

A Study on Consumer Satisfaction towards CNG Bikes in Tiruchirappalli

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Abstract

In the 21st century, two-wheelers play a crucial role in India, especially among the middle-class population, who rely on them as a primary mode of transportation due to their affordability. The widespread use of motorcycles, powered by two-stroke and four-stroke engines running on petrol or diesel, significantly contributes to global warming because of the low quality of these fuels. Compressed Natural Gas (CNG), which is already used as an alternative fuel in four-wheelers, can be adapted for two-wheelers with certain modifications. CNG possesses unique properties, such as a high-octane rating, which allows for rapid combustion, enhancing engine performance and fuel efficiency. Additionally, India has abundant CNG resources, making it a sustainable and lightweight fuel option that can be conveniently refuelled at existing CNG stations. This study highlights the results and parameters that demonstrate the feasibility of using CNG in two-wheelers and

emphasizes the potential benefits, encouraging the automotive industry to adopt this technology.

Keywords: CNG, two-wheeler, fuel, Natural gas.

I.INTRODUCTION

This study explores consumer satisfaction with CNG bikes, focusing on factors such as cost-effectiveness, fuel economy, performance, and environmental impact. It aims to understand how these factors influence buying decisions and overall experience, allowing manufacturers and policymakers to better cater to eco-conscious riders and contribute to a cleaner, more sustainable transportation system.

Scope of study

The study explores consumer satisfaction with CNG bikes, examining factors influencing perception, usage patterns, and overall satisfaction. It examines market trends, consumer demographics, and usage behaviour. Challenges include high initial costs, limited refuelling infrastructure, range anxiety, and public perception issues. The study recommends manufacturers, dealers, and policymakers to improve satisfaction and promote wider adoption of CNG bikes, aiming to accelerate the transition to cleaner, more sustainable mobility options.

Statement of Problem

The study aims to analyse and interpret the data related to the gender-wise classification of respondents and their overall satisfaction towards CNG bike usage. In particular, it focuses on examining the relationship between gender and satisfaction levels (ranging from 'Dissatisfied' to 'Highly Satisfied') and exploring any significant patterns or differences that might exist across genders. Additionally, the study aims to assess the degree of variation in overall satisfaction across different categories of satisfaction using statistical tools like Chi-Square tests and ANOVA to determine whether gender has a significant impact on the respondents' perceptions of CNG bikes.

Review of Literature

Md Sakibu Salehin, Tahia Jubailee, Md. Mohaimenul Islam Sourav, Sayma Afnanin & Shah Md Muniruzzaman (2024) The study investigates the perception of app-based CNG auto-rickshaw services in Dhaka, Bangladesh. A structured questionnaire was developed to

understand users' attitudes and perceived risks. The results showed that women's safety and better safety experience were the most significant factors for accepting these services. The findings will help service providers improve their services for commuters.

Md. Abdul Fattah ^{a b}, Md. Athar Istiaqe ^a (2023) This study investigates the environmental and economic benefits of CNG conversion on three-wheelers in Khulna, Bangladesh. Motorized vehicles contribute significantly to air pollution, especially in developing countries. The study found that CNG conversion reduces vehicle operation costs and increases average daily travel length, resulting in a decrease in daily CO₂ emissions. However, there is an increase in CO emissions, CH₄ and NO₂ emissions, and a decline in pollutant emission costs. The study also highlights the noise pollution of diesel-powered vehicles.

Gerutu Bosinge Gerutu & Kenedy Aliila Greyson (2023) The paper discusses the implementation of natural gas vehicles (NGVs) in Tanzania's road transportation sector, evaluating the technical and economic performance of converted gasoline and diesel engines. The study found that NGVs can reach an average of 100 to 500 km per filling, with fuel consumption ranging between 1.9 and 3.9 and 71 and 78%. The economic performance of gasoline retrofitted NGVs was about 50 to 200 TZS/km, yielding a fuel cost saving of up to 79% and starting to pay off after 2 to 7 months or 10,000 to 40,000 km. The study suggests that NGVs can be a viable alternative to imported oil and contribute to the country's road transportation sector.

Objective

1. Providing a cost-effective commuting solution for daily riders.
2. Enhancing fuel efficiency to provide longer mileage at a lower cost.
3. Ensuring better engine performance with optimized CNG combustion technology.
4. Reducing the maintenance cost of the vehicle by using cheaper fuel in the engine.
5. Promotes greener transportation with reduced pollution levels.

Research Methodology

The study is descriptive and analytical in nature. The researcher adopted systematic methods for collecting and analysing the data. The study is based on the primary data collected from the respondents. The sample size is determined as 90 respondent's opinion from the customers who

presently purchasing product with a help of digital marketing. The survey was conducted using structured questionnaire containing 5-point Likert scale statements. The researcher also used the secondary data for the study. The secondary data & information have been collected from different scholars and researchers, published e-books, articles published in different journals, periodicals, conference papers, working paper, company websites for annual reports & CSR activity reports and their internal newsletters. The company related data and information are used which is available publicly on the websites of the companies. The statistical calculation are done through SPSS. The tools used for the analyses are percentage method, factor analysis and regression.

Analysis And Interpretation of Data

Table No: 1

Gender Wise Classification

Gender	No. of Respondents	Percentage
Male	58	64.00%
Female	32	36.00%
Total	90	100%

Table No 2

Association Between Gender*Overall Satisfaction Towards Cng Bike Usres

Overall Satisfaction

		DS	N	S	HS	
GENDER	Male	1	6	44	7	58

Interpretation

The above table shows that 64% of the respondents are male, 36% of the respondents are female.

Majority (64%) of the respondents are male.

Chi-Square Tests			
	Value	Df	A Symp. Sig. (2-Sided)
Pearson Chi-Square	1.353 ^a	3	.717
Likelihood Ratio	1.384	3	.709
Linear-By-Linear Association	1.285	1	.257
N Of Valid Cases	90		
A. 4 Cells (50.0%) Have Expected Count Less Than 5. The Minimum Expected Count Is .71.			

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.308	3	.103	.429	.733
Within Groups	20.592	86	.239		
Total	20.900	89			

Table No 3								
			Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
DS	2	1.5000	.70711	.50000	-4.8531	7.8531	1.00	2.00
N	11	1.4545	.52223	.15746	1.1037	1.8054	1.00	2.00
S	68	1.3676	.48575	.05891	1.2501	1.4852	1.00	2.00
HS	9	1.2222	.44096	.14699	.8833	1.5612	1.00	2.00
Total	90	1.3667	.48459	.05108	1.2652	1.4682	1.00	2.00

Suggestions

The study explores the impact of CNG bike adoption on consumer satisfaction, focusing on factors such as cost savings, environmental impact, performance and usability concerns, and maintenance costs. It aims to provide a comprehensive view of how CNG bikes meet or fail to meet consumer expectations, allowing for a better understanding of the overall satisfaction level with CNG bikes.

II.CONCLUSION

The study found that 78% of respondents were male, indicating a higher male representation. Both male and female respondents rated their satisfaction as "Satisfactory" (S), with 58 males and 24 females in this category. However, no statistically significant association was found between gender and overall satisfaction. The ANOVA results showed no significant difference in satisfaction levels between different categories. Overall satisfaction trends were consistent across genders, indicating that satisfaction levels are equally satisfactory for both genders. Therefore, gender does not significantly influence overall satisfaction towards CNG bike usage.

III. REFERENCES

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