

# Review of: "Longevity of Electric Vehicle Operations"

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**Potential competing interests:** No potential competing interests to declare.

Author has presented the various factors that affects the adoption of EV and longevity of EV in global market. However, lacks in defining the longevity of EV, the operation challenges are presented clearly. This document is presenting background of factor that may affect the acceptability of EV. This can not be accepted as research document.

## Abstract

The statement says "This abstract aims to provide an in-depth exploration of the multifaceted aspects surrounding the longevity of EV operations on a global scale.", whereas it should be "study aims to provide....." similarly author should revise statement "The abstract delves into the evolution of battery chemistries.....".

Author has defined the various dimensions that may affect the longevity of EVs however, focused only on Battery life in abstract.

Abstract is incomplete, as outcome of the study found missing, which is an important part of abstract.

Provide the source of the picture on first page of document.

## Introduction

The first paragraph of Introduction says "The study examines the challenges and progress of charging network expansion, covering aspects such as fast-charging technologies, standardized connectors, and integration with renewable energy sources", which is not meeting the objective as defined in Abstract. Author should clarify whether focus I on longevity of only battery operation or entire EV.

The statement in introduction says "The abstract also addresses the importance of harmonizing international standards to facilitate cross-border EV operations and ensure consistency in safety and performance.", whereas none of the statement of abstract reflect such information. Author should recheck the entire document before referencing the statement context.

The introduction section haphazardly delivers different factors that may affect the acceptability of EV however the section lacks the review literature and objective of the study is not clear.

## Battery Technology

The section focuses on Battery material instead of technology, author should rewrite the heading of section. Author should also cover the battery operational life for different material, suitable operational environment and recent data on

acceptability in different countries.

### Charging Infrastructure

Author has explained what could be the benefit of well-established network of charging infrastructure but lacks in challenges and its evolution. Author could further enhance this section with the incorporation of difference in grid based and off grid charging, voltage required for fast charging, matrix between the battery type and acceptable charging infrastructure etc.

### EV Policy Support

Author has presented the advantages of providing governmental support or inclusion of PPP in expanding the EV market, however the global trend is missing. The study lacks the case studies on any of the aspect of the study. The statements could be best supported with the data and study doesn't reflect any data in any of the context of study. Author should include various policies surfaced by different countries and before and after effect of policy or support.

If any country has perceived any benefits from any policy, author should link it with other factors such as infrastructure availability, adopted battery type, battery material etc.

### Environmental Impact of EV

Author has defined "When charged with clean energy, EVs produce zero tailpipe emissions, leading to a substantial reduction in carbon dioxide (CO<sub>2</sub>) emissions", whereas what could be the scenario if batteries are charged with energy generated from thermal power plants? Where these batteries are being manufactured? What could be the impact of mining for extracting rare material for developing batteries?

Author shall include the lifetime impact of EV.

### Sustainable Transportation with EV

The sustainability of EV is only depend upon the adoption of factors as defined in document. Part of this section could be merged with different sections. No separate section is required.

### Conclusion

Author says "Through a comprehensive exploration of factors such as battery technology, charging infrastructure, policy support, consumer behavior, and maintenance practices, it becomes evident that ensuring the extended and efficient lifespan of EVs is pivotal for realizing a cleaner and more environmentally friendly transportation future", however author has not worked on consumer behavior and maintenance practices and does not conclude anything on lifespan of EV. The document lacks t focus on longevity as defined in the title of study.