

A BRIEF STUDY OF ELECTRIC TWO WHEELER VEHICLE

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ABSTRACT

Electric motors offer low travel costs, along with energy savings and harmful emissions.

However, there is a lack of comprehensive literature on the perception of electric vehicles in developing countries. This review is important for policy makers to understand the many

constraints associated with different types of electric vehicles (EVs). A regular review of the Google Scholar and Web of Electronics was conducted from 2010 to 2020, with

consideration of the current review guidelines and selected reports from the meta-analysis (PRISMA). The

electric vehicles examined in the data include four-wheel drive vehicles, electric vehicles, and two-

wheelers. Initially, 35 studies were conducted that corresponded to the principles identified in the

Science Network. Next, there were a number of news-related reports related to various disabilities and

investigations. The results show that four-wheeled electric cars are of no use in developing countries due

to the high cost of their purchase. On the other hand, two-wheeled electric wheels have the advantage of being cheaper.

Keywords: electric vehicles; driving forces; resisting forces; developing countries

Introduction

Cellular electricity has many benefits, including reducing dependence on fuel and improving environmental conditions [1]. Electric vehicles are electric vehicles (EV) that consume less energy and emit less greenhouse gas (GHG) [2]. Battery-powered electric vehicles

introduction

(BEVs) are considered a more energy efficient system than vehicles with internal combustion engines (ICEV). Unfortunately, there has been no previous research showing the types of electric vehicles that can be successful in developing countries. Therefore, we will explore several barriers which include four-wheeled electric vehicles (E4W), two-wheeled electric vehicles (E2W), and hybrid electric vehicles (HEVs).

2 There are many forces pushing and pulling the established standard conditions in the various mobile vehicle markets. There are also many motivational factors associated with the acceptance of electric vehicles, such as low fuel emissions (GHG), energy costs, fuel savings and reduced operating costs. Opponents of EV acceptance include high purchase prices, inadequate access, slow switching, and concerns about new product adoption [3–5]. In this study, a comparative study was conducted to understand the retention capacity of drivers carrying different types of EVs in developing countries. We developed a literature review method using the elements of the priority report in the current review and research guideline (PRISMA). We have summarized our research by improving the quality of research and filtering work. The results confirm that E2W and HEV have a greater potential in developing countries than E4W.

background

We follow the pattern of developing and developing countries developed by the United Nations (UN) [6]. These countries are classified according to their gross domestic product and their gross domestic product. Developing countries are divided into two regions: Africa, East Asia, South Asia, West Asia, Latin America and the Caribbean. The next section focuses on the types of electric vehicles used in studies and electric vehicles in developing and developing countries.d

1.1. Type of Electric Vehicles Used in This Study

In this study, prospects of E4Ws, E2Ws and HEVs in the developing countries are elaborated. The E4Ws refer to electric four-wheelers or electric cars. The E4Ws have only the battery as a source of energy providing long-range capability around 200–300 km [7]. The average price of E4Ws varies from USD 30,000 to USD 47,000 [8]. The important parts of E4Ws could be divided into the motor controller, battery and electric motor [9]. The batteries are charged from the electricity grids by the different type of plugs. The type 1, type 2 and combination plugs are usually used in E4Ws having power up to 7.4 kW, 22 kW and 43 kW, respectively. Using the electric motor, the electrical energy is converted to mechanical energy to support the drivetrain [9,10]. The second type of vehicle in the study is a hybrid electric vehicle or HEV, which combines both internal combustion engine and a battery pack to generate power for vehicle propulsion. The HEVs do not require external charging, and the necessary power is generated by the regenerative braking system and the internal combustion engine [11]. We consider the series-parallel type of

HEV used in this study. The price of an average HEV varies USD 24,000–29,000 [4]. We do not consider plug-in hybrid electric vehicles (PHEV) in this study as the purchase price is more expensive [12].

Considering the electric two-wheeler or E2W, we emphasize a mid-sized electric two-wheeler or electric scooter (Vespa-styled) in our study. These E2Ws are not pedal-assisted or kick started. These E2Ws possess a maximum speed of 45 kilometres per hour. These E2Ws carry an electric motor of maximum continuous power rated between 0.25 and 4 kW [13]. In this study, we use EVs to denote HEVs, E4Ws and E2Ws. We use BEVs to denote E4Ws and E2Ws only. For further clarification, different types of EVs are mentioned in the Table1. In this table, some of the features do not apply to HEVs and the blank spot is represented by a dash.

1.2. Present of Electric Mobility in the Globe

According to the study, China and the United States account for 65% of E4W users worldwide. Europe is second, representing 23% of the global market. In 2016, there were six countries that accounted for E4W market share of more than 1% of total light car sales (PLDV). Given these countries, Norway is the most baptized nation in the world, with 29% of the E4W market share of PLDV [18]. Norway has achieved this result with the recent beneficial environmental policies, including a variety of incentives, tax deductions and exclusions on E4W systems [19,20]. After Norway, the Netherlands and Sweden have the largest E4W

3.3. Mode of fire movement in developing countries With the exception of China, electric vehicles are not very popular in developing countries. India has less than 1% ownership of cars considered E4W [17]. When it comes to electric vehicles, we usually think of electric vehicles, but in developing countries like China and Vietnam, many E2Ws are sold. This is related to mobility and the limited purchase of E2W [13]. In 2018, E2W gained sales of 30 million units and a total investment of 250 million units in China [22]. E2W's market share is also slowly growing in other Asian countries like India, Vietnam and Taiwan. In developing countries, it is important to develop electric vehicles compatible with the country's energy system. A study by Wu and Zhang [23] examined the

electrical composition of developing countries. We recommend using HEV for this study. This is because HEVs emit a lot of energy and greenhouse gases, mainly to countries with electrical conditions. The next question is the capacity or price of property for citizens. In the case of E4W, the purchase price is high, so it is difficult for the general public to access. Therefore, the next step is to increase E2W in developing countries. China is a good example of a large rise in E2W [24]

2. Materials and Methods

Search Protocol The protocol was created primarily by displaying online search engines such as Google Scholar and Web Scientists. Initially, these terms were coined from important terms such as "electric vehicle", "electric vehicle", "electric motor", "two-wheeled vehicle", "electric motorcycle" and "rising earth". We have also improved discipline to track driving and opposition groups, such as "savings" and "high purchase prices". Create separate Boolean values for Google Scholar and Web Science attached to the appendix. We booked a search engine for 10 years (2010-2020) to search for the above words. This combination of electric vehicles and resistance and mobility is key element of data analysis contracts. With Science Web Search, you get the information you need with news, books, books, reviews, and English options.

2.1.1. Screening

We have selected non-essential news that has nothing to do with EV. Non-fiction selections related to other scientific disciplines such as medicine and physics are implemented with the help of "research" projects built into science sites. Follow the PRISMA guidelines to select the appropriate study course in the field. The detailed procedure according to the PRISMA guidelines is shown in The second step is to delete the data collected by Google Scholar and Web of Science. By reading the book at the end, we reduced our research to 140 relevant and influential events. We found 35 important stories on the science fiction website, but we found 105 main stories using the Google search engine. Some articles have references to reports like Global EV found in Google Scholar, which have also been added to the references section.

4 Advantages and Disadvantages

2.1.2. Low Operational Cost

One of the main reasons for using EV is to save on fuel costs compared to fuel vehicles [50]. For E4W, the price of the energy joule of electricity is lower than the price of oil, regardless of energy conditions. E4W consumption is around 0.2kWh / km [51-55]. For E4W, the price of 100 km is only 20 kWh. Like E4W, E2W depends more on electricity than oil, which can save a lot of work. E2W uses an average of 0.015 to 0.045kWh per kilometer, considering the amount of energy from the tank to the wheels [13.56]. A study conducted in the UK (UK)

compared the cost of working a tanker with E2W wheels with the operating costs of a top fuel and motorcycle seller. The study found that the operating costs (spent on electricity and battery replacement) were 24% better than most motorbikes sold [37]. Vietnam's operating costs for the E2W account for one-eighth of the main gas engines. This study shows that the operating costs of the E2W are significantly lower than that of a gasoline-powered motorcycle. It also shows that the total cost of ownership consists of fixed price or glue, not the cost of change or labor [56,57].

2.1.3. Affordable Purchase Price of E2Ws

The prices of electric vehicles and accessories are very expensive for the rich in developing countries. For low-income people, choosing a medium or E2W electric scooter is appealing because the price of a sticker is cheaper than a gasoline car. Prices for E2W from 100 euros (E2W with lead acid battery) to 5600 euros (E2W with lithium ion battery [13]). The UK Climate Change Commission has EV 2020 [5]. So wait for the national economy to cut prices

2.1.4. Lack of Awareness

Lack of information or any part of the information about the available methods also leads to resistance to incoming technologies [1]. A study conducted by Zhang [86] in China found that knowledge of EV performance, quantity, performance and cost of care is limited. Therefore, it can be assumed that a thorough education and civilization will avoid various EV-related stressors such as anxiety, stress management, and resale and stress management. In developing countries where electric vehicles are not introduced, the success of these vehicles requires critical public awareness strategies. Sustainability notice also increases the possibility of purchasing an electric vehicle [4]. It is clear that environmentalists and intellectuals can buy electric vehicles. Moreover, advertising campaigns are more effective for people who are interested in the environment than others. The government's public awareness policy through advertising and fundraising also tempting people to buy electric vehicles. Organizations Non-governmental organizations, such as investors, will also need to develop advertising strategies for the following products:

2.1.5. Presence of a Strong Market for Gasoline-Based Vehicles

There are many low-consumption vehicles in low-income countries such as Pakistan, India and Bangladesh [77,90]. In these countries, two-wheel records are better than four-wheel records. In 2006, motorcycles sold more than 7 to 1 passenger cars in China. In 2009, motorcycles accounted for 75% of all new vehicles sold in India. [21] In Pakistan in 2016, motorcycle registrations accounted for 70% of the total number of vehicles, indicating that more than half of the vehicles are made up of motorcycles [91]. If E2W is introduced in India or Pakistan, the motorcycle oil market will offer huge competition due to low purchase prices and high mileage [13,50,87,92]. This bike does not deal with the issues associated with E2W. From the discussion it can be seen that E2W should provide additional value to facilitate the oil motorcycle market. Value in values can be seen in relation to the provision of services such as fewer purchases, lower taxes or a simpler battery change.

2.1.6. Long Charging Time

From the study by Carley and colleagues [3], three main factors were identified for electric vehicle acceptance such as adhesion charge, stress, and charging time. Long charging times are one of the most important ways for people to think of electric vehicles as small

appliances [99]. Compared to the E4W, 100% charging requires 3 to 8 hours of charging with an average power of 1.4 kW [100]. According to a study by Weis and colleagues [13], the E2W has a battery capacity of 0.5 to 15 kWh and requires charging from a standard 8 hour power supply at night when the car is not functioning. Obviously there is no easy and easy option to charge the EV quickly. Long charging times for electric vehicles are difficult until sustainable technology options are developed. The problem of long-term charging is exacerbated by the lack of domestic electricity due to lack of energy. Power outages are common in developing countries due to power outages. The main reason for the crisis in developing countries such as Pakistan is the lack of effective policies to predict rising demand for electricity and the abandonment of existing assets [103,104]. As a result, power outages can increase the stress associated with BEVs. People in developing countries can be trained to charge BEVs in the same way they charge phones, even during guest hours. HEVs do not require external prices, so they may be a cheap and convenient option for wealthy developing countries

2.1.7. . Harmful Emissions

A positive emission study with EVs by Wu and Zhang [23] shows that E4W and HEVs reduce CO₂ emissions, but more PM₁₀, SO₂, and NO_x compared to ICEV engines if the mains connection is usually too hot. Was decided to be released into the atmosphere. The study showed that HEVs work most effectively in countries such as India and China that combine clean electricity. Moreover, zero export returns cannot be achieved unless these factors are controlled. [105]. We also need to work on greening the electric circuits so that we can control the external factors associated with the electric vehicle. [23,106] Most E2W in China are equipped with an acid-acid battery [107]. The lead of the E2W is more valuable than conventional motors. The exhaust air of this system is 5–10 grams per 100 km due to battery design, distribution, and reuse [13,108]. This can lead to pollution and groundwater sources. Removing 4 kilograms of toxic waste from the battery contaminated nearly 2 square meters [109]. In China, due to an inefficient recycling system, 95% of lead emissions are released at the end of its useful life. There are other alternatives to lead-acid batteries, such as lithium-ion batteries and nickel-metal hydride (Ni-MH) batteries. It weighs half and is more powerful than a battery. However, it costs four times more than the single energy produced by an acid battery. Technologies for controlling greenhouse gas emissions are evolving and beneficial for economies of scale [110]. According to one study, 60% of substances containing lead can be recycled. When the recovery of lead-acid battery for reuse is 100%

2.1.8. Low Speed for E2Ws

The average speed of the E2W is around 30 km / h and weighs between 30 and 80 kg [24]. India, where traffic varies, the average speed ranges from 16 to 18 km / h [43], indicating that E2W can withstand such traffic conditions. E2W is usually faster than a bicycle, but smarter than a motorcycle. The rapid increase in effort compared to bicycles was one of the main motivations for acquiring E2W[116]. According to a survey conducted in Vietnam, consumers are willing to pay more if they increase speed and reach. [50] Research has shown that speed is a major barrier to E2W support, and as the speed increases, people are willing to pay more than E2W [13,50,92,117].

Conclusion

This literature review focuses on understanding driving and handling three types of electric vehicles (E4W, HEV, and E2W) in developing countries. By reviewing the literature, we see that E2W is more likely for developing countries due to its low purchasing power and low operating costs. E2W has the potential to reduce congestion and GHG emissions without investing in infrastructure. E2W has the potential to succeed in developing countries, mostly those that use dual-fuel, such as India and Pakistan. Alternatively, E2W faces a variety of retention powers, including uncivilized, power outages, strong fuel markets, and low performance (low speeds and charging times). In developing countries it is recommended to postpone the implementation of E4W until the economy of scale scales the costs associated with E4W. HEV has the potential to spread to developing countries because it is cheaper than E4W. Moreover, HEV provides a low GHG reduction even if the electrical connection is contaminated [4,23,77]. In short, with improved policies, HEVs and E2Ws can be successfully distributed in developing countries. An effort should be made to make electricity greener to enjoy greater environmental benefits of EVs in developing countries. Additional research may be related to the consideration and acceptance of E2W in developing countries where such vehicles are not introduced. In addition, it will be interesting to know whether respondents prefer electric motorbikes, electric motorbikes or electric motorbikes as their next motors. Further research can be carried out to understand the total cost of ownership, the impact on power demand limits, consumption, and the environmental impact of electric vehicles in a particular region or country.

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