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Revolution on Two Wheelers: An In-Depth Analysis of the Challenges Facing the Electric Scooter Industry

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Abstract
Overall Electric vehicle penetration in India, including two-wheelers, is projected to reach 3.2% by the end of CY2022.Two-wheeler riders in India encounter a number of obstacles, including range anxiety, inadequate infrastructure, a slow battery recharge, an absence of a rapid service network, and a subpar construction**.** This study collected the data of 100 respondents through questionnaire which is related how traditional and electric scooter buyers' preferences are shifting over time and also studied various challenges faced by electric scooter buyers. To resolve these problems, the market for electric scooters must prioritize improving battery life. The government must to make the most of this chance and get to work on finding solutions to the genuine issues that are brought up by the widespread use of electric scooters. Because of the limited size of the sample, it is not possible to extrapolate the results to the full population because there is a high probability that the findings will change if the sample size is raised.

Keywords: Impact, Environment Friendly, Consumer Behaviour

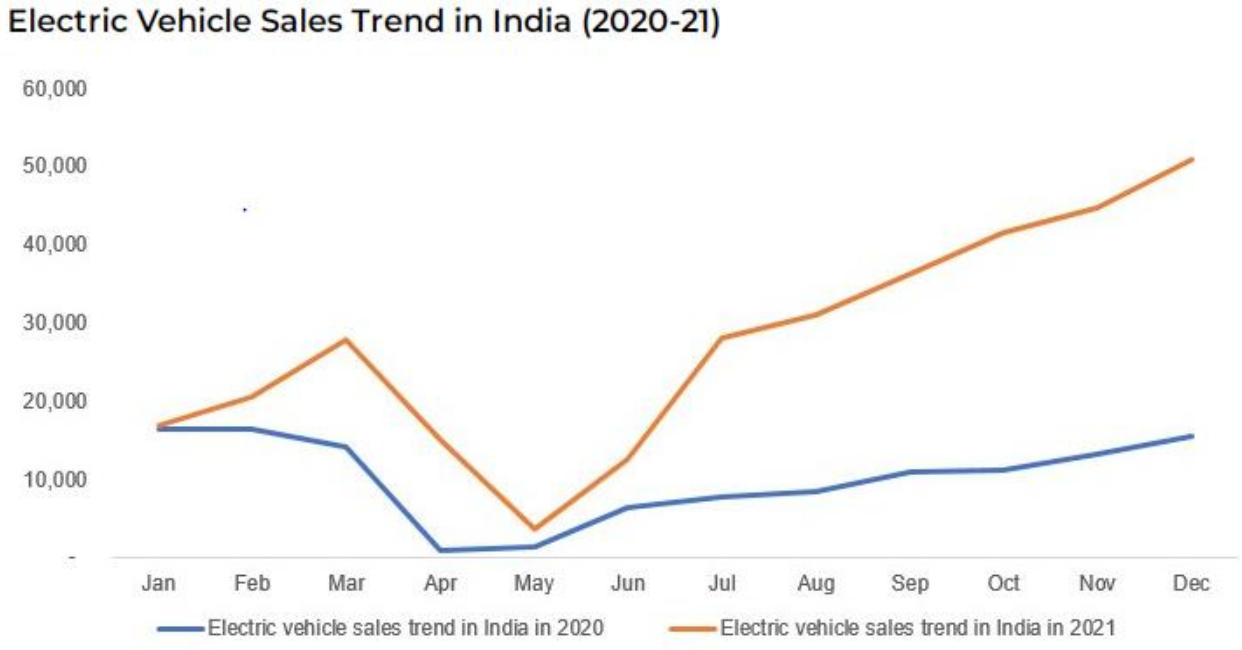
Introduction

Rapid expansion is being seen in the global market for electric vehicles. The expansion of this industry to India has been nothing short of spectacular. There has been increased growth in the industry since 2015, when the project to facilitate the more rapid manufacturing and adoption of hybrid and electric vehicles was initiated by the Ministry of Heavy Industries and Public Enterprises. There were 365,920 sales of fully electric vehicles in 2018, and it is anticipated that this number would increase at a compound annual growth rate (CAGR) of 36% through 2026. It is anticipated that the electric vehicle battery market in India will expand at a compound annual growth rate of thirty percent from its level in 2018 of 520 million US dollars through the year 2026.

India's demand for Electric Vehicles

In 2020, the India Electric Vehicle Market is expected to be worth $5 billion, but this is expected to increase to $47 billion by 2026, a CAGR of over 44%. In spite of this, the COVID-19 pandemic is having an effect on the Indian auto industry due to disruptions in the supply chain, the closure of production facilities as a result of continued lockdowns, travel prohibitions across the nation, and customer financial hardship. However, the markets for electric vehicles saw a rise in demand. It is

expected to grow more quickly than normal during the forecast period as a result of several government initiatives and policies. The government has provided numerous incentives for both buyers and producers of EVs. More and more corporations and governments are showing an interest in electric vehicles. Last-mile delivery using e-Mobility is becoming increasingly popular among online retailers as a means to cut down on their carbon footprint. As part of its e-Mobility public transportation program, the Government of India and many other state governments have installed electric intercity buses in various major cities.When it comes to electric two-wheelers, India is the world's largest unexplored market. Since this sector is open to 100 percent FDI via the automated technique, the market is predicted to expand throughout the forecast period. While the auto industry reported a subdued response to the shutdown, the EV market saw the opposite. The electric vehicle market saw an increase in sales and consumer interest over the previous month. In spite of the fact that the government's second round of lockdowns caused a considerable decline in demand in April and May of 2021, analysts anticipate that the industry will recover within a few weeks. What follows is a discussion of EV demand by state. After Assam, Maharashtra ranks highest in EV sales, while Uttar Pradesh is one of the top states for EV consumption, according to the data. The global market for electric vehicles is growing rapidly.With a rise from 4.2% in 2020 to 8.3% in 2021, battery electric vehicles and plug-in hybrid electric vehicles accounted for the vast bulk of the 6.75 million EVs on the road. This amounts to an increase of 108% by the year 2020. Electric vehicles (EVs) are growing in popularity for their environmental benefits, including reduced pollution and resource consumption. The electric vehicle (EV) market in India is flourishing, with sales of about 0.32 million units in 2021—a 168% year-over-year rise. The Paris Agreement, which aims to reduce carbon emissions, improve air quality in major cities, and lessen reliance on foreign oil, facilitates India's further adoption of electric vehicles.



Source: EV reporter

Classification of electric vehicles:

- Hybrid Electric Vehicle
- Plug-in Hybrid Electric Vehicle

- Battery Electric Vehicle

Hybrid Electric Vehicle (HEV)

A hybrid electric car is propelled by both a conventional internal combustion engine and an electric motor. In this case, the batteries are charged using the energy produced by the engine as well as the energy that is absorbed while braking. Automobiles that are powered by both an internal combustion engine and an electric motor are now commonly referred to as hybrid vehicles because of this combination of power sources. The technology that enables hybrid electric vehicles is extensively used since it delivers current performance without the user needing to be concerned about being dependent on the infrastructure for recharging. They may be able to considerably reduce their fuel usage as a result of electrifying the engine. There are a few different configurations that can be used to link the HEV, depending on the kind of hybrid system that is being used. The power-split hybrid, the parallel hybrid, and the series hybrid are the three distinct varieties.

Hybrid Electric Vehicle Capable of Being Plugged In

Plug-in hybrid electric vehicles are comprised of electric motors in addition to internal combustion engine power trains. These automobiles require fuel to operate but also come equipped with a sizable battery that can be recharged using electricity. The capacity of plug-in hybrid electric vehicles to use the power grid as a secondary energy source is increasing their market share. A plug-in hybrid electric vehicle differs from a pure electric vehicle in that it uses electricity in addition to other fuel sources and typically has a smaller battery. A differentiates from a standard hybrid electric vehicle in that it has a larger battery, there is the possibility of using an appropriate electrical outlet (sometimes known as a "plug") to recharge the battery from the electric grid, and there is a special technique for managing the battery's state of charge (SOC).

Vehicle powered entirely by batteries

Battery electric vehicles, abbreviated as BEVs, are another name for fully electric automobiles. Instead of a gasoline engine, it is powered by high-capacity rechargeable battery packs that can be charged from the outside of the vehicle. The chemical energy stored in rechargeable batteries is used to power the internal electronics of the battery-electric vehicle, including the electric motor. The battery electric vehicle has the potential to reduce reliance on vehicles powered by fossil fuels as well as the total amount of carbon dioxide emissions produced by light-duty vehicles. According to reports, battery electric cars have the biggest market share in India right now, making up more than 70% of sales in 2017. This percentage is expected to keep going up over the next few years. Although until 2014 BEVs outsold PHEVs in a number of nations, PHEV sales have climbed dramatically over the past two years and are now virtually on par with BEV sales. This is due to the fact that BEVs have a longer range than PHEVs. The kinds of batteries that are sold on the Indian market can be used to classify different kinds of batteries, including lead-acid batteries, nickel-metal hydride batteries, and lithium-ion batteries, amongst others. The highest number of sales of electric vehicles in India were recorded in the state of Maharashtra in 2017.

INDIA'S ELECTRONIC SCOOTERS AND BIKES

Since 2014, there has been a significant rise in the number of requests received in India for electric scooters and bikes. There were a total of 152.0 thousand sales of electric scooters and bikes in 2019, representing a 20.6 percent increase from 2014. By the conclusion of the projection period in 2025, annual retail sales are expected to reach 1,080.5 thousand units, representing a compound annual growth

rate (CAGR) of 57.9% between 2020 and 2025. However, experts predict that retail sales will top a billion dollars by 2025, representing a compound annual growth rate of 63.9% from 2020 to 2025. India contributes 6% of global greenhouse gas emissions from the burning of fossil fuels, making it the third largest carbon burner in the world. IQ Air found that in 2019, 21 of the 30 most polluted cities in the world were located in India. Furthermore, 14 of the top 20 most polluted cities in the world are located in India, according to the WHO's Global Air Pollution Database (2018). Seventy percent of India's total population of 200 million cars are two-wheelers, and they also make up eighty percent of the country's annual sales of brand-new autos. About 20% of the world's carbon dioxide and 30% of the world's particulate matter emissions come from these sources. They contribute greatly to pollution levels in urban areas. The federal government, individual states, and municipalities have all taken action in recent years to lessen the environmental damage caused by cars. Tax breaks, rebates, and other financial incentives have been put in place for people who buy electric cars as part of these initiatives. An effective legislative push for electric two-wheelers would help expand the Indian market for electric motorbikes and scooters, and the government's renewed focus on reducing pollution levels is a good sign in this regard.

Literature Review

Chou and Hsaio (2005) analyzed that Electric scooters are regarded as a modern environmentally friendly product and a prospective market in several nations. Taiwan has the largest density of scooters per person and is a leading producer of motor scooters globally, providing ideal circumstances for the development of electric scooters.

Nanaki and Koroneos (2013) discovered that plug-in electric and hybrid vehicles were shown to be one of the most promising solutions to drastically reduce the impact of automobiles on air pollution, carbon dioxide emissions, and dependence on petroleum. It has been demonstrated beyond a reasonable doubt that the consequences on the natural world brought about by driving electric cars are not the same regardless of where the electricity comes from. The conventional, the hybrid, and the electric automobile are evaluated against one another in terms of their costs and their effects on the environment. According to the findings of the investigation, electric and hybrid autos are superior to traditional automobiles.

Monika (2018) determined that electric vehicles had the ability to completely alter the game, but that the biggest barrier to entry for them would be for people to be unaware that they exist. The purpose of this article is to describe the thoughts, feelings, and perspectives of consumers regarding their understanding of environmental issues and their readiness to buy automobiles to assure environmental sustainability. By doing this research, we hope to gain an understanding of what goes on in the thoughts of customers and whether or not they are willing to do what they can to help keep the environment in a sustainable state. How we choose to view electric vehicles and hybrid electric vehicles determines the potential and challenges we see in both types of vehicles. Both types of vehicles have their advantages and disadvantages.

Ansar (2019) revealed that sales of industrial vehicles in India reached a record high, increasing by 24.6%; these data provide sufficient justification for rolling up our sleeves and taking action. The pollution that comes from Metropolitan is significant. Because of this, it is extremely important for inhabitants to have a solid understanding of the situation and to take steps to reduce their level of exposure to harmful gasses and pollutants. E-Vehicles also have the potential to change the game in this context; however, the disadvantage of these vehicles would be that most players would be unaware that

they exist. By doing this research, we hope to gain an understanding of what goes on in the thoughts of customers and whether or not they are willing to do what they can to help keep the environment in a sustainable state. The way we choose to approach electric vehicles and hybrid electric vehicles determines the potential and challenges we will see with regard to each of these types of vehicles.

Sreeram et al. (2019) determined that electric vehicles have recently received more attention on a global scale due to the fact that they cause much less climate pollution compared to their counterparts that are fueled by gasoline. The shortage of charging stations, the slow charging procedure, the expensive initial cost, and the limited range of electric vehicles are the primary factors preventing widespread adoption of EVs. The FAME cars Scheme was initiated by the government of India in the year 2015 with the intention of encouraging the manufacturing of environmentally friendly automobiles such as hybrid electric vehicles. This objective is to turn the Indian market into an EV-only environment by the year 2040. This article's objective is to provide a detailed review of the current electric vehicle market and to identify possible development areas as its primary focus.

Wood et al. (2019) discovered that personal electric scooters, sometimes commonly referred to as e-scooters, have quickly grown popular as an innovative method of transportation in the urban areas of the Western world. As community leaders search for a new generation of mobility options, electric scooters present not just a significant opportunity but also a significant number of challenges. These privately sponsored autos use a variety of different platforms, many of which do not require fixed charging stations, and they frequently function with relatively little control. A preliminary look at an emerging pattern was the focus of this examination. There is still a significant amount of research that has to be done on this topic; however, the most of it won't be practical until e-scooters have advanced somewhat farther as a method of individual transportation.

Kumar and Hallur (2020) found that the demand for products that are renewable and favorable to the environment has increased over the course of time. Electric scooters, which provide customers an alternative to cars powered by fossil fuels in that they produce less pollution and are friendlier to the environment, are an example of the kind of product that may be offered to customers. In response to this transition, Indian automobile manufacturers are releasing a number of electric vehicles, including the Tata Nexon, which is manufactured by the Tata group. Tata Motors will have the opportunity to enter a brand-new market by putting into practice cutting-edge and contemporary technology standards, in addition to receiving support from its clientele in this endeavor. In addition, the company may employ green technology in the process of developing its varied product line in order to minimize its impact on the natural world. Both the company and the government of India need to work together to solve the problem of a shortage of charging outlets in the country. This is despite the fact that the market potential is immense.

Malik and Kohli (2020) analyzed that the Indian government pushed the adoption of environmentally friendly automobiles by implementing a program called Faster Adoption and Manufacturing of Hybrid and Electric Automobiles. This essay examines the tractor industry in India and focuses on the steps taken by the Indian government to lessen the amount of air pollution caused by agricultural machinery. There are a number of advantages to utilizing electric drives in tractors and other types of agricultural machinery; two of these advantages are an increase in functionality and an improvement in energy economy. This report offered readers a general summary of the opportunities that exist in the Indian market for electric tractors. According to the research that was consulted, electric tractors are still in the process of being developed despite having achieved success in the sector even in wealthy countries.

Electric tractors are the best option for agricultural work since they have lower operating costs over the course of their entire lives, in addition to making a substantial contribution to the reduction of emissions**.**

Kalita and Hussain's (2021) observed that the technological advancements have helped the automotive sector advance. Electric cars are one alternative to conventional vehicles that use internal combustion engines. Increased global interest in electric vehicles is being driven by their cleaner air. The Indian government hopes to increase electric vehicle production as well. In this article, we'll look at the opportunities and challenges for selling electric cars in India. This research looks at how the electric car sector in India is affected by economic, social, technological, and environmental factors. These financial and technical factors affect the progress of the infrastructure and batteries. The challenges are then factored into suggestions made to aid the growth of the electric vehicle sector. In the long run, integrated circuits will be phased out in favor of EVs, say market watchers. Furthermore, the increasing popularity of electric vehicles is shown in the increasing number of recent transactions.

Goel et al. (2021) adoption of electric vehicles was shown to be a substantial opportunity for reducing greenhouse gas emissions The widespread adoption of renewable energy sources is facilitated by electric cars, which also reduce dependency on fossil fuels and the effects of dangerous air pollution. This study stands out since it is one of the few that tackles important issues, such as India's inadequate charging infrastructure. Hybrid, plug-in hybrid, and electric vehicles enhance fuel efficiency, however they are more expensive to purchase than regular automobiles. The recent actions and various incentives taken by the Indian government will help the country's transition to e-mobility.

Sanguesa et al. (2021) identified a number of factors contributing to the rising popularity of electric automobiles. New research challenges and unrealized potential are discussed, as well as developments in electric vehicle battery technology and charging methods. This article looked at the different types of EVs, the technology they use, the advantages they have over conventional automobiles, the sales trend over the past several years, the different ways they may be charged, and the potential future technologies that could be used with EVs. We also talked about the major roadblocks and opportunities in the field of research.

Singh and Dubey (2022) have become increasingly important in the sphere of electric distribution. This article delves into many different approaches to optimizing distributed generation, electric vehicles, and distributed generators with electric vehicle programs in a power distribution system with a wide range of load models. Throughout the process of creating the future system, it is essential to do a thorough literature review. This article provides an overview of the strategies employed in the optimization of the process's performance measurement setup.

Smeer and Dr. Ashok (2022) found that the study is concerned with the difficulties and opportunities presented by EVs in India. An electric car is superior to a car powered by fossil fuels in every way. Electric vehicles are being actively marketed on a global scale due to environmental concerns. Electric vehicles are gaining popularity due to their low environmental impact. PLI programs, subsidies, incentives, and tax breaks are all provided by the Indian government, which shows its support for the industry as a whole. In this essay, we'll look at the pros and cons of selling electric cars in India. By 2040, it is expected that electric vehicles would make up the largest portion of the global fleet. For optimal performance, EVS can be used in tandem with autonomous and intelligent vehicles. Companies will be able to take advantage of economies of scale as a result of increased sales volume thanks to the rising global demand for EVS, which will lead to an increase in global investment. Charging infrastructure and charging point density must be systematically increased for EVS to become more

widely adopted. The proper disposal and recycling of batteries requires the establishment of a robust ecosystem.

Paul Sathiyan et al. (2022) looked at data from the five countries with the highest Cost per view: China, the United States of America, Japan, Germany, and India. They also drew on the expertise and experience of Norway, the country credited with inventing the electric vehicle. Electric vehicle (EV) adoption and tailpipe emission reduction can be influenced by government-sponsored marketing initiatives, the widespread rollout of standardized charging infrastructure, and the creation of market-competent EVs. Despite having the same top speed, acceleration, and top engine speed as a gasoline-powered vehicle, the cost per kilometer for electric vehicles has been significantly lower. Electric vehicles' cost per value has lagged significantly behind its peers'. The market reveals a middle ground in terms of vehicle quality.

Objectives of the study

- To analyze how traditional and electric scooter buyers' preferences are shifting over time.
- To identified the difficulties of the electric scooter market in relation to the conventional scooter business.
- To examine the potential for expansion of electric scooter markets and propose solutions.

Research Methodology

An overview of the procedures that are followed when carrying out a particular kind of research is known as a research technique. The term "research technique" refers to the manner in which an investigator plans their study with the end goal of obtaining truthful and dependable data as well as achieving their research goals.

Research Design

The current study is of an exploratory and descriptive nature, and primary data from a total of 100 respondents have been acquired through the use of questionnaires. Research design is the structure of methods and techniques a researcher uses to conduct a study. Because of the architecture, researchers may focus on designing subject-appropriate research methodologies and putting up successful investigations.

Research Approach

The research plan will dictate the processes that must be followed for the gathering, processing, and interpretation of the data. The research methodological philosophy is referenced throughout the entirety of the study technique. Several aspects, such as the target audience, the researcher's background, and the objective of the research, all play a role in determining which research method to use.

Sample size

The study sample constitutes 100 respondents in the research area. The study was conducted from Haryana.

Statistical tool

The statistical tool used for analyzing the data collected is **percentage methods and pie diagram.**

Researchers may support their claims with the use of statistical techniques, Interpret a sizable body of data, visually represent complicated facts, and quickly convey a wide range of concepts.

Sampling Technique -: Convenient Sampling technique used in this paper.

Data Interpretations

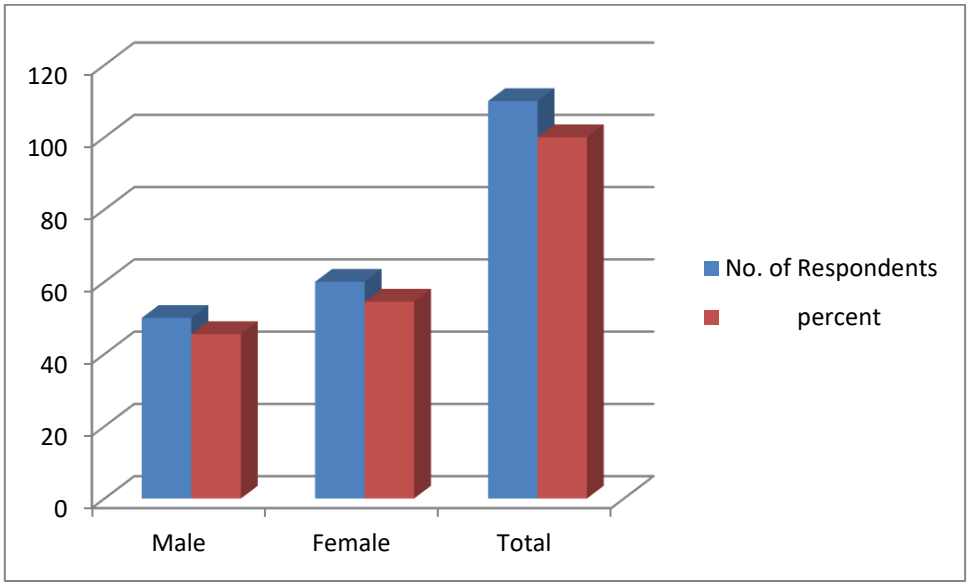
1. Gender

Based on the data in Table 1, it appears that 54.5% of respondents are female and 45.5% are male.

Table 1: Gender-wise Analysis

	No. of Respondents	**percent**
Male	50	45.5
Female	60	54.5
Total	**110**	**100**

Source: compiled from primary data



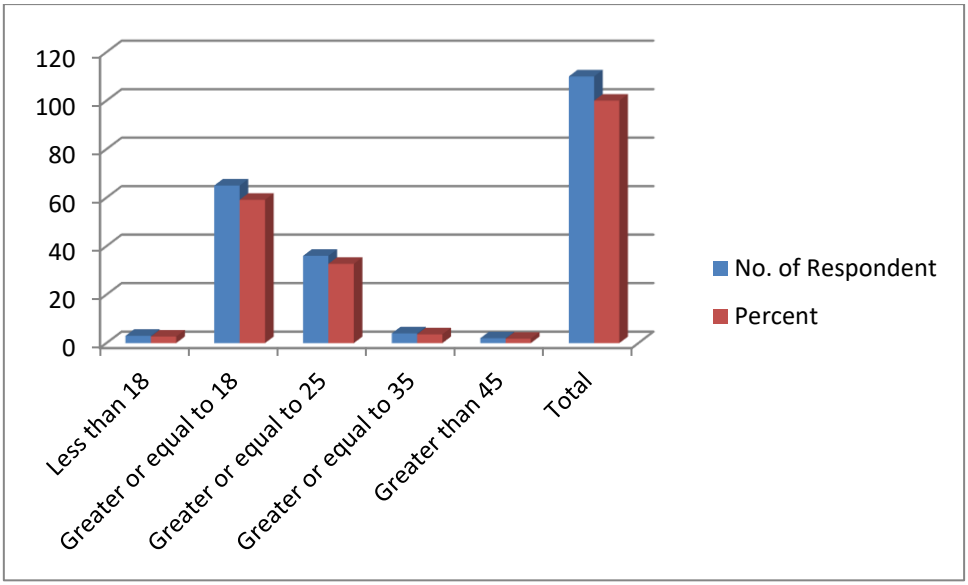
2. Age Group

Table 2 shows that 59.1% of respondents are over 18, 32.7% are 25–45. 3.6% are between 35 and 45, 2.7% are under 18, and 1.8% are beyond 45.

Table 2: Age Group

	No. of Respondent	**Percent**
Less than 18	3	2.7
Greater or equal to 18	65	59.1
Greater or equal to 25	36	32.7
Greater or equal to 35	4	3.6
Greater than 45	2	1.8
Total	**110**	**100**

Source: Compiled from primary data



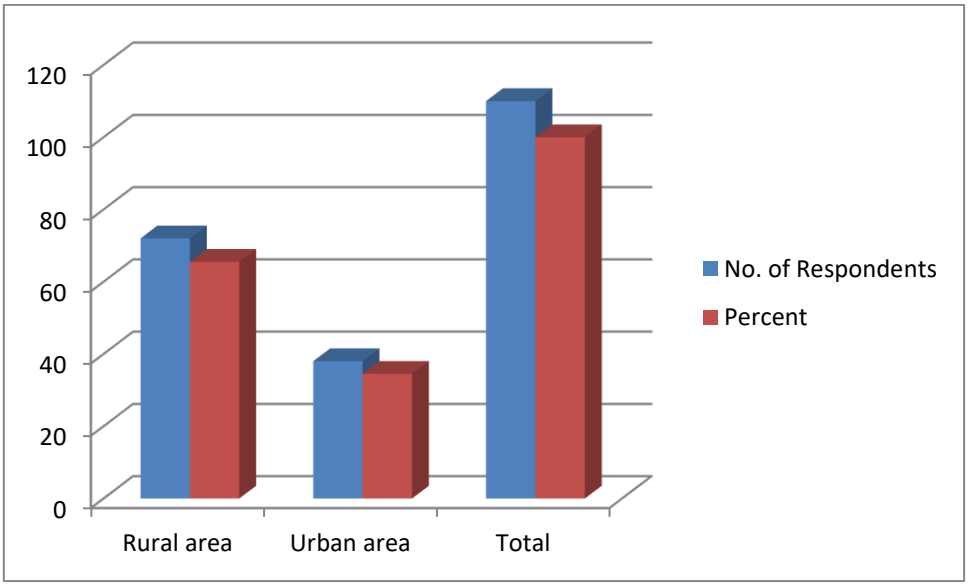
3. Location

Table 3 shows that 65.5 percent of respondents belong to rural areas and 34.5 percent of respondents belong to urban areas.

Table 3: Location

	No. of Respondents	**Percent**
Rural area	72	65.5
Urban area	38	34.5
Total	**110**	**100**

Source: collected from primary data



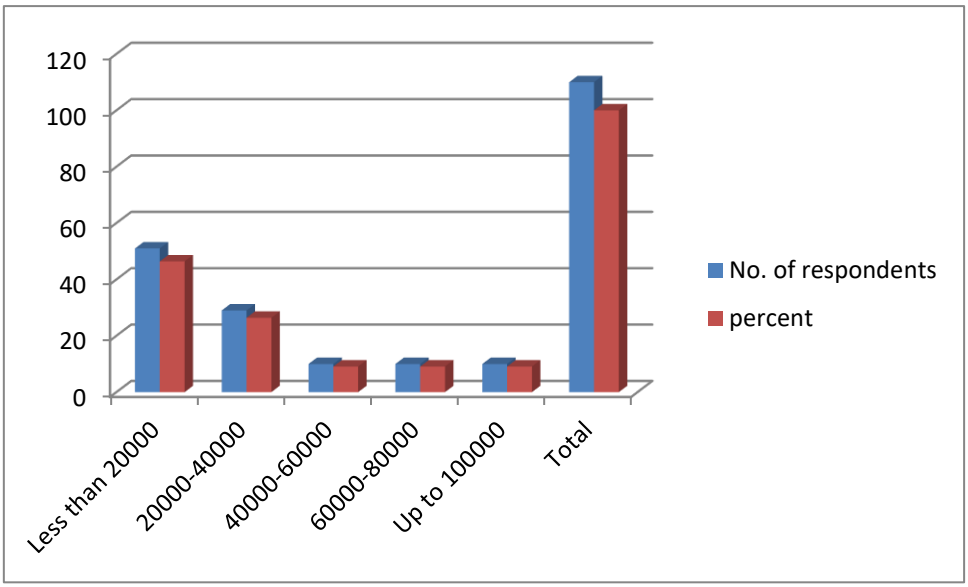
4. Family income (per month)

According to Table 4, 46.4% of respondents have a family income of less than $20,000, 26.4% have an income between $20,000 and $40,000, 9.1% have an income between $40,000 and $80,000, and up to 10% have an income of $100,000 or more.

Table 4: Family income (per month)

	No. of respondents	percent
Less than 20000	51	46.4
20000-40000	29	26.4
40000-60000	10	9.1
60000-80000	10	9.1
Up to 100000	10	9.1
Total	**110**	**100**

Source: collected from primary data



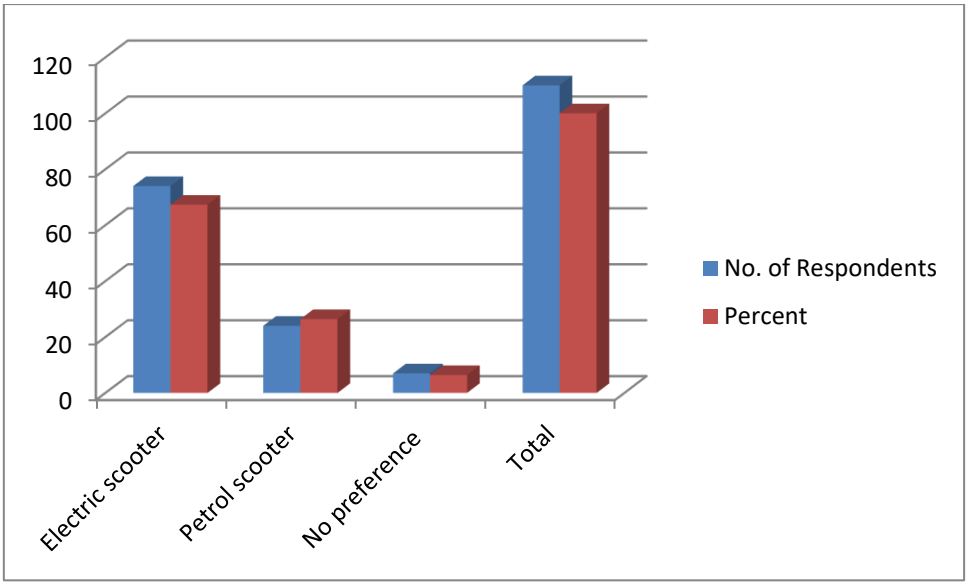
5. If you have a choice, which kind of scooter shall you prefer?

Based on the data in Table 7, it appears that 67.3% of respondents like electric scooters, 26.4% choose classic scooters, and 6.4% do not favor either type of scooter.

Table 5: Preference between electric and traditional scooters

	No. of Respondents	Percent
Electric scooter	74	67.3
Petrol scooter	24	26.4
No preference	7	6.4
Total	**110**	**100**

Source: Collected from primary data



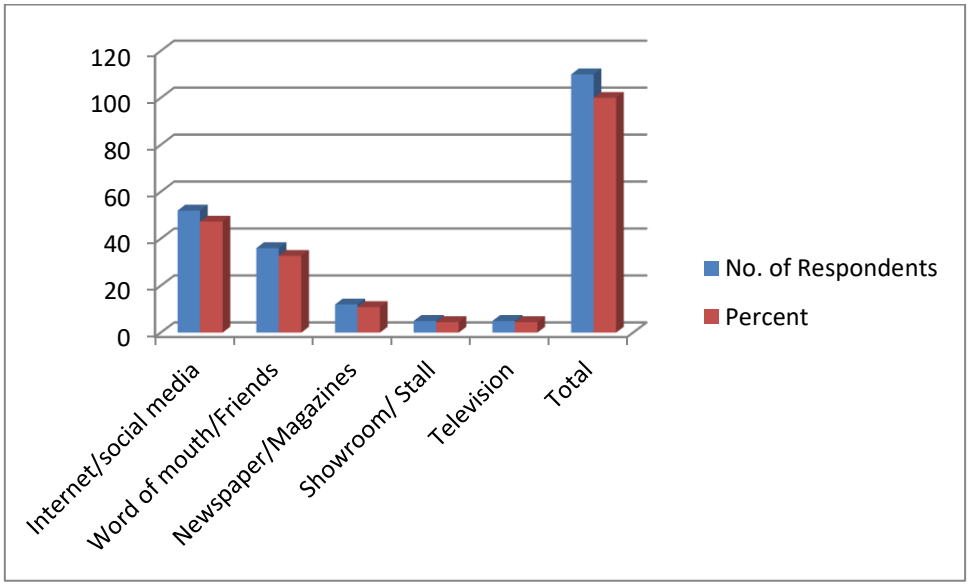
6. How do you know about electric scooters?

Table 6 shows that 47.3% of respondents learn about electric scooters via the internet and social media, 32.7% via word of mouth and friends, 10.9% via newspaper and magazines, and 4.5% via a combination of a showroom/stall and television.

Table 6: How do you know about electric scooters?

	No. of Respondents	**Percent**
Internet/social media	52	47.3
Word of mouth/Friends	36	32.7
Newspaper/Magazines	12	10.9
Showroom/ Stall	5	4.5
Television	5	4.5
Total	**110**	**100**

Source: Collected from primary data



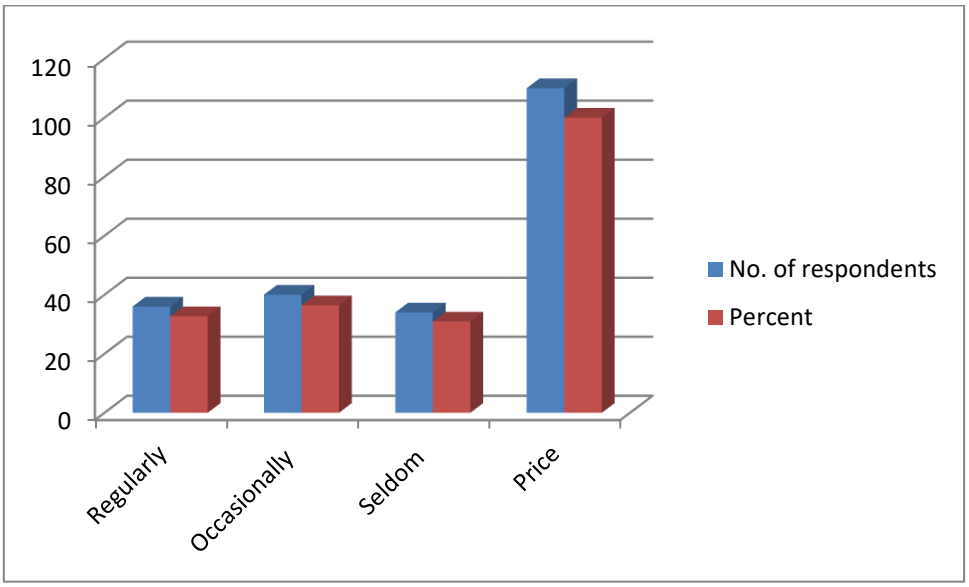
7. Have you ever used an electric scooter and how often?

As can be seen in Table 7, between 36.4 and 32.7 percent of respondents use electric scooters on a regular basis, whereas 30.9 percent of respondents rarely use them at all.

Table 7: Have you ever used an electric scooter and how often?

	No. of respondents	**Percent**
Regularly	36	32.7
Occasionally	40	36.4
Seldom	34	30.9
Price	**110**	**100**

Source: collected from primary data



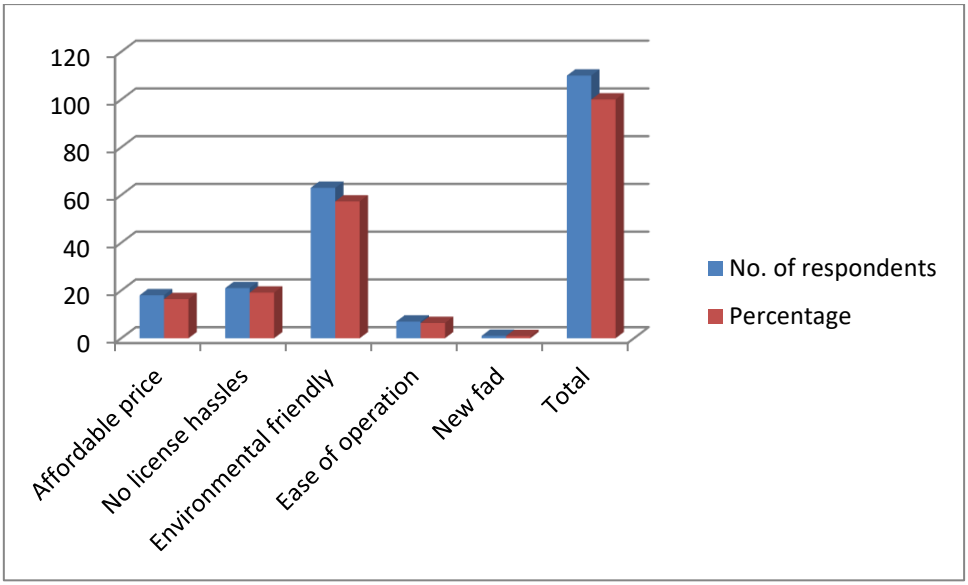
8. What is the advantage of owing an electric scooter overa traditional scooter?

According to Table 8, 57.3% of respondents preferred electric scooters over traditional scooters because they are better for the environment, 19.1% preferred electric scooters because they require no license, 16.4% preferred electric scooters because they are more cost-effective, 6.4% preferred electric scooters because they are simpler to operate, and 0.1% preferred traditional scooters because they are more fun to ride.

Table 8 :What advantage of owing an electric scooter toa traditional scooter?

	No. of respondents	**Percentage**
Affordable price	18	16.4
No license hassles	21	19.1
Environmental friendly	63	57.3
Ease of operation	7	6.4
New fad	1	0.9
Total	**110**	**100**

Source: collection from primary data



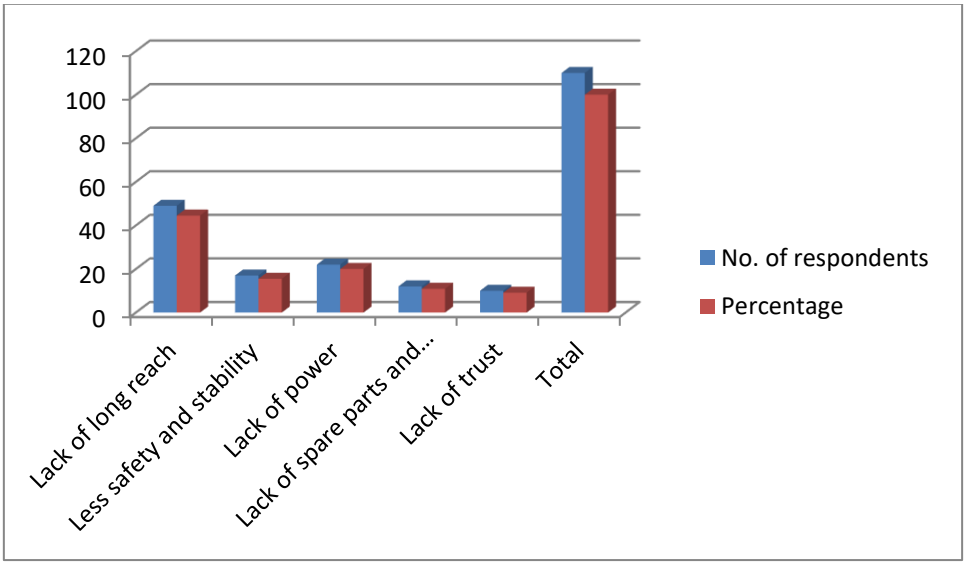
9. **What is the disadvantage of owning an electric scooter than a traditional scooter?**

In Table 9, we see that 44.5% of respondents cite the lack of long reach as a drawback of electric scooters compared to traditional scooters, while 20% cite the lack of power limitation, 15.5% cite the lack of stability and safety, 10.9% cite the lack of spare part and the service, and 10.5% cite the lack of spare part and the service.

Table 9: Disadvantage of owing electric scooters than traditional scooters?

	No. of respondents	**Percentage**
Lack of long reach	49	44.5
Less safety and stability	17	15.5
Lack of power	22	20
Lack of spare parts and service center	12	10.9
Lack of trust	10	9.1
Total	**110**	**100**

Source: collection from primary data



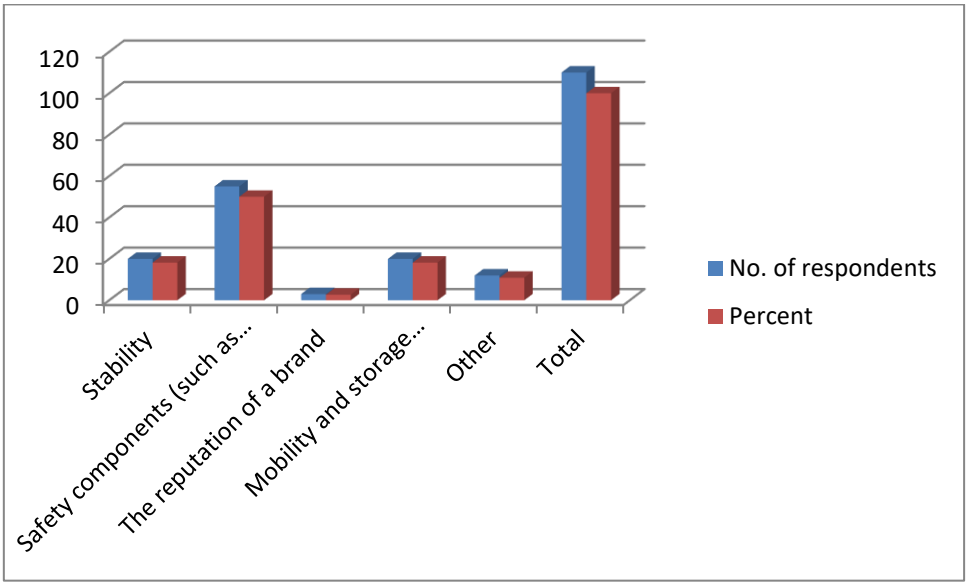
10. Are there any particular characteristics you would want in a new scooter?

Table 10, shows that half of respondents care most about having safety features on the new scooter, followed by those who want it to be stable, mobile, and have good storage options, then those who want nothing of the sort, and finally, those who care most about the brand's reputation.

Table 10: Characteristics want in new scooter

	No. of respondents	**Percent**
Stability	20	18.2
Safety components (such as lights, breaking system)	55	50
The reputation of a brand	3	2.7
Mobility and storage efficiency	20	18.2
Other	12	10.9
Total	**110**	**100**

Source: collection from primary data



11. Do you have any particular suggestions for improvement or updates for the electric scooter?

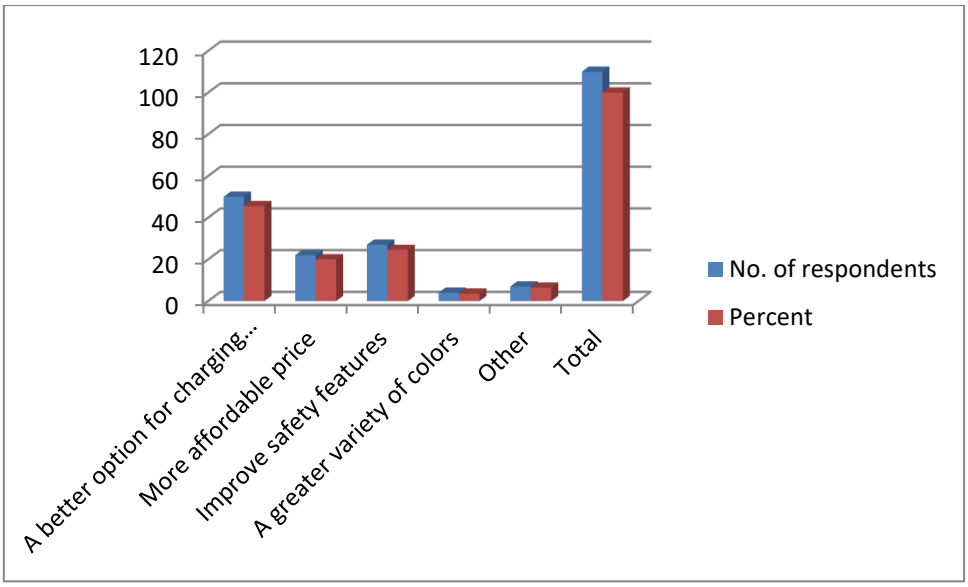
Table 11, shows that most respondents (45.5%), would like to see improved charging and battery life options; 24.5% would like to see improved safety features for updated electric scooters; 20% would like to see more affordable prices; 6.4% would like to see some other feature added to the electric scooter; 3.6% would like to see more color options.

Table 11: Suggestion to improve electric scooter

	No. of respondents	**Percent**
A better option for charging and battery life	50	45.5
More affordable price	22	20
Improve safety features	27	24.5

A greater variety of colors	4	3.6
Other	7	6.4
Total	**110**	**100**

Source: Collection from primary data



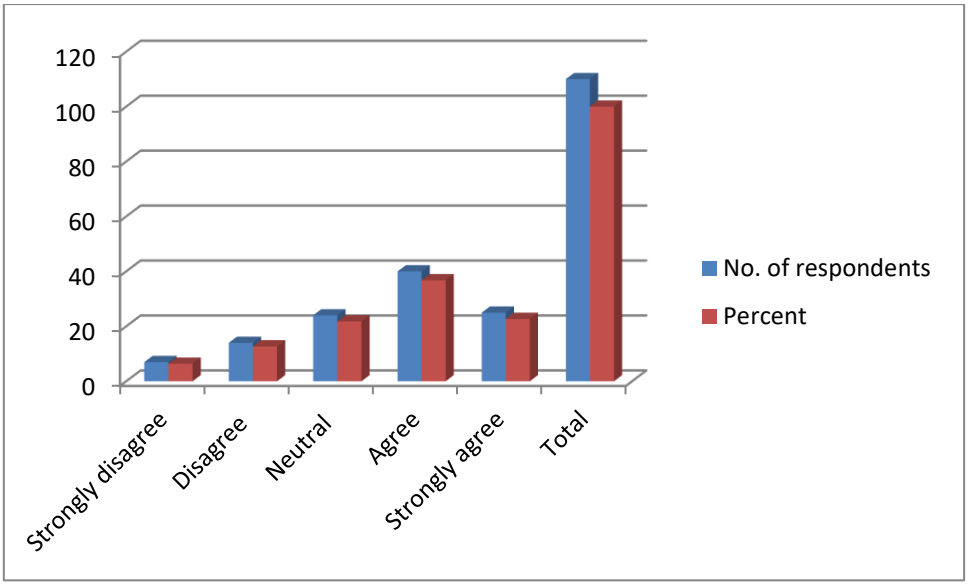
12. Getting stuck midway on an electric scooter is still fearful.

Table 12 demonstrates that 38% of people are concerned about getting stranded while riding an electric scooter. In a survey, 22.7% of participants expressed strong agreement with the statement "getting stuck midway on an electric scooter is still fearful," while 21.8% expressed no strong agreement or disagreement with the statement. While 12.7% of respondents agree with the statement, 6.4% of respondents strongly disagree that getting trapped in the middle of the road on an electric scooter is still terrifying.

Table 12: Getting stuck midway is still fearful or not.

	No. of respondents	**Percent**
Strongly disagree	7	6.4
Disagree	14	12.7
Neutral	24	21.8
Agree	40	36.8
Strongly agree	25	22.7
Total	**110**	**100**

Source: collection from primary data



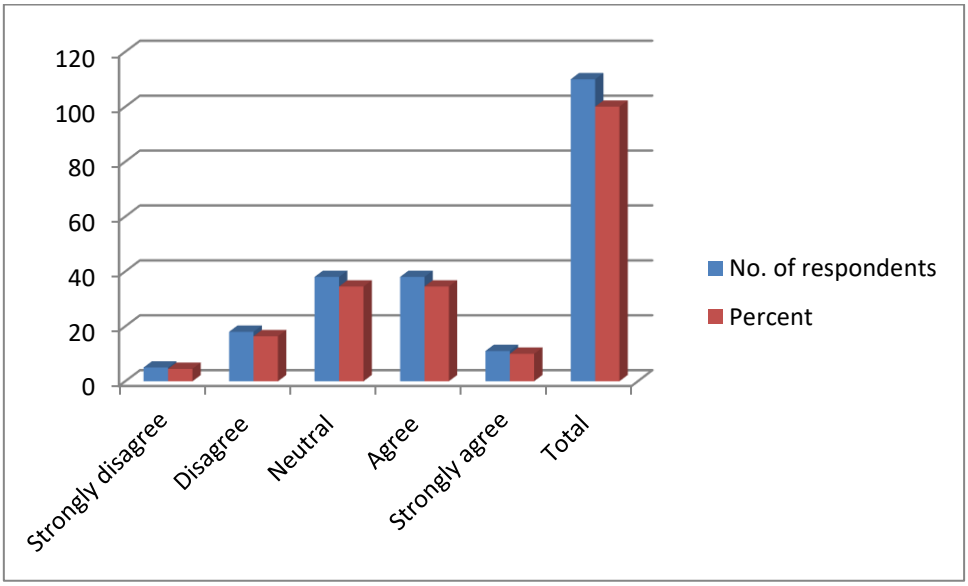
13. Is an electric scooter more convenient than a petrol scooter?

Table 13, shows that 34.5% of respondents are unsure or agree that electric scooters are more convenient than petrol scooters, 16.4% disagree that electric scooters are more convenient than petrol scooters, 10% agree that electric scooters are more convenient than petrol scooters, and 4.5% strongly disagree that electric scooters are more convenient than petrol scooters.

Table 13: Is an electric scooter more convenient than a petrol scooter?

	No. of respondents	**Percent**
Strongly disagree	5	4.5
Disagree	18	16.4
Neutral	38	34.5
Agree	38	34.5
Strongly agree	11	10
Total	**110**	**100**

Source: collection from primary data



Findings and suggestions

- Most respondents are between the age group of 18 to 35 years.
- The majority have a bachelor's or higher degree as their greatest level of education.
- The majority of respondents are Students from College and university make up the vast majority of responses and the rest are professionals, the self-employed, housewives, and the elderly.
- Most responders are from rural areas, while those from metropolitan areas make up the remaining percentage.
- Fewer than 10% of respondents have household incomes of $40,000 or more, and the vast majority have incomes of less than $20,000.
- There is about an even distribution of male and female respondents.
- If you could pick any kind of scooter, which would you go for if given the chance? In a survey, 74 people said they would rather ride an electric scooter than a petrol scooters one.
- The internet and social media are the primary means by which respondents learn about electric scooters, followed by word of mouth, friends, newspapers, magazines, television, and retail outlets such showrooms and stalls.
- The vast majority of responders make regular use of traditional scooters, while the rest do so only rarely or never.
- The vast majority of respondents make frequent use of electric scooters, while the rest do so only infrequently or seldom.
- The quick expansion of the electric scooter market suggests that its marketing strategy is superior to that of the gas scooter.
- 60% of respondents feel that electric scooters are becoming more inexpensive, despite the significant increase in the price of gasoline.

Suggestions

- Government subsidies are needed to get more people to buy electric scooters. Taking these measures will have a significant impact on lowering pollution levels and enhancing conditions for present and future generations.
- Maintenance expenses for existing electric scooters are another issue that needs to be resolved before they can win over the public.
- Since I conducted my study in a rural region and my questionnaire was completed by people from Haryana, I believe that future studies on the same topic will benefit from being conducted in a more urban setting.
- To enhance sales and have a positive effect on consumers, electric scooter manufacturers should include safety features.
- Electric scooters should see an increase in battery efficiency.
- The battery should have great performance and a short charging time.

Conclusion

The challenges of electric scooters are investigated in this study. This study's findings suggest that the popularity of electric scooters will continue to rise for a variety of good reasons in the years to come, including those listed above. From our research, we learned that electric scooters have a number of drawbacks, including poor battery life, excessive electricity use, charging problems, getting stuck in the

middle of a journey, and the risk of catching fire. To resolve these problems, the market for electric scooters must prioritize improving battery life. The government should make the most of this opportunity and work to address the real concerns raised by electric scooters' widespread use. Despite the challenges of initial investment and market acceptance, the electric scooter business is poised for explosive growth in the next years. There are restrictions on this research study. Results from urban regions would be more reliable than those found in this study because electric scooters are not widely available in rural areas. The small sample size also means that the findings cannot be generalized to the entire population, as the results will undoubtedly shift if the sample size is increased.

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