The questions about the influence of toilet cleanliness on purchase decisions were adapted from a 2023 study by Tatan and Soylu entitled "The Impact of Perceived Cleanliness On Customer Satisfaction, Revisiting Intention and Complaining Behaviors: The Case of Restaurants by S-O-R Model" (Taştan and Soylu, 2023: 27-38). The original versions of the two scales used in the study were created according to a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Participants were asked to evaluate their experiences with restroom services based on their own encounters rather than focusing on a specific brand or station when responding to the survey questions. This study was carried out with the approval of Afyon Kocatepe University Social and Human Sciences Scientific Research and Publication Ethics Committee. Decision No: 2023/401. Date: 20.12.2023.

4.1. Sampling

The main population of the study consists of vehicle users. In 2023, there were 27.114.000 registered vehicles in Turkey (Webtekno, 2024). Since it is not possible to reach the entire population, the researchers decided to use the convenience sampling method to select a sample. To determine the sample size, the researchers used a formula commonly used for quantitative variables and applicable to populations with unlimited volume (Özdamar, 1999). Considering reliability, the sample size was set at 387 surveys, which exceeds the threshold of $n=384$ for all groups. The questionnaire prepared for this purpose was completed both online and in person between December 22, 2023, and January 10, 2024. First, participants were asked whether they drive a vehicle, and if so, they were invited to take part in the study. The survey was conducted among people aged 20 and older who use cars.

When the survey form was distributed, only drivers were asked to fill out the form. Of the participants, 60.5% were male and 39.6% were female. 33.9% of participants were in the 18 to 30 age group, and 35% earned a monthly income between 20,001 and 30,000. 58.4% of participants had a bachelor's degree.

4.2. Descriptive Findings: General Reasons for the Participants' Choice of Gas Station

In the study, participants were asked two questions about the general reasons for choosing a gas station. The first question was about the factors to consider when choosing a gas station in general. The percentage distribution of answers to this question is shown in Figure 1.



Figure 1. Factors Influencing Participants' Choice of Gas Station

According to Figure 1, participants pay particular attention to the brand of the gas station when making their choice (52.5%). A reputable brand name is considered the most influential factor in preference. The second most important reason for participants to choose a gas station is the cleanliness of the toilets at that gas station. Therefore, the cleanliness of sinks and toilets is an important factor for consumers when choosing a gas station.

Since reasons for choosing a gas station can vary depending on circumstances and situations, participants were asked the same question, this time asking: What is the most important factor for you when choosing a gas station on a long trip? Figure 2 shows the percentage distribution of answers to this question.

According to Figure 2, the most important reason for participants to prefer gas stations on long trips is that the gas station belongs to a major brand (41.9%). The second most important factor influencing participants' choice on long trips is the cleanliness of station toilets (31.5%). Compared to Figure 1, it can be said that the importance of toilet cleanliness at gas stations is comparatively more important for long-distance travelers. Although toilet cleanliness is not the first choice, it has been shown to be an important factor.

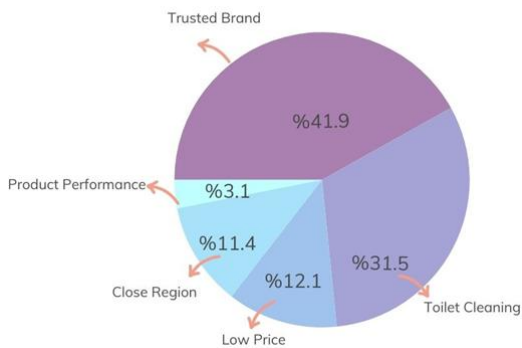


Figure 2. Factors Influencing Participants' Choice of Gas Station on Long Trips

4.3. Validity and Reliability Analysis

In this study, factor analysis was conducted for 15 statements regarding toilet cleanliness at gas stations. The Kaiser-Meyer-Olkin test (KMO) measures the adequacy of the sample size, while Bartlett's test of sphericity assesses the consistency of variables (Pett et al. 2003). The Kaiser-Meyer-Olkin value indicates the adequacy of the sample size (KMO=0.864), and the Bartlett test demonstrates the applicability of factor analysis for sphericity ($\chi^2=2310.654$ and $p<0.001$) (Table 2).

Table 2. Kaiser-Meyer-Olkin and Bartlett Test

Kaiser-Meyer-Olkin (Sample Adequacy)	.864
Bartlett Test Chi-Square Value	2310.654 .000*

Table 3 presents the factor analysis results of the gas station cleanliness scale, which was adapted by the authors from different scales. The analysis revealed that the variables can be grouped into 2 factors, which together account for a total variance of 50.704%. The first factor, comprising eleven statements, explains a variance of 34.841%, with a mean of 3.33 and a standard deviation of 0.771. This factor, which pertains to the overall cleanliness and orderliness of gas station toilets, is labeled as "cleanliness practices." The second factor, with a variance explanation rate of 15.863%, a mean of 4.29, and a standard deviation of 0.718, consists of statements about the impact of toilet cleanliness in gas stations on purchasing decisions. Therefore, it is referred to as "Effect of Cleanliness on Purchasing Decisions."

The reliability of the survey was assessed using Cronbach's alpha coefficient. The results show high reliability for the first factor ($r=0.887$) and reliable scale for the second factor ($r=0.741$), with an overall high reliability for the scale ($r=0.836$).

Table 3. Factor Analysis of Perception of Toilet Cleanliness at Gas Stations

	Cleanliness Practices	Effect of Cleanliness on Purchasing Decisions
The toilet seats in gas station restrooms are clean.	.662	
The insides of toilet bowls and/or urinals in gas station restrooms are clean	.742	
The floors in gas station restrooms are clean	.718	
The trash bins in gas station restrooms are not full.	.599	
The walls in gas station restrooms are clean.	.746	
The mirror, faucet, and countertop areas in gas station restrooms are clean.	.739	
The flush works properly in gas station restrooms.	.684	
The sinks in gas station restrooms have clean and sufficient water flow.	.688	
Liquid soap or bar soap is available in gas station restrooms.	.684	
The bidet sprayer works properly in gas station restrooms.	.671	
Toilet paper and paper towels are available in gas station restrooms.	.621	
Toilet cleanliness affects the overall quality of a gas station.		.678
Toilet cleanliness is important for me to choose a gas station again.		.841
A gas station with clean toilets increases my satisfaction level.		.791
Clean toilets at gas stations may lead me to not buy fuel there.		.733
Variance Explained Percentage %	34.841	15.863
Cronbach's Alpha (For each dimension)	.887	.741
Cronbach's Alpha (For the entire scale)	.836	
Arithmetic Mean Values for Factors	3.33	4.29
Standard Deviation Values for Factors	.77175	.71854
Total Variance Explained Percentage	50.704	

5. Findings

In order to test the H1a sub-hypothesis, the t-test was used to compare the results. Findings regarding the t-test results conducted to determine whether there are differences in participants' opinions on cleaning practices based on gender are presented in Table 4.

Table 4. t-test Comparing Participants' Approaches to Cleaning Practices by Gender

<i>Gender</i>	<i>n</i>	<i>X</i>	<i>SD</i>	<i>p</i>
<i>Male</i>	234	3.46	.741	.000
<i>Female</i>	152	3.11	.767	

Accordingly, there are differences in responses to statements about cleaning practices based on participant gender ($p=.000 < p=.05$). As can be seen from the values in Table 4, the opinions of male participants are more positive than those of female participants ($x=3.46$). Male participants who use gas stations tend to perceive the toilets as cleaner and more organized. In other words, women are not as positive about the cleanliness and organization of public toilets as men. Therefore, H1a was accepted.

A one-way ANOVA analysis was conducted to examine the effect of income level on the 'Perception of Cleanliness' score. Findings regarding the ANOVA conducted to determine whether there are differences in participants' opinions on cleaning practices based on income are presented in Table 5.

Table 5. ANOVA Comparing Participants' Approaches to Cleaning Practices By Income

<i>Income</i>	<i>n</i>	<i>X</i>	<i>SD</i>	<i>p</i>
<i>0-10000</i>	101	3.28	.737	.040
<i>10001-20000</i>	136	3.46	.667	
<i>20001-30000</i>	85	3.36	.864	
<i>300001-40000</i>	46	3.04	.697	
<i>40000-50001</i>	14	3.15	1.23	
<i>50001 and above</i>	4	3.52	.901	

According to Table 5, there is a significant difference between income level and approach to cleaning practices ($p=.040$). As participants' income increases, satisfaction with cleaning practices also increases. As a result, H1b was accepted. Income level causes differences in the perception of toilet cleanliness.

ANOVA was used to determine whether there was a significant difference in the perception of cleanliness according to education level. Findings regarding the ANOVA conducted to determine whether there are differences in participants' opinions on cleaning practices based on educational level are presented in Table 6.

Table 6. ANOVA Comparing Participants' Perceptions to Cleaning Practices by Education Level

<i>Educatin</i>	<i>n</i>	<i>X</i>	<i>SD</i>	<i>p</i>
<i>Primary School</i>	37	3.35	.679	.156
<i>Secondary School</i>	26	3.45	.719	
<i>High school</i>	90	3.34	.718	
<i>Graduate</i>	226	3.29	.811	
<i>Postgraduate</i>	8	3.69	.793	

According to Table 6, there is no significant difference between education level and percetions to cleaning practices ($p=.554 > p=.05$). Accordingly, the H1c hypothesis was rejected, as no significant difference in the perception of cleanliness was found based on education level.

When the H1 hypothesis was evaluated as a whole, gender and income level were found to significantly influence the perception of toilet cleanliness among demographic variables; however, education level had no effect. Therefore, the H1 hypothesis was partially accepted.

A t-test was conducted to examine whether hygiene-related purchasing decisions differed by gender (H2a). The results of the analysis, which aimed to identify any significant gender-based differences in participants' hygiene-related purchasing decisions, are presented in Table 7.

Table 7. t-Test Comparing Participants' Purchase Decision Approaches By Gender

<i>Gender</i>	<i>n</i>	<i>X</i>	<i>SD</i>	<i>P</i>
<i>Male</i>	234	4.26	.759	.064
<i>Female</i>	152	4.34	.651	

There is no significant difference in responses to purchase statements based on participant gender ($p = .064 > .05$). As shown in Table 7, female participants' opinions are more positive than those of male participants ($x = 3.46$). A t-test was conducted for H2a to examine whether hygiene-related purchasing decisions differed by gender. Female participants who use gas stations tend to believe that the cleanliness of the toilets has a greater influence on purchasing decisions than male participants. However, this difference in hygiene-related purchasing decisions is not statistically significant. Thus, hypothesis H2a was rejected.

An ANOVA analysis was conducted for H2b to determine whether there were significant differences in hygiene-related purchasing decisions across income groups. Findings

regarding the analysis of variance conducted to assess variations in participants' opinions on hygiene-based purchasing decisions by income level are presented in Table 8.

Table 8. Results of ANOVA Comparing Participants' Purchase Approaches by Income Level

Income	n	X	SD	p
0-10000	101	4.22	.742	.009
10001-20000	136	4.16	.807	
20001-30000	85	4.42	.626	
300001-40000	46	4.47	.482	
40000-50001	14	4.48	.592	
50001 and above	4	4.93	.125	

There is a significant difference between income level and hygiene-related purchasing behavior ($p = .009 < .05$). In this regard, hypothesis H2b was accepted.

The results of the Tukey B post-hoc analysis reveal that participants in the highest income group (₺50,000 and above) reported significantly higher mean scores for hygiene-related purchasing decisions compared to those in the lowest income groups (₺10,000–₺20,000 and 0–₺10,000), as these groups fall into different subsets. This indicates a statistically significant distinction in consumer sensitivity to hygiene based on income. The middle-income groups (₺20,000–₺50,000) appear in both subsets, suggesting that they do not differ significantly from either lower or higher groups. These findings suggest that higher-income consumers place greater emphasis on hygiene factors in their purchasing behavior, while lower- and middle-income groups display more moderate and overlapping patterns.

Table 9. Tukey B Post-Hoc Test Results for Hygiene-Based Purchasing Decisions by Income Group

Income	n	Mean	Subset1	Subset 2
0-10000	101	4.22	✓	
10001-20000	136	4.16	✓	
20001-30000	85	4.42		✓
300001-40000	46	4.47		✓

40000-50001	14	4.48	✓
50001 and above	4	4.93	✓

ANOVA was applied to determine whether there was a significant difference in the "effect of cleanliness on purchasing decisions" variable according to education level. Findings regarding the ANOVA conducted to determine whether differences in participants' opinion purchasing depending on education level are presented in Table 10.

Table 10. Analysis of Variance Comparing Participants' Approaches to Purchasing by Educational Level

Education	N	X	SD	p
Primary School	37	4.14	.825	.156
Secondary School	26	4.15	.765	
High school	90	4.24	.727	
Graduate	226	4.33	.696	
Postgraduate	8	4.71	.281	

According to Table 10, there is no statistically significant difference in hygiene-related purchasing decisions based on education level ($p = .156 > .05$). Therefore, the H2c hypothesis is rejected. This finding indicates that education level does not have a statistically significant impact on purchasing decisions based on hygiene factors.

When the H2 hypothesis is evaluated as a whole, it is found that among the demographic variables, only income shows a statistically significant difference in hygiene-related purchasing decisions. Additionally, gender and education level do not create a significant difference. Accordingly, the H2 hypothesis is partially accepted. A summary of all hypotheses is presented in Table 11.

Table 11. Hypothesis Results

Hypothesis	Statement	p- value	Result
H1	Consumers' attitudes toward toilet cleanliness at gas stations vary based on demographic characteristics.	-	Partially Accepted
H1a	Consumers' attitudes toward toilet cleanliness differ by gender.	0.000	Accepted

H1b	Consumers' attitudes toward toilet cleanliness differ by income level.	0.040	Accepted
H1c	Consumers' attitudes toward toilet cleanliness differ by education level.	0.156	Rejected
H2	Consumers' purchasing decisions based on hygiene factors differ according to demographic characteristics.	-	Partially Accepted
H2a	Consumers' purchasing decisions based on hygiene factors differ by gender.	0.064	Rejected
H2b	Consumers' purchasing decisions based on hygiene factors differ by income level.	0.009	Accepted
H2c	Consumers' purchasing decisions based on hygiene factors differ by education level.	0.156	Rejected

5. Conclusion

The importance of cleanliness in public toilets is increasing day by day, especially in light of recent disease outbreaks. Consumers place a high value on the cleanliness of toilets when making purchasing decisions. This study focuses on the issue of toilet cleanliness in gas stations, which are frequently used, particularly during long trips.

In this study, participants were asked two questions about the reasons for choosing gas stations. These questions were asked in two different forms: gas stations used daily and those used on long trips. According to the study, the most important factor consumers consider when choosing a gas station is that it has a reliable brand. Since the concept of a brand encompasses factors such as trust, performance, and health, it is normal for consumers to prioritize it. The second most important feature for consumers after the brand is the cleanliness of the toilet. When comparing Figures 1 and 2 in the study, the perceived importance of toilet cleanliness increases on longer journeys (31.5%), indicating that sensitivity to cleanliness grows as travel times lengthen.

Therefore, it can be said that toilet cleanliness is more important for consumers during long trips. These results are unsurprising, as sensitivity to hygiene has increased significantly since the pandemic (Kumari & Bhateja, 2024). Hygiene's impact on consumer behavior is not only assessed from a health perspective but also as a key indicator of service quality. While brand trust remains the most important factor, it is directly influenced by hygiene standards. In public spaces, establishing and maintaining hygiene standards can significantly impact consumer loyalty and brand preferences (Chandra et al., 2018). Although brand trust is a crucial driver of consumer choices, enhancing cleaning standards should be a strategic priority for gas stations.

When evaluating the study's hypotheses, a significant difference is observed between the genders of the participants and their views on toilet cleanliness. Male participants find gas station toilets cleaner than female participants. This result is consistent with similar studies in the literature. For example, Eriksson et al. (2022) and Tumwebaze (2013) also found that gender plays a significant role in hygiene perception, with women tending to be more sensitive to cleanliness in public spaces. Additionally, Zulfiqar (2023) emphasized that income level is a determinant in hygiene-related behaviors, supporting the current study's findings that higher-income individuals exhibit greater sensitivity to toilet cleanliness. Perspectives on the cleanliness of gas stations also vary depending on income levels. In general, as participants' income increases, the likelihood that gas station toilets will be perceived as clean also increases. This result is also consistent with the literature on this topic. (Zulfiqar, 2023). In addition, as the income of the participants increases, the influence of cleanliness on purchases also increases. However, statistically speaking, the level of education has no influence on this aspect. This result differs from other results in the literature (Santos et al. 2021).

When evaluating the study results, it would be appropriate for companies to make the following recommendations:

- Toilet cleanliness is becoming increasingly important to consumers. Companies should take this into account and ensure a clean toilet environment.
- It is understood that toilet cleanliness influences purchasing decisions. Companies can see an increase in sales of their products and services when they create cleaner/more hygienic environments. For the image of companies, it is important to organize social projects on the topic of toilet cleanliness and to communicate these as publicly as possible.
- Corporate restroom practices are not just about cleanliness. The equipment used, services provided, accessibility, overall appearance, and staff practices can also influence consumers' opinions about restrooms.
- Companies should take various measures to ensure effective toilet cleanliness. For example, automation of

toilet cleaning tasks should be ensured, for example through the use of toilet seat cleaning mechanisms and floor cleaning robots. It is also important to understand the need for proper cleaning and disinfection to minimize the transmission of potential pathogens and control odors.

- Disinfectants in public toilets are important to prevent the spread of bacteria and viruses. Overall, implementing effective cleaning strategies and maintaining good toilet hygiene increases customer satisfaction and promotes positive perceptions of cleanliness. Real-time feedback data and classification techniques can be used to understand toilet cleanliness, leading to timely interventions and improvements.

Informing the public about this issue has become a necessity rather than a preference for companies. Therefore, the training and practices that institutions will implement on this topic have become crucial to their future and commercial success. It is believed that companies that consider toilet cleanliness as part of public health and promotional efforts will be more successful in ensuring customer loyalty and trust in the future.

This study should be conducted with a larger sample size and using various research methods and methodologies. The research results from the population-representative sample cannot be generalized to all consumers. It is also important to conduct the study on different consumer groups in various regions, taking into account cultural differences and variables such as age. Collecting data over time will also allow for tracking seasonal fluctuations.

References

- Akyüz, İ. (2008). *Otomobil kullanıcılarının akaryakıt istasyonu tercihleri üzerine etki eden faktörlerin belirlenmesi ve İstanbul ilinde bir pilot araştırma* [Yüksek lisans tezi, İstanbul Üniversitesi].
- Alan, G. A. E. (2015). Kurumsal sosyal sorumluluk çalışmalarında sosyal medya kullanımı. In *Kurumsal sosyal sorumluluk ve kurumsal itibar* (ss. 81–99). Derin Yayınları.
- Altuntaş, B. (2020). Determining the importance levels of factors affecting people's choice of rest area by analytical hierarchy process. *Journal of Institute of Economic Development and Social Researches*, 6(25), 662–673. <https://doi.org/10.31623/ikad062503>
- Altunışık, R., Coşkun, R., Bayraktaroğlu, S., & Yıldırım, E. (2010). *Research methods in social sciences*. Sakarya Publishing.
- Anju, B. (2021). Clean India: A mission. 6(1), 67–70. Retrieved May 7, 2024, from https://en.wikipedia.org/wiki/Swachh_Bharat_Mission
- Aytaç, M. B., Akan, E., & Özal, H. (2023). Hygiene anxiety and brand love of consumers: Lessons from COVID-19 pandemic. *Kafkas Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 14(28), 686–708. <https://doi.org/10.36543/kauibfd.2023.028>
- Areksan. (2023). Tuvalet hijyeni. Retrieved September 10, 2024, from <https://www.areksan.com/blog/tuvalet-hijyeni>
- Barber, N., & Scarcelli, J. M. (2009). Clean restrooms: How important are they to restaurant consumers? *Journal of Foodservice*, 20, 309–320.
- Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing*, 56(2), 57. <https://doi.org/10.2307/1252042>
- Chandra, S., Srivastava, S., & Roy, A. (2018). Public toilet hygiene monitoring and reporting system. In *Proceedings of IEEE Sensors* (October, pp. 1–4). <https://doi.org/10.1109/ICSENS.2018.8589894>
- CNN. (2017). China to get extreme toilet makeover to boost tourism. Retrieved September 5, 2024, from <https://www.cnn.com/travel/article/china-toilet-revolution/index.htm>
- Corradi, G., Theirs, C., Garcia-Garzon, E., & Barrada, J. R. (2023). A silent burden: How negative experiences with public toilets impact quality of life and life satisfaction. *Scandinavian Journal of Psychology*, 64(4), 495–503. <https://doi.org/10.1111/sjop.12914>
- Czerniewska, A., Mwambuli, K., Curtis, V., & Aunger, R. (2023). Intervention design in public health: Adaptive messaging in the Tanzanian national sanitation campaign. *Health Promotion International*, 38(3).
- Çoban, Ö., Eryücel, Ö., & Yalçınkaya, T. (2019). Consumers' perceptions about the cleanliness of restaurant and cafe toilets: The case of Çanakkale. *20th National Tourism Congress*, January 16–19, Eskişehir.
- Domestos. (2023). Domestos'la tüm dünyada temiz tuvalet ve hijyen. Retrieved August 28, 2024, from <https://www.domestos.com/tr/misyonumuz/projelerimiz/dunya-tuvalet-gununde-tum-dunyada-hijyen.html>
- Eriksson, K., & Dickins, T. E. (2022). Strimling P. Global sex differences in hygiene norms and their relation to sex equality. *PLOS Global Public Health*, 2(6), 1–17.
- Eser, H. (2019). *Evaluation of the toilets in common usage areas for user comfort* [Yüksek lisans tezi, Yıldız Teknik Üniversitesi].
- Ferguson, S. (2019). Saving lives, one toilet at a time. Retrieved March 3, 2024, from <https://www.unicefusa.org/stories/saving-lives-one-toilet-time>
- Galon, C., Carpenter, G. S., & Hayagreeva, R. A. O. (2020). Disgusted and afraid: Consumer choices under the threat of contagious disease. *Journal of Consumer Research*, 47(3), 373–392. <https://doi.org/10.1093/jcr/ucaa025>

- Hameed, A. Z. (2020). Prioritizing and achieving quality services in gas stations using analytical hierarchy process and quality function deployment. *Journal of Scientific and Industrial Research*, 79(1), 53–55.
- Hoffman, D. K., Kelley, S. W., & Chung, B. C. (2003). A CIT investigation of servicescape failures and associated recovery strategies. *Journal of Services Marketing*, 17, 322–340.
- Hu, Y., & Hu, Y. (2013). The patriotic hygiene campaign and the construction of clean new people. In *Rural health care delivery: Modern China from the perspective of disease politics* (pp. 111–126).
- Hürriyet. (2021). Türkiye’de insanlar umumi tuvaletleri kullanmak konusunda endişeli. Retrieved July 5, 2024, from <https://www.hurriyet.com.tr/kelebek/saglik/turkiyede-insanlar-umumi-tuvaletleri-kullanmak-konusunda-endiseli-41958227>
- Hyunju, K., & Jarrett, R. B. (2019). Examining customer perceptions of restaurant restroom cleanliness and their impact on satisfaction and intent to return. *Journal of Foodservice Business Research*, 22(2), 191–208.
- Kimutai, J. J., Lund, C., Moturi, W. N., Shewangizaw, S., Feyasa, M., & Hanlon, C. (2023). Evidence on the links between water insecurity, inadequate sanitation and mental health: A systematic review and meta-analysis. *PLoS ONE*, 18(5), 1–22. <https://doi.org/10.1371/journal.pone.0286146>
- Kinderis, R., Danielienė, J., & Jonuškienė, E. (2023). Assessment of customer service quality of the gas station network in Lithuania. *Economics & Education*, 8(1), 6–16.
- Kumari, P., & Bhateja, B. (2024). How COVID-19 impacts consumer purchase intention towards health and hygiene products in India? *South Asian Journal of Business Studies*, 13(1), 118–136. <https://doi.org/10.1108/SAJBS-05-2021-0185>
- MarketingTürkiye. (2016). Akaryakıt sektöründe tuvalet rekabeti. Retrieved September 16, 2024, from <https://www.marketingturkiye.com.tr/haberler/akaryakit-sektorunde-tuvalet-rekabeti/>
- MarketingTürkiye. (2022). Rekabet akaryakıtın ötesinde. Retrieved May 12, 2024, from <https://www.marketingturkiye.com.tr/haberler/rekabet-akaryakit-otesinde/>
- Maroko, A. R., Hopper, K., Gruer, C., Jaffe, M., Zhen, E., & Sommer, M. (2021). Public restrooms, periods, and people experiencing homelessness: An assessment of public toilets in high needs areas of Manhattan, New York. *PLoS ONE*, 16(6), 1–20. <https://doi.org/10.1371/journal.pone.0252946>
- Opet. (2018). Temiz tuvalet kampanyası. Retrieved October 4, 2024, from <https://www.opet.com.tr/sosyal-sorumluluk-projeleri/temiz-tuvalet-kampanyasi>
- Özdamar, K. (1999). *Biostatistics with SPSS*. Eskişehir: Kaan Bookshop.
- QSR. (2013). Dirty little secret. Retrieved August 7, 2024, from <https://www.qsrmagazine.com/outside-insights/dirty-little-secret>
- Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis*. Sage Publications.
- Rahim, A. A. (2005). A concept of clean toilet from the Islamic perspective. *Journal of Islamic Built Environment*, 1(1), 71–84.
- Rajamani, K., Prateeba Devi, J., & Princlin Raj Kumar, N. A. (2022). Consumer perception and purchase intention towards personal hygiene products during COVID-19. *International Journal of Health Sciences*, 6(May), 10389–10396. <https://doi.org/10.53730/ijhs.v6ns2.7711>
- Santos, P. L., Saiani, C. S., Vieira, E. B., & Piorski, C. R. L. (2021). Conscientização e serviços ambientalmente adequados. *Revibec: Revista Iberoamericana de Economía Ecológica*, (34), 1–24.
- Sengupta, S., Misra, D. C., Chaudhary, M., & Prakash, O. (2019). Role of technology in success of rural sanitation revolution in India. In *Proceedings of the 12th International Conference on Theory and Practice of Electronic Governance*, April 3–5, Melbourne, VIC, Australia.
- Šimunović, M. (2018). *Analiza ponašanja potrošača pri impulsivnoj kupnji na benzinskim postajama* [Doktora tezi, VERN Üniversitesi].
- Taştan, H., & Soylu, G. A. (2023). The impact of perceived cleanliness on customer satisfaction, revisiting intention and complaining behaviors: The case of restaurants by S-O-R model. *Journal of Multidisciplinary Academic Tourism*, 8(1), 27–38.
- Tumwebaze, I. K. (2013). Gender and sanitation perspectives in Kampala's slums, Uganda. In R. J. Shaw (Ed.), *Delivering water, sanitation and hygiene services in an uncertain environment: 36th WEDC International Conference*. Nakuru, Kenya.
- Unicef. (2013). Water, sanitation and hygiene (WASH). Retrieved May 6, 2024, from <https://www.unicef.org/eu/water-sanitation-and-hygiene-wash>
- Unilever. (2018). Domestos’la hijyenik tuvalet, sağlıklı gelecek. Retrieved August 4, 2024, from <https://www.unilever.com.tr/news/press-releases/2018/domestos-tan-hijyenik-okul-tuvaletleri-icin-yeni-bir-proje-daha-hijyenik-tuvalet-saglikli-gelecek/>

- United Nations. (2023). World Toilet Day. Retrieved May 11, 2024, from <https://www.un.org/en/observances/toilet-day>
- Vishwakarma, D. (2016). Swachh Bharat Abhiyan clean India Abhiyan. *International Research Journal of Management, IT and Social Sciences*, 3(3), 110–122.
- Webtekno. (2024). Türkiye'deki toplam otomobil sayısı açıklandı: En çok tercih edilen renk ve özellikler belli oldu. Retrieved August 8, 2024, from <https://www.webtekno.com/turkiye-toplam-otomobil-sayisi>
- World Health Organization. (2019). *Safe water, better health*. <https://apps.who.int/iris/bitstream/handle/10665/329905/9789241516891-eng.pdf>
- Xu, J., Xu, X., Sun, K. S., Wu, D., Lam, T. P., & Zhou, X. (2022). Changes in residents' hygiene awareness and behaviors in public toilets before and during the COVID-19 pandemic in Hangzhou, China: A two-round cross-sectional study. *BMC Public Health*, 22(1), 1690.
- Zulfiqar, G. M. (2023). Prasad, A. Postcolonial feminism in management and organization studies: Critical perspectives from India, Pakistan, and Bangladesh. In V. Doshi (Ed.), *The epistemology of the toilet: Doing class work in Pakistan*. Routledge.