Electrifying The Commute: Key Factors Behind Young Workers' Shift To E-Bikes

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***Abstract*—Nowadays, people live in a competitive and fast-paced world where electric vehicles have become essential in various aspects of daily life. The adoption of electric vehicles has been steadily increasing, especially when compared to the previous year (2024). The main objective of this study is to identify the factors that encourage working youngsters to ride electric bikes in order to promote eco-friendly transportation. This study adopted a descriptive research design and involved a sample of 127 electric bike users. Primary data was collected using a self-administered questionnaire, and respondents were selected through a convenience sampling method. According to the study's findings, the majority of consumers are influenced by key factors such as the speed, range, and cost of electric vehicles. Additionally, both state and federal governments in the United States have implemented various legislative measures, financial incentives, and initiatives aimed at promoting the use of electric vehicles.**

***Index Terms*—Electric Bike Adoption, Eco-Friendly Transportation, Working Young Consumers, Government Incentives, Consumer Preferences.**

I. INTRODUCTION

The need and usage of electric vehicles are increasing day by day, but they still account for only a minimal percentage of the total new vehicles sold worldwide. People are shifting to alternative fuel options to minimize monthly expenses, save the environment, and reduce noise and air pollution. As of February 2025, electric two-wheelers accounted for 5.6% of total two-wheeler sales in India. This represents a slight decrease from 6.4% in January 2025 and is nearly unchanged from 5.7% in February 2024. It seems that most people, especially working youngsters, are influenced and interested in buying more electric bikes than traditional bikes. Nowadays, most people have decided to shift to electric bikes due to rising city noise pollution, air pollution, the shortage of petroleum, and the high cost of fuel. Electric bikes are in high demand, and people prefer to use them for substantial transportation. However, many are still unfamiliar with these vehicles due to a lack of awareness about their environmental benefits. The adoption rate of electric two-wheelers in India remains low due to high costs, inadequate infrastructure of charging stations, and the high cost of services and battery replacement.

Government intervention continuously plays an important role in promoting the sale of electric bikes. To motivate consumers, the government provides subsidies, offering benefits for those who decide to purchase electric vehicles. The government is also focused on increasing electric mobility and offering financial incentives to encourage the production of electric bikes. The purpose of this study is to explore the key factors that motivate working youngsters to adopt electric bikes, with a focus on promoting environmentally friendly transportation. By understanding these driving factors, the study aims to support initiatives that encourage sustainable mobility choices among the youth.

Statement of the Problem

The increasing environmental concerns and the urgent need to reduce carbon emissions have highlighted the importance of sustainable transportation alternatives. A comprehensive understanding of the factors that influence working youngsters to adopt electric bikes is essential to support the transition toward eco-friendly mobility. This study aims to examine the key motivators,

perceived benefits, and potential barriers that shape the adoption behavior of working youngsters, thereby contributing to the development of effective strategies for promoting sustainable transportation.

II. REVIEW OF LITERATURE

1. According to Sivaramkrishnan, M. et al. (2024) the demand for electric bikes is growing daily. This may be attributed to a number of factors, including government incentives, affordability, accessibility, and the potential for micromobility. The factors influencing the intention to purchase an electric bike were investigated in the study. According to the study, the production procedure for batteries and the addition of lithium iron result in outstanding power preservation and a low rate of self-discharge. The study included information on the many kinds of electric bikes that are available on the market as well as their advantages for both people and the environment.

2. Mohammed Zabilla et al. in (2024) The research determined the key motivators and obstacles for an Indian city-level sample of electric bike riders. The study discovered that the e-bike infrastructure, perceived social and economic gain, travel quality, e-bike mobility, and user-perceived advantage are the influencing factors. Additionally, the study compares the variables that influence purchasing intention, such as the sample income component and the purchase cost element. These results provide guidance for creating successful e-bike marketing strategies to encourage the widespread use of e-bikes.

3. Lakash Kumar Shakya et al. (2024) examined the environmental advantages of electric bike adoption as well as consumer behavior intentions. Data were gathered for the study from 385 bike riders in the sample. This study examined the factors influencing consumers' adoption of e-bikes through explanatory research. The findings show that half of the respondents (53.76%) would prefer to use e-bikes, and all bike users (99.84%) are aware of them. If the government offers enticing regulations for e-vehicles and builds infrastructure for electric vehicles, other users will be willing to embrace e-bikes. The majority of respondents (79%) stated that the main obstacle to the adoption of e-bikes is the absence of charging infrastructure and stations.

4. Kumar et al. (2024) highlights how young professionals, particularly in urban areas, are increasingly turning to electric bikes as a sustainable mode of transportation. The study found that e-bikes are perceived as an effective solution for reducing carbon footprints and alleviating urban air pollution. Young workers, especially those between the ages of 25-35, are prioritizing eco-friendly alternatives as part of their broader environmental activism.

5. Zhang et al. (2024) it was noted that the incorporation of smart features like GPS tracking, mobile connectivity, and performance monitoring has made e-bikes more appealing to the tech-savvy youth demographic. These technological advancements enhance convenience and security, addressing key concerns of working youngsters about commuting, especially in crowded urban environments.

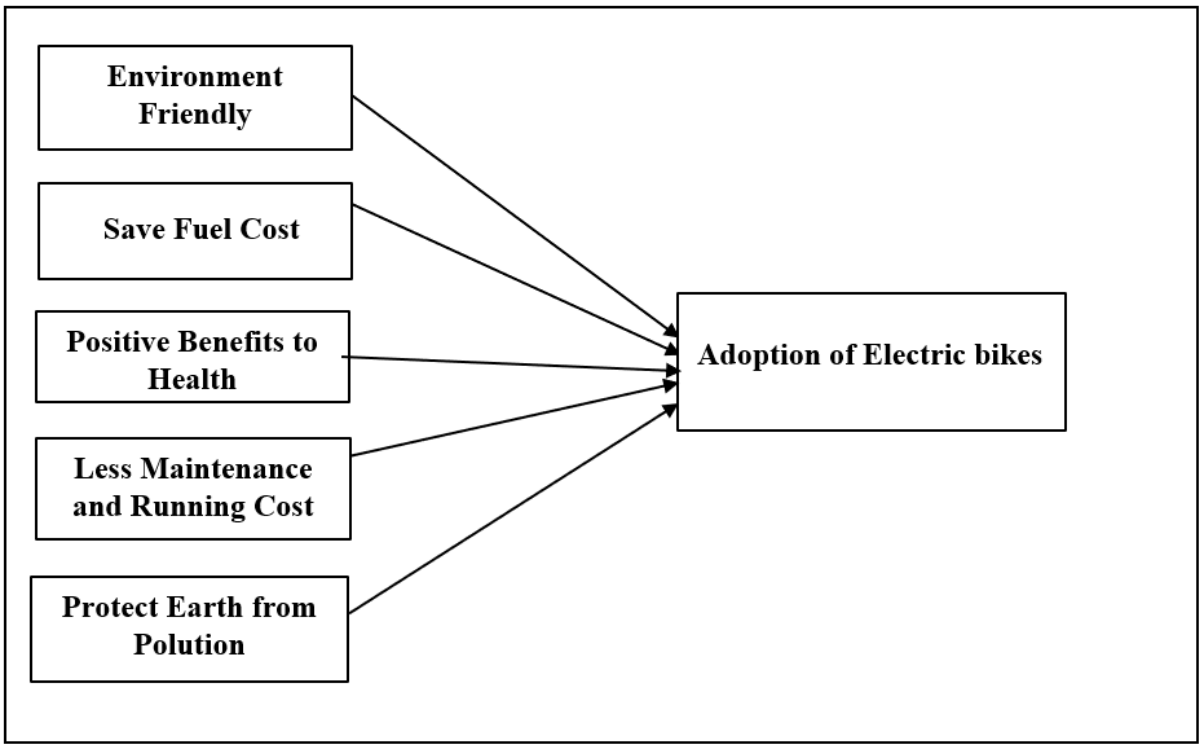
6. Himasmita Das et al. (2023) analyzed technological and financial factors, along with psychological and enthusiastic factors, influenced to purchase electric bike." The study looked at the fundamental advantages of adopting electric bikes and advancing efforts to meet sustainable development goals. The elements and their priorities were determined by the study using the analytical hierarchy method (AHP). Data was collected from a sample of thirty-one consumers who had recently bought an e-bike using a survey-based methodology. The study provides marketers and e-bike makers with insights on how to effectively target and appeal to Indian customers based on their priorities and preferences.

III. METHODOLOGY

This study focuses on determining the variable factors that affect the consumer intention to adopt electric bike and investigating how customers in Chennai influenced to change alternate fuel option. Descriptive research design was used in this study.

The study was conducted in Chennai with a sample of 127 respondents who have using electric bike. Primary data was collected through self-administrated questionnaire. In this study, the respondents are chosen using the convenience sampling method. The data were analysed using one-way ANOVA to examine group differences. The analysis was conducted with Microsoft Excel. Theory of Planned Behaviour was used in this study. It focuses on how perceived usefulness and perceived ease of use drive technology adoption. It is useful for examining whether teenagers find electric bikes convenient and beneficial for their daily transportation needs.

IV. CONCEPTUAL FRAMEWORK



V. HYPOTHESIS BUILDING

Ho: There is no significant difference between age and satisfying influenced factor.
Result of ANOVA analysis:

INFLUENCING FACTORS	Source of Variation	SS	df	MS	F	P-value	F crit
ENVIRONMENT FRIENDLY	Between Groups	292.13	2	146.1	1.85	0.199	3.9
	Within Groups	947.6	12	78.97			
Total	1239.73	14					
SAVE FUEL COST	Between Groups	292.13	2	146.1	1.47	0.269	3.9
	Within Groups	1193.6	12	99.47			
Total	1485.73	14					

POSITIVE BENEFITS TO HEALTH	Between Groups	292.13	2	146.1	2.27	0.146	3.9
	Within Groups	773.6	12	64.47			
Total	1065.73	14					
LESS MAINTENANCE AND RUNNING COST	Between Groups	292.13	2	146.1	2.88	0.095	3.9
	Within Groups	609.6	12	50.8			
Total	901.733	14					
PROTECT EARTH FROM POLLUTION	Between Groups	292.13	2	146.1	3.08	0.083	3.9
	Within Groups	569.6	12	47.47			
Total	861.733	14					
GOVERNMENT SUBSIDY	Between Groups	292.13	2	146.1	3.21	0.076	3.9
	Within Groups	545.6	12	45.47			
Total	837.733	14					

VI. INFERENCE

The P value of the variable namely environmentally friendly, save fuel cost, positive benefits to health, less maintenance and running cost, protect earth from pollution and government subsidy are more than 0.05, at 5% level of significance. Hence full hypothesis (Ho) is accepted. It concludes that there is no significance between these variables and the age of the respondents.

VII. FINDINGS

The current period presents an ideal opportunity for the two-wheeler industry to shift towards electric vehicles, offering a more environmentally responsible mode of transport. Electric two-wheelers can address critical global concerns such as limited oil availability and pollution control. The study found that electric vehicles are predominantly used by respondents aged 18 to 25, compared to older individuals. Among the participants, 46% of employed individuals showed a clear preference for electric vehicles. Social influence played a significant role, with most respondents acknowledging the impact of friends and relatives on their decision. Additionally, 61% reported that advertisements significantly influenced their purchase decisions. Regarding pricing, 51% of the respondents expressed agreement with the cost of electric bikes. However, opinions on government incentives were more reserved, with 45% maintaining a neutral stance. In terms of performance, 51% of participants were satisfied with the mileage offered by electric vehicles, and a majority supported the idea that EVs contribute to reducing noise pollution. Furthermore, 54% of respondents agreed with the speed capabilities of electric bikes, and most were also satisfied with the availability of service stations.

VIII. SUGGESTIONS

By decreasing pollution more quickly, electric two-wheelers can contribute to a better world.
It is best to use a youthful, intelligent brand ambassador to accomplish this. Additionally, it has been noted that consumers do not perceive any brand to have a high recall value. Therefore, all businesses can collaborate to raise awareness about environmentally responsible transportation. The industry can fight for market share once it has eventually stabilized. For the purpose of generalizing the

findings, future research can be carried out with larger sample sizes, comparing gender-influenced factors, and a broader geographic scope.

IX. CONCLUSION

In the upcoming years, electric two-wheelers will be the majority of vehicles on Indian roadways. They are the vehicles of the future for our nation. Rumor has it that within the next fifty years, petroleum products will disappear from the earth, forcing India's transportation industry to undergo an energy revolution. By encouraging the use of electric two-wheelers and offering incentives for their purchase to promote their production, the government has taken action to lower pollution levels. Additionally, the government has relaxed the regulations pertaining to foreign direct investment (FDI). A number of new brands are launching electric bikes in India. Together, the government and business community should work to develop the infrastructure required for electric two-wheelers and to create a welcoming environment for them. The respondents accepted that electric two-wheelers need to improve more to replace conventional two-wheelers in terms of meeting consumer expectations, but they were dissatisfied with the lack of public charging stations.

In order to promote the usage of electric two-wheelers across the country, state and federal governments have implemented various legislation, incentives, and programs. Increasing the number of electric two-wheelers can help a big city like Chennai safeguard its environment from air pollution and noise pollution. This study has certain limitations that should be acknowledged. Firstly, it was geographically limited to the city of Chennai, which may restrict the applicability of the findings to other regions with different demographics or infrastructural conditions. Secondly, the study focused solely on working youngsters, thereby excluding insights from other potential user groups such as students, non-working individuals, or older adults. Lastly, the sample size was limited to 127 respondents, which may not be sufficiently representative of the broader population, potentially affecting the generalizability of the results.

A direction for future research would be to examine the socio-economic and gender-based differences in electric bike adoption across various urban and semi-urban regions. This could include a comparative analysis between working and non-working individuals, as well as men and women, to better understand how demographic factors influence perceptions, preferences, and barriers related to electric bike usage. Additionally, future studies could explore the long-term behavioral impact of environmental awareness campaigns and government incentives on adoption rates.

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