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Article

Navigating the roadblocks: Media's role in overcoming barriers to electric vehicle adoption in Medan

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Abstract: Adopting electric vehicles (E.V.) is crucial for promoting sustainable mobility in metropolitan areas such as Medan, Indonesia. To achieve this, it is essential to comprehend the factors that influence E.V. adoption, with a particular focus on the impact of media. This study examines the adoption of electric vehicles in Medan and evaluates the influence of the media on the public's perception and policy decisions. Opinions, concerns, and recommendations surrounding electric vehicles were examined through surveys and interviews with 35 stakeholders, including students, lawmakers, industry experts, business owners, and media professionals. The findings indicate a strong knowledge and favorable perception of electric vehicles in Medan. However, there are worries regarding the expenses associated with E.V.s and the availability of charging infrastructure. Notably, 60% of the respondents identified media as their primary source of information, highlighting its significant influence. Encouraging cooperation between media, professionals, and stakeholders is advisable to achieve accurate and balanced reporting. This can be done by employing techniques like showcasing success stories and emphasizing the environmental advantages to encourage acceptance and implementation. This study provides valuable insights into improving the adoption of electric vehicles in Medan. It emphasizes the significance of implementing effective media strategies and supportive policies to achieve sustainable transportation solutions.

Keywords: electric vehicles; E.V. adoption; media influence; sustainability; Medan; public perception; policy decisions

1. Introduction

In the 21st century, our globe is confronted with a pressing and essential task—the immediate necessity to alleviate climate change and diminish carbon emissions (Borys et al., 2022; Brodny and Tutak, 2023; Kuzior et al., 2022). Amidst numerous initiatives, adopting electric vehicles (E.V.) has become a crucial element in transforming urban transportation networks globally (Ravi and Aziz, 2022; Yerina et al., 2021). Medan, Indonesia's expansive and dynamic city, is pivotal in the worldwide shift towards sustainable transportation. Nevertheless, the path towards broad electric vehicle adoption in Medan is riddled with problems beyond technology's scope. These impediments include socio-economic constraints, infrastructural limitations, and deeply rooted psychological barriers (Pandyaswargo et al., 2021). This research investigates the complex terrain of E.V. adoption in Medan, emphasizing the media's crucial role in tackling these problems.

E.V. in Medan holds great potential as a viable solution to various urban issues

(Figenbaum et al., 2014; Pandyaswargo et al., 2021). The evident advantages of electric transportation range from mitigating the detrimental impacts of air pollution to alleviating the daily challenges posed by traffic congestion and reducing the nation's heavy dependence on fossil fuels (Setiawan et al., 2022). However, similar to any undertaking that brings about significant change, the difficulties are not limited to technological progress or the mere presence of electric vehicles (Gunawan et al., 2022). A comprehensive approach is needed to overcome the socio-economic, infrastructural, and psychological obstacles that impede the broad adoption of E.V. Media is a powerful and adaptable weapon within these complex difficulties networks (Chao et al., 2014).

The primary contention and discord about adopting electric vehicles revolve around the differing viewpoints, interests, and objectives. Policymakers and industry stakeholders are responsible for achieving a harmonious equilibrium between economic expansion and environmental preservation (Ajanović and Haas, 2018; Gunawan et al., 2021). However, consumers and environmental activists strongly advocate for the immediate necessity of cleaner transportation alternatives. The collision of these diverse ideas often creates an intricate fabric of discussion and disagreement that requires careful navigation (Gunawan et al., 2021; Kuzior et al., 2023). Within this framework, the significance of media as a potent means of communication cannot be underestimated. The media can mould these discussions, sway public opinion, and potentially resolve competing interests. Hence, comprehending the significance of media in Medan's progression towards E.V. adoption is not only necessary but also indispensable.

This study analyzes Medan's many obstacles to promoting E.V. The analysis will explore the socio-economic elements influencing customer choices, the logistical challenges of establishing a robust electric vehicle infrastructure, and the urgent need to change public perceptions and behaviors. Moreover, its objective is to clarify the capacity of media as a catalyst for transformation. This study intends to add to the expanding research in the sector by providing insights on how the city might utilize media to promote a more sustainable and environmentally conscious transportation future despite the ongoing arguments and disputes surrounding electric vehicle adoption.

This study aims to enhance the academic discussion and offer practical solutions to the challenges faced in Medan's efforts to adopt E.V. and create a more environmentally friendly urban transportation system. It focuses on the role of media in facilitating this transformation and addresses the ongoing debates and conflicts surrounding E.V. adoption in the city. In this investigation into the influence of media on Medan's E.V. future, we will examine how disseminating information, persuasive techniques, and effective communication may significantly transform transportation direction in one of Asia's bustling and energetic megacities.

Research questions:

- What are the socio-economic aspects that affect customer decisions about the adoption of E.V. in Medan?
- What logistical obstacles must be overcome to build a solid electric vehicle infrastructure in Medan?
- What is the impact of media on public views and behaviours regarding E.V.

adoption in Medan?

Research significance:

This study enhances our comprehension of the intricate dynamics associated with adopting E.V. in urban environments, specifically in Medan, Indonesia. This study offers significant information for policymakers, industry stakeholders, and media professionals to develop effective strategies for promoting sustainable transportation solutions by clarifying the role of media in influencing public views and actions toward E.V.

Research framework:

This study's research framework includes examining the socio-economic factors that impact consumer choices, the logistical obstacles in infrastructure development, and the influence of media on public perceptions and behaviors regarding adopting E.V. in Medan. The study seeks to thoroughly comprehend the intricacies associated with boosting E.V. adoption and offer practical suggestions for cultivating a more sustainable and environmentally aware transportation system in Medan by analyzing these interwoven components.

1.1. Introduction to E.V. adoption and Media's role

The global transportation sector stands at a pivotal crossroads, with E.V. emerging as a crucial component in the transition towards sustainable mobility. Adopting E.V.s is not just a technological advancement; it represents a fundamental shift in how societies approach energy consumption, urban planning, and environmental stewardship (Coffman et al., 2016; Jaiswal et al., 2021). The growing concerns over climate change, urban air pollution, and the finite nature of fossil fuel resources underscore the urgency of this transition. In this context, E.V. adoption becomes more than an option; it is necessary.

Medan, the bustling capital city of Indonesia, epitomizes the challenges and opportunities inherent in this shift. As a megacity with over 10 million residents, Medan faces acute air pollution, traffic congestion, and energy dependence issues. These challenges make it a critical case study for understanding and facilitating E.V. adoption in urban environments, particularly in developing countries (Kumar et al., 2020). The city's journey towards embracing electric mobility is not just a local concern but a reflection of a global imperative.

The role of media in this transformative journey cannot be overstated. In the information age, media is the primary conduit through which public opinion is shaped and influences policy directions (Jaiswal et al., 2021). Media can illuminate the benefits of E.V. adoption, address misconceptions, and create a narrative supporting a swift transition to electric mobility (Lampinen, 2018).

In Medan, where traditional and social media have significant reach and impact, the narrative presented by media outlets can play a decisive role in influencing both public opinion and policy decisions (Molaei, 2014). The media's ability to disseminate information, educate the public, and shape perceptions is pivotal (Araújo et al., 2019). Whether through news articles, documentaries, social media campaigns, or influencer endorsements, the messages conveyed about E.V.s can accelerate their acceptance and adoption.

However, the relationship between media, public opinion, and policy is complex and multi-faceted. Media narratives can reflect but also shape societal values and priorities. They can bring attention to E.V.s' environmental and health benefits, the economic rationale for their adoption, and the policy measures needed to support their integration into urban transport systems. Conversely, media can also perpetuate misconceptions or biases that hinder E.V. adoption.

1.2. Global and local trends in E.V. adoption

The evolution of E.V. globally represents a significant shift in transportation trends, driven by technological advancements and growing environmental consciousness. This transition is evident in the E.V. market's rapid growth, increased sales, expanded range of models, and significant investments in research and development (Egnér and Trosvik, 2018; Kumar et al., 2022). Governments worldwide are pivotal in this shift, implementing policies and incentives to promote E.V. adoption as part of broader environmental and energy strategies. The consumer market has responded positively, with rising demand for E.V. driven by an awareness of their environmental benefits and the economic advantages they offer over traditional internal combustion vehicles (Araújo et al., 2019). Recognizing this trend, the automotive industry is increasingly committed to electrifying vehicle fleets, signaling a transformative change in the sector's future direction.

Aligned with that, the research by Broadbent et al. (2021) explores how media coverage influences consumer attitudes and awareness of government initiatives aimed at promoting the transition to electric vehicles. By examining media usage among car buyers and evaluating perceptions regarding electric vehicles, their study highlights the importance of communication channels, particularly print media, in disseminating relevant information and fostering positive attitudes toward electric vehicle adoption.

In Indonesia, particularly in Medan, the adoption of E.V.s is influenced by unique environmental, infrastructural, and economic challenges (Qazi et al., 2021). As one of the world's most populous urban areas, Medan faces significant environmental issues like air pollution and traffic congestion, for which E.V.s present a potential solution (Huda et al., 2020). The Indonesian government has shown initiative in promoting E.V.s through various policies, aiming to improve urban living conditions and establish the country as a leader in the E.V. market in the region (Murtiningrum et al., 2022). However, the path to widespread E.V. adoption in Medan is hampered by infrastructural challenges, notably the insufficient availability of charging stations and economic barriers, including E.V.s' relatively high initial costs (Purwanto and Irawan, 2023). Moreover, there is a crucial need for a shift in consumer perception and behavior in Medan, where many have yet to fully understand the benefits of E.V.s or remain hesitant about new technology.

Despite these challenges, Medan is witnessing gradual progress in E.V. adoption, with several pilot projects and initiatives demonstrating the feasibility and benefits of E.V.s in urban transportation. These efforts and global trends indicate a promising future for E.V.s in Medan, provided the existing barriers are effectively addressed. Media and public information campaigns are vital in this context, as they can educate,

inform, and shift public opinion towards a more favourable view of E.V.s. The success of Medan in embracing electric mobility will depend significantly on how these challenges are navigated, leveraging global trends and local initiatives to create a sustainable urban transportation environment.

1.3. Barriers to E.V. adoption

Barriers to adopting E.V. in urban environments, particularly in cities like Medan, are multifaceted and complex. These challenges span technological, economic, infrastructural, and socio-cultural domains, each playing a critical role in shaping the E.V. landscape (Sunitiyoso et al., 2023).

- Technological Challenges: One of the primary technological barriers to E.V. adoption concerns battery life and performance. Range anxiety, or the fear that an E.V. will not have sufficient battery to reach a destination, is a significant concern for potential users. Moreover, in a tropical city like Medan, the impact of high temperatures on battery efficiency and lifespan poses additional challenges. While rapid, the pace of technological advancements in battery technology has yet to fully address these concerns in a way that convinces the average consumer.
- Economic Barriers: The economic challenges of E.V. adoption is particularly pronounced in developing urban centres like Medan. The initial cost of purchasing an E.V. remains relatively high compared to traditional gasoline vehicles, making them less accessible to the average consumer. Additionally, the perceived uncertainty about the long-term savings associated with E.V.s, including maintenance and electricity costs versus fuel, contributes to consumer hesitation. The limited availability of affordable and diverse E.V. models suitable for different income levels and lifestyles compounds these economic factors.
- Infrastructural Limitations: A critical barrier in Medan is the lack of adequate E.V. charging infrastructure. The scarcity of public charging stations and the logistical challenges of installing private chargers in densely populated areas hinder the practicality of owning an E.V. This infrastructure gap is a significant deterrent for potential E.V. owners who worry about the convenience and feasibility of recharging their vehicles, especially in a city known for its traffic congestion and limited parking spaces.
- Socio-Cultural Challenges: Socio-cultural factors also play a significant role in E.V. adoption. In Medan, as in many other cities, there is a lack of awareness and understanding about E.V.s. Misconceptions about the capabilities and limitations of E.V.s are widespread, often fueled by a lack of targeted information and education campaigns. Additionally, the cultural attachment to traditional gasoline vehicles and the prestige of certain car brands can slow the transition to newer, less familiar E.V. technologies.

Addressing these barriers requires a multi-pronged approach that includes continued technological innovations, economic incentives and subsidies, significant investments in charging infrastructure, and comprehensive information and education campaigns to shift public perception (Rahmawati et al., 2022). The successful adoption of E.V.s in urban environments like Medan hinges on tackling these

challenges in a coordinated and strategic manner, paving the way for a more sustainable and efficient urban transport system.

1.4. Media influence on public perception and policy

The media's influence on public perception and policy regarding environmental issues and technology adoption, such as E.V., is critical, especially in urban settings like Medan, where media engagement is extensive (Boudet, 2019). Previous research underscores that various forms of media, including news outlets, social media, and advertising, play a significant role in shaping public awareness and attitudes toward environmental concerns (Howe et al., 2019; Maestre-Andrés et al., 2019). In E.V. adoption, how media portrays these vehicles can either facilitate or impede public acceptance. Positive media coverage highlighting E.V.s' environmental benefits and technological advancements has increased consumer interest and acceptance. On the contrary, coverage that focuses on the limitations or challenges of E.V.s, such as range anxiety and insufficient charging infrastructure, can reinforce consumer hesitations (Qazi et al., 2019). The impact of social media and online influencers is increasingly noteworthy, offering platforms for disseminating information, sharing user experiences, and fostering communities supportive of E.V. adoption.

In addition to that, the study by Ruan and Lv (2023) could provide valuable insights into how influential figures on platforms like Twitter shape discussions surrounding EVs, which could enhance your analysis of media influence. Their research delves into understanding public perceptions of Evs by analyzing discussions on online social networks (OSNs) such as Reddit and Twitter. By examining EV-related conversations on these platforms, they reveal distinct patterns in topic and sentiment over the past decade. Furthermore, they identify politicians and news media as the most influential users on Twitter, highlighting differences in conversation patterns between these accounts and the general public. This study offers a nuanced understanding of how social media influencers contribute to shaping public perception of Evs, complementing traditional methods of studying consumer attitudes. The study conducted by Ruan and Lv (2022) delved into understanding public perception of electric vehicles (Evs) through the lens of Reddit, a popular online social network. This study tracked shifts in public sentiment towards Evs over time, shedding light on evolving attitudes and perceptions. Furthermore, differences in perceptions across different Reddit communities underscored the presence of distinct subcultures with varying attitudes towards Evs, emphasizing the need for targeted messaging tailored to specific online audiences.

Moreover, the media's role extends beyond influencing individual behavior to impacting environmental policy. Media coverage can generate public pressure, leading to policy changes, a phenomenon observed in various global contexts (Barberá et al., 2019). For instance, in the European Union, extensive media coverage on air pollution issues has been instrumental in enforcing stricter vehicle emission standards and fostering a supportive environment for E.V. Cities like Oslo and Amsterdam exemplify how media campaigns emphasizing E.V. benefits have underpinned policy initiatives, including subsidies and infrastructure development (Kanger et al., 2019). In Medan's context, the media could similarly highlight the city's air pollution and

traffic congestion challenges to advocate for EV-supportive policies. This could encompass emphasizing improved charging infrastructure, financial incentives for E.V. purchasers, and regulations favouring electric over traditional fossil-fuel-based vehicles.

This relationship between media, public perception, and policy underscores the importance of accurate, informative, and positively framed media coverage in the transition toward electric mobility. Examining successful media strategies in other regions offers valuable insights and adaptable approaches for Medan, demonstrating the media's potential to overcome barriers to E.V. adoption and facilitate a transition to sustainable urban transportation.

2. Method

2.1. Research design

This study adopts a qualitative research approach to explore the interplay between media influence and E.V. adoption in Medan. The rationale for choosing a qualitative methodology is its ability to provide in-depth insights into people's perceptions, attitudes, and behaviors. Unlike quantitative research, which seeks to quantify data and generalize results across populations, qualitative research delves into understanding the nuances and complexities of human experiences and social phenomena. This approach is particularly suited to our study, as it allows for a comprehensive exploration of individuals' subjective experiences and opinions regarding E.V. adoption and a detailed analysis of media content and its impact on public perception and policy.

2.2. Sampling strategy

A purposive sampling technique will select participants with relevant experiences and insights into the topic of interest. This may include E.V. owners, potential E.V. adopters, members of the general public, policymakers, and media professionals within the Medan region.

2.3. Data collection methods

Data for this study will be collected through a combination of surveys, semi-structured interviews, and content analysis of media publications:

1) Surveys: Structured surveys will be conducted with residents of Medan to gauge their perceptions, knowledge, and attitudes towards E.V.s. These surveys will help understand public awareness levels, misconceptions, and the media's potential influence on their opinions about E.V. adoption (see Appendix A).
2) Semi-Structured interviews: In-depth interviews will be conducted with key stakeholders, including policymakers, industry experts, and media professionals. These interviews aim to gather expert insights into the role of media in shaping E.V. policies and public opinion in Medan (see Appendix B).

Objective: To gather insights on the role of media in shaping E.V. policies and public opinion.

2.4. Data analysis

The data collected will be analyzed using a combination of qualitative analysis techniques. Thematic Analysis is used for survey responses and interview transcripts; thematic analysis will identify, analyze, and report patterns (themes) within the data. This method is beneficial for examining the perspectives of different groups, highlighting similarities and differences, and generating unanticipated insights.

3. Results

3.1. Demographic characteristics of respondents

This study engaged 35 participants (see **Table 1**), ensuring diverse perspectives on electric vehicle (E.V.) adoption in Medan. The gender distribution was evenly balanced, with 18 males and 17 females participating, providing a comprehensive view across gender lines. The participants varied in age, with a notable representation from the younger demographic (20–29 years), reflecting a keen interest in E.V.s among the younger population. The study also included substantial input from those in the 30–39 and 40–49 age brackets, offering insights from individuals who may have different transportation needs and environmental concerns during their careers. While fewer in number, participants aged 50–59 and 55–64 contributed valuable perspectives, potentially reflecting long-term considerations regarding sustainability and economic impacts.

Table 1. Participant demographics.

Participant ID	Gender	Age group	E.V. ownership status	Occupation
ST0	Male	20–29	Non-owner	Student
PM1	Female	30–39	E.V. Owner	Policymaker
IE2	Female	40–49	Considering E.V.	Industry Expert
ST3	Male	30–39	Non-owner	Student
ST4	Female	20–29	Non-owner	Student
BO5	Male	50–59	E.V. Owner	Business Owner
MP6	Female	35–44	Non-owner	Media Professional
EN7	Male	45–54	Considering EV	Engineer
RE8	Female	55–64	Non-owner	Retired
AR9	Male	25–34	E.V. Owner	Architect
HM10	Female	60–69	Non-owner	Homemaker
ST11	Male	18–24	Considering E.V.	Student
CO12	Female	40–49	E.V. Owner	Consultant
IT13	Male	35–44	Non-owner	IT Specialist
NU14	Female	30–39	Considering EV	Nurse
TE15	Male	50–59	Non-owner	Teacher
GD16	Female	25–34	Non-owner	Graphic Designer
AC17	Male	40–49	Considering E.V.	Accountant
DR18	Female	45–54	E.V. Owner	Doctor
EN19	Male	55–64	Non-owner	Entrepreneur

Table 1. (*Continued*).

Participant ID	Gender	Age group	E.V. ownership status	Occupation
LW20	Female	35–44	Considering E.V.	Lawyer
CH21	Male	30–39	Non-owner	Chef
AR22	Female	50–59	E.V. Owner	Artist
MU23	Male	20–29	Considering E.V.	Musician
ST24	Female	18–24	Non-owner	Student
EN25	Male	40–49	E.V. Owner	Engineer
SW26	Female	55–64	Considering E.V.	Social Worker
FT27	Male	25–34	Non-owner	Fitness Trainer
PH28	Female	30–39	E.V. Owner	Pharmacist
JO29	Male	45–54	Considering E.V.	Journalist
ED30	Female	40–49	Non-owner	Educator
GA31	Male	20–29	Considering E.V.	Graphic Artist
CS32	Female	30–39	E.V. Owner	Civil Servant
CO33	Male	55–64	Non-owner	Consultant
MS34	Female	25–34	Considering E.V.	Marketing Specialist

The diversity of respondents' occupations enriches this research. This is underpinned by Priyam's findings (2023) highlighting the importance of considering demographic factors in understanding public perceptions of electric vehicles (EVs). This group consists of students, policymakers, industry experts, business owners, media professionals, and others from various professions. This mix ensures that the research captures various perspectives, ranging from those directly involved in policy and industry to individuals who may be end-users of EVs. The diverse professional backgrounds provide a comprehensive understanding of the challenges and perceptions surrounding EV adoption in Medan, which is crucial for examining the role of media in this context.

3.2. Survey result

From **Table 2** presenting survey results on E.V. perceptions in Medan, it is evident that the residents have a considerable level of awareness and a generally positive attitude towards E.V. This section interprets these findings in an academic context.

- Awareness and knowledge of E.V.s: The data reveals that 90% of respondents are aware of E.V.s, demonstrating a high level of general awareness within the population. This is further complemented by an average self-rated knowledge score of 3.5 out of 5, indicating the respondents' moderate to high understanding of E.V. technology. This level of awareness and knowledge is crucial for adopting new technologies and suggests a fertile ground for further educational initiatives.
- General perceptions of E.V.s: Most respondents hold a positive view of E.V.s, but concerns are also noted, particularly regarding the cost. This mixed perception highlights the need to address economic barriers and enhance the value proposition of E.V.s to potential consumers.

- Influences on opinions about E.V.s: The survey results underscore the significant role of media in shaping public opinion, with 60% of respondents citing it as their primary source of information about E.V.s. This finding points to the influential power of media narratives in forming public perceptions and the necessity for accurate and comprehensive media coverage of EV-related topics.
- Barriers and motivations for E.V. adoption: The primary concerns impeding E.V. adoption relate to charging infrastructure and cost, pointing to the critical need for improvements in these areas. Conversely, the primary motivator for considering an E.V. purchase is its environmental benefits, suggesting that environmental consciousness is a significant driver for E.V. adoption in Medan.
- Media's impact on E.V. perception: The predominantly positive sentiment in media coverage about E.V.s, as perceived by 60% of the participants, along with the fact that 70% acknowledge the media's influence on their opinion, underscores the media's pivotal role in shaping public perception and attitudes towards E.V. adoption.

Table 2. Survey result.

Question	Yes/Positive/High	No/Negative/Low	Neutral
Awareness of E.V.s	90%	10%	-
Knowledge Rating (1–5)	Average: 3.5	None below 2	-
General Perception of E.V.s	Mostly positive	Some concerns about the cost	-
Influence Sources	Media (60%), Friends (30%)	Online forums (10%)	-
Frequency of E.V. Information in Media	Frequently (70%)	Rarely (10%)	Occasionally (20%)
Concerns About Switching to E.V.	Charging infrastructure (40%)	Cost (30%)	Range anxiety (30%)
Motivation Factors for Purchasing E.V.	Environmental benefits (50%)	Cost savings (40%)	Technology interest (10%)
Media Coverage Sentiment	Positive (60%)	Negative (10%)	Neutral (30%)
Media Influence on Opinion	Yes (70%)	No (15%)	Uncertain (15%)

The table summarizes that the survey results offer valuable insights into public opinion on E.V.s in Medan. They highlight the areas of strength, such as high awareness and positive perceptions, and the challenges that need to be addressed, such as economic barriers and the need for improved charging infrastructure. Furthermore, the significant impact of media on public opinion emphasizes its potential as a strategic tool in promoting E.V. adoption. These insights are critical for policymakers, industry stakeholders, and media professionals aiming to foster a more conducive environment for E.V. adoption in Medan.

3.3. Semi-Structured interviews

The perspectives and recommendations shared by our diverse group of respondents provide valuable insights into the current state of electric vehicle (E.V.) adoption in Medan and the influential role of the media in shaping policies and public opinion. Their views highlight both the progress and challenges in promoting sustainable transportation solutions.

Current state of E.V. adoption in Medan:

In exploring the current state of electric vehicle (E.V.) adoption in Medan, a

diverse group of respondents provides valuable insights into the city's evolving landscape of sustainable transportation. Their perspectives shed light on the challenges and opportunities surrounding E.V. adoption, offering a multifaceted view of the situation.

Respondents from various backgrounds offer their perspectives on the current state of E.V. adoption in Medan, providing a nuanced understanding of the city's transition towards sustainable mobility. A total of five respondents contribute to this section:

University Student (ST0) acknowledges the relatively low adoption but notes the presence of electric scooters as a positive sign.

Policymakers (PM1) recognize progress and growing interest but underscore the need for more robust policies and infrastructure.

Industry Expert (IE2) views the consideration of E.V.s positively but emphasizes the importance of addressing infrastructure challenges.

As an E.V. owner, business Owner (BO5) observes the growth of a small community of enthusiasts but highlights the need for more charging stations.

Media Professional (MP6) notes the increasing presence of EV-related content in the media, indicating a growing interest in E.V.s.

Role of Media in influencing E.V. policies and public opinion:

In understanding the dynamic relationship between media and electric vehicle (E.V.) policies as well as public opinion, five respondents offer valuable insights into the influential role played by media; Each respondent brings a unique perspective on how media shapes public perception and policy discussions regarding E.V.s. From boosting confidence through positive coverage to serving as an educator and a catalyst for policy changes, their viewpoints highlight the multifaceted impact of media in driving the adoption of sustainable transportation solutions.

I.T. Specialist (IT13) acknowledges the media's influential role in shaping public opinion, with positive coverage boosting confidence in E.V.s.

Nurse (NU14) sees media as an educator about E.V. benefits but stresses the importance of addressing concerns and misconceptions.

Teacher (TE15) views media as a bridge between policymakers and the public, capable of driving policy changes.

Doctor (DR18) emphasizes the media's capacity to sway public opinion and motivate governments to prioritize sustainable transportation.

Entrepreneur (EN19) recommends that media highlight success stories and benefits to garner public interest and government support.

Impact of Media on policy decisions regarding E.V.s:

Five respondents offer concrete examples of how media has influenced policy decisions regarding electric vehicles (E.V.s), illustrating the significant role played by media in shaping governmental approaches to sustainable transportation:

Lawyer (LW20) cites media reports on air quality and pollution, leading to increased government attention and policies promoting E.V. adoption.

Chef (CH21) mentions media campaigns showcasing environmental benefits, influencing policymakers to prioritize green transportation.

Artist (AR22) notes that media exposure of successful E.V. initiatives in other cities has encouraged the local government to follow suit.

Fitness trainer (FT27) points out that reports on the health benefits of reducing emissions through E.V.s have pushed for policies supporting cleaner transport.

Pharmacist (PH28) highlights the media's role in prompting discussions about incentives through reports on similar measures in other regions.

Media strategies to improve E.V. adoption in Medan:

In the pursuit of fostering a sustainable transportation ecosystem, the role of media strategies in promoting electric vehicle (E.V.) adoption in Medan is paramount. five arrays of stakeholders, comprising experts and professionals from various fields, offer insightful recommendations aimed at leveraging media influence to drive the transition towards cleaner mobility solutions:

Journalist (JO29) suggests media collaboration with experts to create informative content that delivers accurate information to the public.

Educator (ED30) recommends using engaging visuals, such as infographics and videos, to simplify complex E.V. concepts and appeal to a broader audience.

Graphic artist (GA31) emphasizes the importance of balanced reporting that presents both the benefits and challenges of E.V. adoption to provide a comprehensive perspective.

Civil servant (CS32) advocates for the active involvement of E.V. users in content creation to share their experiences and build trust.

Consultant (CO33) proposes the utilization of social media platforms for interactive Q&A sessions and forums to address public concerns and questions.

In conclusion, these responses reflect a diverse range of perspectives and recommendations, highlighting the complex landscape of E.V. adoption in Medan and the influential role of the media in shaping this transition. The insights provided by our respondents contribute to a better understanding of the challenges and opportunities in promoting sustainable transportation solutions in the city.

Media professionals' role in shaping E.V. adoption:

In the provided text, there is mention of five media professionals contributing their insights to shaping public perception and policy discussions regarding electric vehicle (E.V.) adoption in Medan. These professionals offer diverse approaches to covering E.V. topics, highlighting the challenges they encounter, audience engagement trends, and strategies to promote E.V. adoption in the region.

- Question a: How do you approach the topic of E.V.s in your reporting or content creation?

Media professionals adopt various strategies when addressing EV-related topics:

Balanced reporting (MP6): Many emphasize presenting a balanced view of E.V.s, showcasing their potential benefits and existing challenges. They strive to provide objective perspectives that educate and inform the public effectively.

Educational content (TE15): Some media professionals educate their audience about E.V. benefits, technology, and environmental impact. They aim to provide comprehensive information that helps the public make informed decisions.

Highlighting success stories (PH28): Several professionals believe in highlighting success stories and real-world examples of E.V. adoption. They see these stories as inspiring and relatable, encouraging more people to consider E.V.s.

Addressing concerns and misconceptions (ED30): Media professionals also recognize the importance of addressing concerns and misconceptions about E.V.s in

their reporting. They aim to foster trust by providing accurate information and dispelling myths.

Collaboration with experts (JO29): Collaborating with experts in the field is a strategy some endorse. They believe that working with experts ensures the accuracy and credibility of their EV-related content.

- Question b: What challenges do you face when reporting about E.V.s?

Media professionals encounter several challenges when reporting about E.V.s:

Lack of comprehensive data (CS32): The absence of comprehensive data on E.V.s, such as performance, charging infrastructure, and environmental impact, poses a challenge. Media professionals strive to provide accurate information despite limited data availability.

Simplifying technical jargon (GD16): Simplifying technical aspects of E.V.s for general audiences can be challenging. Media professionals aim to convey complex concepts in an understandable way to the public.

Countering misinformation (CO33): Countering misinformation and scepticism about E.V.s is another challenge. Some media professionals work to dispel myths and provide accurate information to combat misconceptions.

Balancing coverage (AR22): Balancing coverage by presenting the benefits and challenges of E.V. adoption can be difficult. Media professionals aim to maintain objectivity while highlighting essential aspects.

Engaging the audience (FT27): Engaging the audience with EV-related content is essential. Media professionals strive to create content that resonates with their viewers and readers, keeping them interested and informed.

- Question c: What audience engagement do you observe on EV-related content?

Media professionals generally observe moderate to high audience engagement with EV-related content. Some key observations include:

Interest in new E.V. models (BO5): Audience interest spikes when articles or reports discuss new E.V. models hitting the market.

Government incentives (ST24): Coverage of government incentives for E.V. adoption generates significant audience interest.

User experiences (EN19): Firsthand user experiences with E.V.s, including reviews and testimonials, are particularly engaging for the audience.

Environmental impact (SW26): Articles highlighting the environmental benefits of E.V.s and their contribution to reducing emissions attract a substantial audience.

Interactive content (GA31): Engaging visuals, interactive content, and multimedia formats tend to captivate the audience and encourage participation.

- Question d: How do you think media can contribute to increasing the adoption of E.V.s in Medan?

Media professionals believe they can play a vital role in promoting E.V. adoption by implementing various strategies:

Collaboration with experts (JO29): Collaborating with experts and industry professionals to create informative and accurate content can help inform the public and build credibility.

Engaging visuals (ED30): Using engaging visuals such as infographics, videos, and images can simplify complex E.V. concepts and make content more appealing.

Balanced reporting (CO33): Maintaining balanced reporting that presents both

the advantages and challenges of E.V. adoption ensures that a comprehensive perspective is provided to the audience.

Involving E.V. users (CS32): Actively involving E.V. users in content creation, allowing them to share their experiences and insights, can build trust and credibility among the audience.

Utilizing social media (MS34): Leveraging social media platforms for interactive Q&A sessions, forums, and discussions can address public concerns and questions, fostering a sense of community and support.

These insights from media professionals provide a comprehensive understanding of their role in shaping the narrative around E.V. adoption in Medan and the strategies they employ to engage the audience and promote informed decision-making. To review the summary of interview findings presented in **Table 3**, readers can explore the insights gathered from interviews conducted with diverse respondents. The interpretation of this table illustrates various perspectives and recommendations provided by the respondents, highlighting the challenges and opportunities in adopting electric vehicles (E.V.) in Medan, as well as the significant role of the media in shaping public opinion and related policies.

Table 3. Summary of interview findings on media influence in E.V. adoption.

Section	Summary	Result
Current State of E.V. Adoption in Medan	Insights from five respondents representing various backgrounds provide perspectives on E.V. adoption in Medan.	Acknowledged relatively low adoption with positive signs such as electric scooters.
Role of Media in Influencing E.V. Policies and Public Opinion	Media's impactful role in shaping public opinion and policy discussions is outlined by five respondents.	Acknowledged media's influential role, from boosting confidence to serving as an educator.
Impact of Media on Policy Decisions Regarding E.V.s	Five respondents illustrate how media has influenced policy decisions, citing examples of its impact.	Cited examples such as increased government attention due to media reports on air quality.
Media Strategies to Improve E.V. Adoption in Medan	Recommendations from five stakeholders highlight strategies for media to enhance E.V. adoption.	Suggestions included collaboration with experts and utilizing social media platforms.
Media Professionals' Role in Shaping E.V. Adoption	Five media professionals share insights, challenges, audience engagement trends, and strategies for promoting E.V. adoption.	Strategies ranged from balanced reporting to using engaging visuals and social media.

4. Discussion

This study thoroughly examines the complex dynamics related to the current stage of electric vehicle (E.V.) adoption in Medan, Indonesia. It highlights the crucial role of media in moulding public opinion and influencing legislative agendas. Our investigation of this field uncovers a complex terrain marked by encouraging progress and daunting obstacles, requiring a comprehensive understanding of the complicated interaction of multiple components.

The study results reveal a notable awareness among Medan locals regarding E.V., as an impressive 90% of respondents confirmed their acquaintance with this emerging technology. Supporting this data, the mean self-assessed knowledge rating of 3.5 out of 5 highlights a significant level of comprehension among the general population, which is crucial for potential acceptance (Priyadarshini et al., 2018; Talukder et al., 2020; Toufaily et al., 2021). Nevertheless, as existing evidence shows, simply being aware does not always result in widespread acceptance or implementation. Therefore,

tackling existing financial concerns, clarifying common misunderstandings, and offering concrete information to individuals interested in electric vehicles is crucial.

Moreover, although the prevailing attitude towards E.V. among Medan inhabitants is primarily positive, there are still residual reservations about their cost resilience. The perspectives presented highlight the importance of adequately addressing economic obstacles and emphasizing the numerous environmental and long-term economic advantages of owning electric vehicles (Asadi et al., 2021; Jaiswal et al., 2021). Importantly, our survey highlights the substantial impact exerted by media, as 60% of participants recognize it as their primary source of information on EV-related topics. The influence of media narratives on shaping public opinion and policy decisions highlights the importance of accurate and comprehensive reporting on topics related to electric vehicles (Featherman et al., 2021; Higueras-Castillo et al., 2019).

Alongside our survey analysis, the significant insights obtained from the viewpoints of our participants, especially media professionals, emphasize their crucial role in shaping the narrative around the adoption of electric vehicles. Proposed recommendations, such as advocating for unbiased reporting, fostering partnerships with experts in the field, and implementing creative methods of engagement, align with existing research that highlights the effectiveness of media strategies in promoting the adoption of electric vehicles (Brückmann and Bernauer, 2020; Debnath et al., 2021). These observations emphasize the crucial role that media professionals have in spreading information and influencing public opinions about E.V.

Furthermore, the paper highlights the obstacles and motivations relevant to adopting electric vehicles in Medan, mainly focusing on the availability of charging infrastructure and financial factors. In order to overcome these obstacles, it is necessary to focus on improving the charging infrastructure, implementing incentive systems, and promoting the environmental benefits of owning electric vehicles (Jaiswal et al., 2021; Kumar and Alok, 2020).

The results of our study emphasize the crucial role of media in influencing public opinion and policy discussions on the deployment of electric vehicles in Medan. The key to promoting sustainable mobility in the city is to remove economic obstacles and take advantage of the current positive attitude towards E.V. Expanding on these critical findings; future research should focus on developing detailed approaches to address cost concerns, strengthening the charging infrastructure and maximizing the benefits of E.V. in Medan. Furthermore, assessing media campaigns and policy initiatives' effectiveness in promoting sustainable transportation options will be crucial in guiding future actions. In order to achieve Medan's goal of a more environmentally sustainable transportation system, media stakeholders, legislators, industry leaders, and the general public must work together and create creative synergies.

5. Conclusion

This study thoroughly examined the factors influencing the adoption of E.V. in Medan, Indonesia. It also highlighted the significant impact of media in shaping public opinion and policy-making. Our thorough examination has revealed a strong level of

knowledge and generally favourable attitude towards E.V. among the population of Medan. This provides a promising foundation for the prospective acceptance and use of E.V.s. Nevertheless, significant obstacles, including financial hurdles and the urgent requirement for a robust charging network, demand prompt action to effectively promote mass electric vehicle adoption.

Implication:

The rise of media as a crucial influencer, with 60% of participants recognizing it as their primary source of knowledge about electric vehicles, highlights its significant role in shaping public opinion. Media practitioners are responsible for spreading precise information, debunking misconceptions, and advocating for the numerous advantages of electric vehicles. Effective collaboration between media entities, subject matter experts, and stakeholders is crucial to guarantee a comprehensive and unbiased narrative about electric vehicles.

Moreover, our research highlights the crucial significance of promoting successful instances of electric vehicle adoption, emphasizing the urgency of environmental concerns, and actively involving E.V. fans in media discussions. These proactive strategies, which align with well-established research paradigms, provide concrete avenues for expediting the adoption of electric vehicles in the Medan area. In order to achieve Medan's goals of sustainability and establish itself as a growing centre for electric mobility, it is necessary to make a focused and coordinated effort to overcome challenges, implement supportive legislation, and effectively explain the numerous economic and environmental benefits of owning electric vehicles.

Limitation:

Recognizing the underlying constraints of this study is crucial. Firstly, the sample size might not accurately reflect the total population of Medan, which could restrict the capacity to apply the findings to the broader community. Additionally, the dependence on self-reported data may induce response bias, which might impact the accuracy of participant responses. In addition, like any research that relies on surveys, there is a potential for social desirability bias. This occurs when participants submit replies, they believe are socially acceptable rather than accurately reflecting their opinions or actions.

Suggestions for future research:

Future study efforts could address these constraints and enhance our comprehension of electric vehicle (E.V.) uptake in Medan. Longitudinal studies can offer valuable insights into the changing patterns and influences on the uptake of E.V. as time progresses. Moreover, employing qualitative research approaches such as conducting in-depth interviews or organizing focus groups could provide a more comprehensive investigation into individuals' motives, obstacles, and perspectives about adopting electric vehicles. Moreover, conducting comparison studies across various cities or areas within Indonesia could provide a clearer understanding of the differences in electric vehicle (E.V.) adoption patterns and the effectiveness of media methods in promoting adoption. Interdisciplinary research collaborations that combine perspectives from psychology, economics, and urban planning can provide comprehensive insights into the various factors that influence the adoption of E.V. This can help develop specific interventions to speed up the transition towards sustainable transportation systems.

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Appendix A

Surveys

General awareness and perception of E.V.s:

a) Are you aware of E.V.?
b) On a scale of 1–5, how would you rate your knowledge about E.V.s?
c) What are your general perceptions of E.V.s?

Influences on opinion:

a) What sources of information have most influenced your opinion about E.V.s? (e.g., media, friends, online forums)
b) How often do you encounter information about E.V.s in the media?

Barriers and motivations:

a) What, if any, are your concerns about switching to an E.V.?
b) What factors would motivate you to consider purchasing an E.V.?

Media influence:

a) Do you believe media coverage on E.V.s in Medan is generally positive, negative, or neutral?
b) Has media coverage influenced your opinion about E.V.s? How?

Appendix B

Semi-Structured interviews

For policymakers and industry experts:

a) What is your perspective on the current state of E.V. adoption in Medan?
b) How do you perceive the role of media in influencing E.V. policies and public opinion?
c) Can you provide examples of how media has impacted policy decisions regarding E.V.s?
d) What media strategies would you recommend to improve the adoption of E.V.s in Medan?

For media professionals:

a) How do you approach the topic of E.V.s in your reporting or content creation?
b) What challenges do you face in reporting about E.V.s?
c) What kind of audience engagement do you observe on EV-related content?
d) How do you think media can contribute to increasing the adoption of E.V.s in Medan?