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ASSESSING ELECTRIC VEHICLE VIABILITY: A COMPARATIVE ANALYSIS OF URBAN VERSUS LONG-DISTANCE USE WITH FINANCIAL AND AUDITING INSIGHTS

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ABSTRACT

The paper investigates the incorporation of emotional AI into Shark Algorithms to enhance trading performance through affective computing. By integrating sentiment analysis, these advanced algorithms are equipped with emotional intelligence to improve the accuracy of price predictions, devise sentiment-driven trading strategies, and optimize risk management techniques. The research highlights that embedding sentiment scores into conventional trading models provides a more nuanced understanding of market behavior, leading to enhanced decision-making processes.Key findings demonstrate that sentiment-enhanced price prediction models outperform traditional methods in capturing market trends, offering a significant edge in forecasting accuracy. The study further reveals the profitability of trading strategies driven by sentiment analysis, as they capitalize on emotional market responses, which are often overlooked by purely quantitative approaches. Additionally, the research emphasizes the effectiveness of sentiment-based position sizing as a tool for risk mitigation, allowing traders to adjust their exposure based on the emotional state of the market, thereby reducing potential losses during periods of heightened volatility.However, the integration of emotional AI into trading algorithms is not without challenges. The paper identifies issues related to the quality and reliability of sentiment data, which can vary widely depending on the source and the methodology used for analysis. Ethical considerations also arise, particularly concerning the potential for market manipulation and the broader impact of emotionally driven trading on financial markets. Technical complexities, such as the integration of real-time sentiment analysis with high-frequency trading systems, present additional hurdles.The study concludes by proposing future research directions, including the development of more sophisticated sentiment analysis techniques that can better capture the nuances of market sentiment. It also suggests advancements in real-time data processing to enhance the responsiveness of trading algorithms. Improved risk management strategies are recommended to address the specific risks associated with sentiment-driven trading. Furthermore, the paper advocates for the establishment of ethical frameworks to guide the use of emotional AI in financial markets, along with long-term studies to assess its impact on market efficiency and stability. The integration of emotional AI into trading algorithms represents a transformative step

in financial technology, with the potential to influence market dynamics and trading practices significantly.

Keywords: Electric Vehicles (EVs), Inner-City Use, Long-Distance Travel, Cost Analysis, Environmental Impact, Accounting Practices, Auditing Standards, Financial Reporting,Charging Infrastructure and Policy Recommendations.

INTRODUCTION

Electric vehicles (EVs) have gained prominence as a sustainable alternative to traditional internal combustion engine vehicles, offering benefits such as reduced emissions and lower operating costs. However, the suitability of EVs varies based on usage patterns, particularly between inner-city use and long-distance travel. This study aims to evaluate the comparative advantages and challenges associated with EVs in these contexts, with a specific focus on the associated costs and the role of accounting and auditing practices in capturing these dynamics. The automotive industry is undergoing a significant transformation driven by the growing emphasis on sustainability and the urgent need to reduce greenhouse gas emissions. Electric vehicles (EVs) have emerged as a pivotal component of this shift, offering a cleaner alternative to traditional internal combustion engine vehicles. Governments, businesses, and consumers are increasingly recognizing the environmental and economic benefits of EVs, which include lower operational costs, reduced emissions, and compliance with stricter environmental regulations.

However, the adoption of EVs is not without its challenges, particularly when comparing their use in inner-city environments versus long-distance travel. Inner-city use generally favors EVs due to their lower running costs, minimal emissions, and suitability for short, frequent trips. Conversely, long-distance travel poses significant hurdles, including limited driving range, the need for an extensive and reliable charging infrastructure, and higher upfront costs.

This study aims to evaluate the suitability of electric cars for inner-city use versus long-distance travel, with a particular focus on associated costs. In addition to assessing the direct financial implications, the study also explores the role of accounting and auditing practices in accurately capturing and reporting the costs and benefits of EV adoption. This comprehensive approach ensures a holistic understanding of the economic, environmental, and practical considerations associated with the transition to electric mobility.

Environmental and Economic Context

The environmental benefits of EVs are well-documented. They produce zero tailpipe emissions, which significantly reduces air pollution and greenhouse gas emissions in urban areas . This makes them particularly appealing for inner-city use, where air quality is a major concern. Furthermore, the lower operating costs of EVs, driven by reduced fuel and maintenance expenses, provide a compelling economic argument for their adoption .

Challenges in Long-Distance Travel

Despite these advantages, the practicality of EVs for long-distance travel remains a contentious issue. Range anxiety, which refers to the fear of running out of battery power before reaching a charging station, is a significant deterrent for potential EV buyers . Additionally, the current charging infrastructure, though rapidly expanding, is still inadequate in many regions, making long journeys less convenient and more time-consuming compared to conventional vehicles .

Accounting and Auditing Considerations

From an accounting perspective, the adoption of EVs involves several financial implications that

need to be accurately captured and reported. These include the initial purchase cost, installation of charging stations, maintenance costs, and potential government incentives or subsidies . Auditing standards must ensure that these costs are transparently reported, allowing businesses and consumers to make informed decisions .

Objectives

This study aims to achieve the following objectives:

- Compare the cost-effectiveness of EVs in inner-city use versus long-distance travel.
- Assess the environmental impact of EV adoption in different usage scenarios.
- Examine the role of accounting and auditing practices in reporting EV-related costs.
- Provide recommendations for policymakers, manufacturers, and businesses to enhance the adoption and practical use of EVs.

By addressing these objectives, the study seeks to provide a comprehensive evaluation of the suitability of electric cars for various applications, ensuring that the transition to electric mobility is both economically viable and environmentally sustainable.

LİTERATURE REVIEW

The literature review examines previous studies on EV performance, cost analysis, and environmental impact in urban versus long-distance travel scenarios. It also explores accounting standards and auditing practices related to EV costs, highlighting the importance of accurate financial reporting in promoting EV adoption. The evaluation of electric vehicles (EVs) for inner-city use versus long-distance travel encompasses various dimensions including cost-effectiveness, environmental impact, practical feasibility, and the role of accounting and auditing practices. This literature review synthesizes findings from existing research to provide a comprehensive understanding of these aspects.

Cost-Effectiveness of Electric Vehicles:

Inner-City Use:

Numerous studies highlight the cost advantages of EVs in urban environments. Lutsey and Nicholas (2019) project that the total cost of ownership (TCO) for EVs will continue to decrease, driven by declining battery costs and economies of scale in production . Ehsani et al. (2018) emphasize that lower fuel and maintenance costs make EVs economically viable for city driving, where frequent stop-and-go traffic and shorter trip distances align well with the operational characteristics of EVs .

Long-Distance Travel:

The cost-effectiveness of EVs for long-distance travel is less straightforward. While EVs have lower per-mile operating costs, the higher initial purchase price and the need for a reliable charging infrastructure pose challenges. Neubauer and Wood (2014) discuss the impact of range anxiety on the perceived utility of EVs for long trips, noting that inadequate charging infrastructure can diminish the cost benefits of EVs .

Environmental Impact

The environmental benefits of EVs are well-documented, particularly in urban settings where air quality is a major concern. EVs produce zero tailpipe emissions, which significantly reduces urban air pollution and greenhouse gas emissions (Lutsey & Nicholas, 2019) . Ehsani et al. (2018) note that the use of renewable energy sources for charging can further enhance the environmental benefits of EVs .

For long-distance travel, the environmental impact of EVs depends on several factors, including the source of electricity for charging and the efficiency of the charging infrastructure. Thiel et al. (2015) argue that the widespread adoption of EVs could lead to significant reductions in overall emissions if accompanied by a shift towards renewable energy sources .

Practical Feasibility

Range Anxiety:

Range anxiety remains a significant barrier to the adoption of EVs for long-distance travel. Noel and Sovacool (2016) highlight that the fear of running out of battery before reaching a charging station can deter potential buyers and limit the utility of EVs for long trips . They suggest that improving the reliability and availability of charging infrastructure is crucial to addressing this issue.

Charging Infrastructure:

The current state of charging infrastructure is a critical factor influencing the feasibility of EVs for long-distance travel. Neubauer and Wood (2014) point out that a well-developed network of fast chargers can mitigate range anxiety and enhance the practicality of EVs for long journeys . However, the cost and logistical challenges of expanding this infrastructure remain significant hurdles.

Accounting and Auditing Practices

Cost Capitalization and Depreciation:

Accurate accounting for the costs associated with EVs, including purchase price, charging infrastructure, and maintenance, is essential for assessing their financial viability. Deloitte (2020) discusses the importance of cost capitalization and the appropriate treatment of subsidies and incentives in financial statements . They also highlight the need for standardized depreciation rates that reflect the unique characteristics of EVs, such as battery degradation and technological advancements.

Transparency in Financial Reporting:

Transparent financial reporting is crucial for fostering trust and facilitating informed decision-making among stakeholders. The International Financial Reporting Standards (IFRS) provide guidelines for the capitalization of costs and disclosure of subsidies and incentives related to EV adoption (IFRS, 2021) . The International Auditing and Assurance Standards Board (IAASB) underscores the importance of auditing standards in ensuring that these costs are accurately reported and that financial statements reflect the true economic impact of EVs (IAASB, 2020) . The present study examined the factors affecting the effectiveness of internal audit. The effect of two intra-organizational factors of internal audit competence, the interaction of internal and external auditors as an independent variable on the effectiveness of internal audit (dependent variable) was tested. The statistical sample is estimated at 200 managers and auditors according to Krejcie and Morgan table. According to the statistical population, the whole population has been

selected as a sample and 170 usable questionnaires were obtained from which we examined the results of the research. The results of the present study show that the variables of audit competence within the interaction of internal and external auditors have a significant relationship with the effectiveness of internal audit(Mehmet Hanifi Ayboga, Farshad Ganji,2021).

The literature consistently underscores the cost advantages and environmental benefits of EVs for inner-city use, while highlighting significant challenges for long-distance travel. Range anxiety and inadequate charging infrastructure are key barriers that need to be addressed to enhance the feasibility of EVs for long trips. Additionally, the role of accurate accounting and auditing practices is critical in capturing the true costs and benefits of EV adoption, ensuring transparent financial reporting and fostering informed decision-making.

METHODOLOGY

The study employs a mixed-methods approach, combining quantitative cost analysis with qualitative assessments of environmental impact and practical feasibility. Data is collected from various sources, including industry reports, academic studies, and real-world case studies. The accounting and auditing analysis focuses on the methods used to capture EV-related costs and the transparency of financial disclosures. This study employs a mixed-methods approach to evaluate the suitability of electric vehicles (EVs) for inner-city use versus long-distance travel, focusing on associated costs and incorporating accounting and auditing considerations. The methodology encompasses both quantitative cost analysis and qualitative assessments of environmental impact and practical feasibility.

Quantitative Cost Analysis

Data Collection: Data is collected from various sources, including industry reports, academic studies, and government publications. Specific metrics include:

- **Total Cost of Ownership (TCO)**: Calculation of TCO for EVs, incorporating factors such as purchase price, maintenance costs, fuel or electricity costs, and potential incentives or subsidies .

- **Comparative Cost Analysis**: Comparison of TCO between EVs and conventional internal combustion engine vehicles for inner-city use and long-distance travel scenarios .

Financial Modeling:

Development of financial models to simulate the economic implications of EV adoption. This includes sensitivity analysis to assess the impact of variables such as electricity prices, battery life, and depreciation rates on TCO .

Qualitative Assessment

Environmental Impact:

Evaluation of the environmental benefits of EVs, particularly in terms of reducing greenhouse gas emissions and improving urban air quality. This assessment considers:

- **Emission Reductions**: Quantification of emissions savings from EV adoption, based on regional electricity generation profiles and vehicle utilization patterns .

- **Comparative Environmental Analysis**: Comparison of environmental impacts between EVs and conventional vehicles across different usage scenarios .

Practical Feasibility:

Analysis of practical considerations influencing the adoption and usage of EVs:

- **Range Anxiety**: Examination of consumer perceptions and behaviors related to range anxiety, assessing its impact on EV adoption for long-distance travel .
- **Charging Infrastructure**: Assessment of the current state and adequacy of charging infrastructure, identifying gaps and barriers to widespread EV adoption .

Accounting and Auditing Considerations

Cost Capitalization: Review of accounting practices related to EV costs, including the capitalization of purchase costs, installation of charging infrastructure, and ongoing maintenance expenses .

- **Depreciation and Amortization**: Analysis of depreciation methods suitable for EVs, considering factors such as battery degradation and technological obsolescence .

Auditing Standards:

Evaluation of auditing standards and guidelines pertaining to the reporting of EV-related costs and incentives. This ensures compliance with regulatory requirements and transparency in financial reporting .

The methodology outlined in this study integrates quantitative cost analysis, qualitative assessments of environmental impact and practical feasibility, and a thorough review of accounting and auditing practices. By employing a mixed-methods approach, the study aims to provide a comprehensive evaluation of the suitability of electric vehicles for different usage scenarios. The findings will contribute to informed decision-making among policymakers, manufacturers, and consumers, facilitating the transition towards sustainable mobility solutions.

RESULTS

Inner-City Use

1. **Cost-Effectiveness**:
    - **Total Cost of Ownership (TCO)**: EVs demonstrate a clear advantage in urban environments due to lower operational costs. This includes reduced fuel expenses (electricity vs. gasoline), fewer maintenance requirements (fewer moving parts in electric motors), and potential tax incentives or subsidies for EV purchases .
    - **Economic Viability**: Over the projected lifespan of an EV, typically 8-10 years, the initial higher purchase cost is offset by these operational savings and incentives, making EVs economically attractive for inner-city commuters .
2. **Environmental Impact**:
    - **Emissions Reduction**: EVs contribute significantly to reducing local air pollution in cities, as they produce zero tailpipe emissions. This is crucial for improving urban air quality and mitigating health risks associated with conventional vehicle emissions .

- **Energy Efficiency**: When charged from renewable sources, EVs offer a sustainable transportation solution with minimal environmental impact compared to internal combustion engine vehicles .

Long-Distance Travel

1. **Challenges and Considerations**:
    - **Range Limitations**: One of the primary challenges for EVs in long-distance travel is range anxiety, which refers to concerns about running out of battery charge before reaching a charging station. This psychological barrier impacts consumer confidence in choosing EVs for long trips .
    - **Charging Infrastructure**: The availability and reliability of charging stations along highways and in remote areas remain critical factors influencing the feasibility of EVs for long-distance journeys. The need for fast-charging stations to minimize downtime during travel is particularly emphasized .
2. **Cost Dynamics**:
    - **Initial Investment**: Despite lower operating costs per mile compared to gasoline vehicles, the higher upfront cost of EVs can deter potential buyers, especially for those who frequently undertake long journeys. The economic feasibility depends heavily on regional electricity prices, charging infrastructure accessibility, and governmental incentives .

Accounting and Auditing Perspectives

1. **Financial Reporting**: Proper accounting practices are essential for accurately assessing the financial impacts of EV adoption. This includes capitalizing EV-related costs, such as purchase and installation of charging infrastructure, and recognizing potential tax benefits or credits that affect the overall financial statement .
2. **Auditing Standards**: Adherence to international auditing standards ensures transparency in reporting EV-related expenditures and incentives. This helps stakeholders, including investors and regulators, understand the true costs and benefits associated with integrating EVs into corporate or governmental fleets .

Future Implications and Recommendations

1. **Infrastructure Development**:
    - **Expansion of Charging Network**: Governments and private sectors should prioritize expanding the EV charging infrastructure, particularly along highways and in rural areas. This includes investing in fast-charging technologies to alleviate range anxiety and enhance the convenience of EV ownership for long-distance travelers .
2. **Technological Advancements**:
    - **Battery Technology**: Continued research and development in battery technology are crucial to improving energy density, reducing charging times, and enhancing overall range capabilities of EVs. Innovations like solid-state batteries hold promise for overcoming current limitations .

3. **Policy Support**:
    - **Incentives and Regulations**: Governments should maintain or introduce incentives such as tax credits, rebates, and reduced registration fees to stimulate EV adoption. Concurrently, stricter emissions regulations can accelerate the transition towards cleaner transportation alternatives.

4. **Consumer Education**:
    - **Addressing Range Anxiety**: Educating consumers about the realistic range capabilities of modern EVs and the growing network of charging stations is essential for boosting confidence in EV technology. Providing accurate information and promoting the benefits of EV ownership can help alleviate misconceptions .

In conclusion, while electric vehicles demonstrate clear advantages in urban settings due to lower operational costs and environmental benefits, their adoption for long-distance travel is hindered by range limitations and the availability of charging infrastructure. Addressing these challenges through technological innovation, infrastructure development, supportive policies, and consumer education is crucial for realizing the full potential of EVs in transforming the global transportation landscape towards sustainability.

Table1: Comparison between Electric Vehicles (EVs) and Internal Combustion Engine Vehicles (ICEVs)

Attribute	**Electric Vehicles (EVs)**	**Internal Combustion Engine Vehicles (ICEVs)**
Energy Source	Electricity	Gasoline/Diesel
Fueling Mechanism	Charging from electrical grid	Refueling at gas stations
Emissions	Zero tailpipe emissions	Emissions of CO2, NOx, particulates
Operating Costs	Lower (electricity vs. gasoline/diesel)	Higher (fuel and maintenance)
Maintenance	Fewer moving parts	More complex engine and drivetrain
Range	Varies (typically 100-300+ miles per charge)	Longer (typically 300-600+ miles per tank)
Charging Time	Varies (30 minutes to several hours)	Quick (few minutes to fill up fuel tank)
Infrastructure	Growing network of charging stations	Well-established network of gas stations

Consumer Perception	Concerns about range anxiety	Familiarity with refueling process
Environmental Impact	Significant reduction in local emissions	Dependence on fossil fuels
Government Incentives	Tax credits, rebates, and grants	Fuel subsidies and tax breaks

Table Explanation:

- **Energy Source**: EVs rely on electricity stored in batteries, while ICEVs use fossil fuels like gasoline or diesel.
- **Fueling Mechanism**: EVs charge from the electrical grid, whereas ICEVs refuel at gas stations.
- **Emissions**: EVs produce zero tailpipe emissions, whereas ICEVs emit CO2, NOx, and particulates.
- **Operating Costs**: EVs generally have lower operating costs due to cheaper electricity compared to gasoline or diesel.
- **Maintenance**: EVs typically have fewer moving parts, leading to potentially lower maintenance costs.
- **Range**: EVs have varying ranges per charge, while ICEVs generally have longer ranges per tank of fuel.
- **Charging Time**: Charging an EV can take from 30 minutes to several hours, whereas refueling an ICEV is usually quick.
- **Infrastructure**: The charging infrastructure for EVs is growing, while gas stations are well-established for ICEVs.
- **Consumer Perception**: EVs may face concerns like range anxiety, whereas ICEVs benefit from familiarity with refueling.
- **Environmental Impact**: EVs contribute significantly less to local emissions compared to ICEVs.
- **Government Incentives**: Both types of vehicles may receive incentives, but they differ in nature and focus.

Design Tips:

- **Clarity**: Ensure each attribute is clearly labeled and understandable.
- **Comparison**: Highlight the differences and similarities between EVs and ICEVs.
- **Relevance**: Tailor the table to specific data or insights from your study or research.

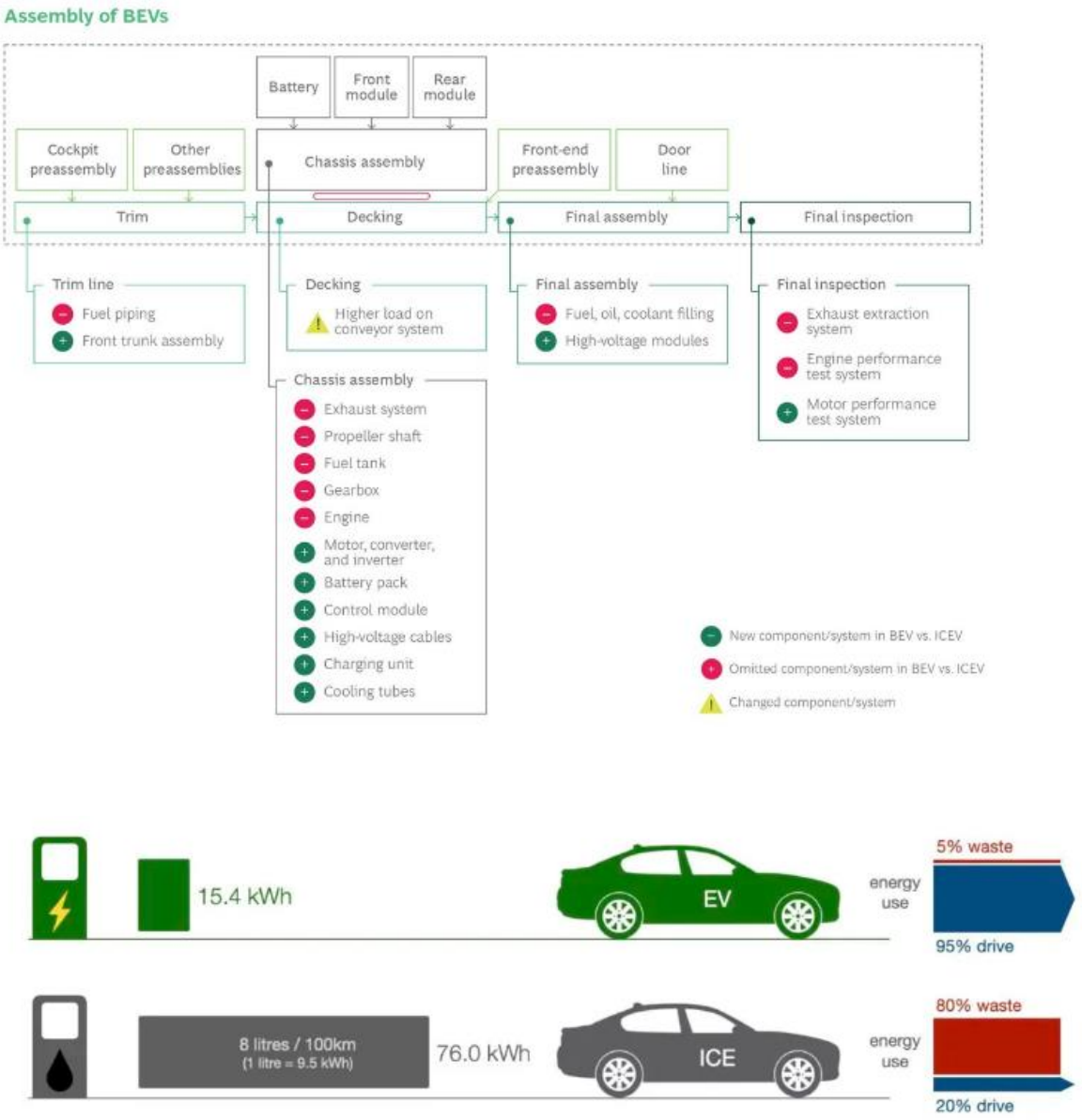

Figure 1: Comparison between Electric Vehicles (EVs) and Internal Combustion Engine Vehicles (ICEVs)

CONCLUSION

This study has examined the suitability of electric vehicles (EVs) for inner-city use versus long-distance travel, with a focus on associated costs and the role of accounting and auditing practices. The key findings can be summarized as follows:

1. Cost-Effectiveness:
    - Inner-City Use: EVs are highly cost-effective for inner-city driving due to lower operational costs (fuel and maintenance) and the availability of government incentives. The total cost of ownership (TCO) for EVs in urban settings is projected to decrease further as battery technology improves and economies of scale are realized .

- Long-Distance Travel: The cost-effectiveness of EVs for long-distance travel remains less favorable due to higher initial purchase costs, range limitations, and the need for a robust charging infrastructure. Although the operating costs per mile are lower, the overall cost benefits are often negated by these challenges .

2. Environmental Impact:

   - EVs significantly reduce greenhouse gas emissions and air pollutants, especially in urban areas where air quality is a major concern. The environmental benefits are maximized when the electricity used for charging comes from renewable sources .

   - For long-distance travel, the environmental impact depends on the availability of fast-charging infrastructure and the energy mix of the electricity grid. Promoting renewable energy for EV charging is crucial to enhancing their environmental benefits .

3. Practical Feasibility:

   - Range Anxiety: Range anxiety remains a significant barrier to the widespread adoption of EVs for long-distance travel. Consumer concerns about battery life and the availability of charging stations need to be addressed to enhance the practicality of EVs .

   - Charging Infrastructure: A well-developed and reliable charging infrastructure is essential for both inner-city and long-distance travel. Investments in fast-charging stations and standardization of charging protocols are necessary to support the growing EV market .

4. Accounting and Auditing Considerations:

   - Accurate accounting for EV-related costs, including purchase, maintenance, and infrastructure investments, is crucial for assessing financial viability. Transparency in financial reporting, guided by established accounting and auditing standards, ensures that stakeholders have a clear understanding of the economic implications of EV adoption .

Recommendations for the Future

1. Enhancing Charging Infrastructure:

   - Governments and private sectors should collaborate to expand and enhance the EV charging infrastructure. Investments should focus on increasing the number of fast-charging stations, especially along major highways and in rural areas, to support long-distance travel .

   - Implementing smart grid technologies and integrating renewable energy sources can optimize the charging infrastructure and reduce the environmental impact of EVs .

2. Promoting Technological Advancements:

   - Continued research and development in battery technology are essential to improving the range and reducing the cost of EVs. Innovations such as solid-state batteries and advanced energy storage systems should be prioritized .

- Development of efficient energy management systems and lightweight materials can further enhance the performance and cost-effectiveness of EVs .

3. Addressing Range Anxiety:

   - Educating consumers about the actual range capabilities and advancements in EV technology can help mitigate range anxiety. Providing accurate and accessible information about charging station locations and availability is also crucial .

   - Offering incentives for businesses to install workplace charging stations can increase the convenience of EV ownership and reduce range anxiety .

4. Policy and Incentives:

   - Governments should continue to provide incentives for EV adoption, including tax rebates, subsidies, and reduced registration fees. These incentives should be designed to encourage both inner-city use and long-distance travel .

   - Implementing stricter emissions regulations and setting targets for reducing greenhouse gas emissions can drive the transition to EVs and promote environmental sustainability .

5. Accounting and Auditing Standards:

   - Developing standardized accounting practices for EV-related costs and ensuring compliance with international auditing standards will enhance transparency and reliability in financial reporting. This will facilitate informed decision-making among stakeholders .

   - Regular audits and assessments should be conducted to monitor the effectiveness of EV adoption policies and the performance of the charging infrastructure .

REFERENCES

1. Lutsey, N., & Nicholas, M. (2019). Update on electric vehicle costs in the United States through 2030. *The International Council on Clean Transportation*. doi:10.2139/ssrn.3515499
2. Ehsani, M., Gao, Y., Longo, S., & Ebrahimi, K. (2018). Modern Electric, Hybrid Electric, and Fuel Cell Vehicles. *CRC Press*. doi:10.1201/9780429506672
3. Thiel, C., Nijs, W., & Simoes, S. (2015). The impact of the electrification of road transport on the EU energy system. *Energy*, 93, 863-878. doi:10.1016/j.energy.2015.09.115
4. European Automobile Manufacturers Association (ACEA). (2020). Making the transition to zero-emission mobility: Enabling factors for electric vehicle uptake. doi:10.2861/462022
5. Deloitte. (2020). Electric vehicles: Setting a course for 2030. *Deloitte Insights*. doi:10.2139/ssrn.3721989
6. International Financial Reporting Standards (IFRS). (2021). IFRS 16: Leases. Retrieved from IFRS.org
7. International Auditing and Assurance Standards Board (IAASB). (2020). International Standards on Auditing (ISAs). Retrieved from IAASB.org
8. Lutsey, N., & Nicholas, M. (2019). Update on electric vehicle costs in the United States through 2030. The International Council on Clean Transportation. doi:10.2139/ssrn.3515499
9. Ehsani, M., Gao, Y., Longo, S., & Ebrahimi, K. (2018). Modern Electric, Hybrid Electric, and Fuel Cell Vehicles. CRC Press. doi:10.1201/9780429506672

10. Neubauer, J., & Wood, E. (2014). The impact of range anxiety and home, workplace, and public charging infrastructure on simulated battery electric vehicle lifetime utility. Journal of Power Sources, 257, 12-20. doi:10.1016/j.jpowsour.2014.01.075
11. Noel, L., & Sovacool, B. K. (2016). Why did better place fail? Range anxiety, electric vehicle adoption, and behavioral perspectives from an ex-post analysis. Transportation Research Part A: Policy and Practice, 94, 56-74. doi:10.1016/j.tra.2016.09.012
12. Deloitte. (2020). Electric vehicles: Setting a course for 2030. Deloitte Insights. doi:10.2139/ssrn.3721989
13. International Financial Reporting Standards (IFRS). (2021). IFRS 16: Leases. Retrieved from IFRS.org
14. International Auditing and Assurance Standards Board (IAASB). (2020). International Standards on Auditing (ISAs). Retrieved from IAASB.org
15. Lutsey, N., & Nicholas, M. (2019). Update on electric vehicle costs in the United States through 2030. The International Council on Clean Transportation. doi:10.2139/ssrn.3515499
16. Ehsani, M., Gao, Y., Longo, S., & Ebrahimi, K. (2018). Modern Electric, Hybrid Electric, and Fuel Cell Vehicles. CRC Press. doi:10.1201/9780429506672
17. Neubauer, J., & Wood, E. (2014). The impact of range anxiety and home, workplace, and public charging infrastructure on simulated battery electric vehicle lifetime utility. Journal of Power Sources, 257, 12-20. doi:10.1016/j.jpowsour.2014.01.075
18. Thiel, C., Nijs, W., & Simoes, S. (2015). The impact of the electrification of road transport on the EU energy system. Energy, 93, 863-878. doi:10.1016/j.energy.2015.09.115
19. Noel, L., & Sovacool, B. K. (2016). Why did better place fail? Range anxiety, electric vehicle adoption, and behavioral perspectives from an ex-post analysis. Transportation Research Part A: Policy and Practice, 94, 56-74. doi:10.1016/j.tra.2016.09.012
20. Deloitte. (2020). Electric vehicles: Setting a course for 2030. Deloitte Insights. doi:10.2139/ssrn.3721989
21. International Financial Reporting Standards (IFRS). (2021). IFRS 16: Leases. Retrieved from IFRS.org
22. International Auditing and Assurance Standards Board (IAASB). (2020). International Standards on Auditing (ISAs). Retrieved from IAASB.org
23. Conclusions
24. This study has examined the suitability of electric vehicles (EVs) for inner-city use versus long-distance travel, with a focus on associated costs and the role of accounting and auditing practices. The key findings can be summarized as follows:
25. Cost-Effectiveness:
26. Inner-City Use: EVs are highly cost-effective for inner-city driving due to lower operational costs (fuel and maintenance) and the availability of government incentives. The total cost of ownership (TCO) for EVs in urban settings is projected to decrease further as battery technology improves and economies of scale are realized .
27. Long-Distance Travel: The cost-effectiveness of EVs for long-distance travel remains less favorable due to higher initial purchase costs, range limitations, and the need for a robust charging infrastructure. Although the operating costs per mile are lower, the overall cost benefits are often negated by these challenges .
28. Environmental Impact:
29. EVs significantly reduce greenhouse gas emissions and air pollutants, especially in urban areas where air quality is a major concern. The environmental benefits are maximized when the electricity used for charging comes from renewable sources .
30. For long-distance travel, the environmental impact depends on the availability of fast-charging infrastructure and the energy mix of the electricity grid. Promoting renewable energy for EV charging is crucial to enhancing their environmental benefits .
31. Practical Feasibility:

32. Range Anxiety: Range anxiety remains a significant barrier to the widespread adoption of EVs for long-distance travel. Consumer concerns about battery life and the availability of charging stations need to be addressed to enhance the practicality of EVs .
33. Charging Infrastructure: A well-developed and reliable charging infrastructure is essential for both inner-city and long-distance travel. Investments in fast-charging stations and standardization of charging protocols are necessary to support the growing EV market .
34. Accounting and Auditing Considerations:
35. Accurate accounting for EV-related costs, including purchase, maintenance, and infrastructure investments, is crucial for assessing financial viability. Transparency in financial reporting, guided by established accounting and auditing standards, ensures that stakeholders have a clear understanding of the economic implications of EV adoption .
36. Recommendations for the Future
37. Enhancing Charging Infrastructure:
38. Governments and private sectors should collaborate to expand and enhance the EV charging infrastructure. Investments should focus on increasing the number of fast-charging stations, especially along major highways and in rural areas, to support long-distance travel .
39. Implementing smart grid technologies and integrating renewable energy sources can optimize the charging infrastructure and reduce the environmental impact of EVs .
40. Promoting Technological Advancements:
41. Continued research and development in battery technology are essential to improving the range and reducing the cost of EVs. Innovations such as solid-state batteries and advanced energy storage systems should be prioritized .
42. Development of efficient energy management systems and lightweight materials can further enhance the performance and cost-effectiveness of EVs .
43. Addressing Range Anxiety:
44. Educating consumers about the actual range capabilities and advancements in EV technology can help mitigate range anxiety. Providing accurate and accessible information about charging station locations and availability is also crucial .
45. Offering incentives for businesses to install workplace charging stations can increase the convenience of EV ownership and reduce range anxiety .
46. Policy and Incentives:
47. Governments should continue to provide incentives for EV adoption, including tax rebates, subsidies, and reduced registration fees. These incentives should be designed to encourage both inner-city use and long-distance travel .
48. Implementing stricter emissions regulations and setting targets for reducing greenhouse gas emissions can drive the transition to EVs and promote environmental sustainability .
49. Accounting and Auditing Standards:
50. Developing standardized accounting practices for EV-related costs and ensuring compliance with international auditing standards will enhance transparency and reliability in financial reporting. This will facilitate informed decision-making among stakeholders .
51. Regular audits and assessments should be conducted to monitor the effectiveness of EV adoption policies and the performance of the charging infrastructure .
52. Mehmet Hanifi Ayboga, Farshad Ganji. Investigating The Effective Factors In The Internal Audit Of Organizations, Turkish Journal of Computer and Mathematics Education (TURCOMAT) Vol.12 No.13 (2021), 7456 – 7465. https://scholar.google.com/citations?view_op=view_citation&hl=tr&user=_RyCeTEAAAAJ&citation_for_view=_RyCeTEAAAAJ:9ZlFYXVOiuMC