



U.S. Department of Transportation
Federal Transit Administration



Assessing Transit Providers' Internal Business Case for Transit Bus Automation

Background

To support the development and deployment of automated bus transit services, the Federal Transit Administration (FTA) has developed a five-year Strategic Transit Automation Research (STAR) Plan that outlines FTA's research agenda on automation technologies. This report, which is a part of the STAR Plan research, outlines the process for analyzing the internal business case (and/or benefit-cost analysis) for transit bus automation.

Objectives

When new technologies enter the marketplace, transit agencies must make strategic business decisions regarding whether and how to adopt them. A business case assesses the extent to which a proposed project generates cost savings, ridership gains, or other benefits that justify the costs of the investment. This report discusses the elements of a transit bus automation business case, provides an overview of how agencies are making decisions today, and identifies existing data.

Findings and Conclusions

This research provides agencies with relevant considerations on how to assess the business case for transit bus automation and provides stakeholders with information on how agencies approach the business case.

For transit agencies, there may be barriers that prevent them from fully assessing the business case for automation, such as limited resources and a lack of available data. This report documents those limitations but also seeks to help agencies overcome them by providing information on available resources and estimates. For other stakeholders who are active in transit automation, the report helps to provide an understanding of how agencies assess transit bus automation, potentially allowing them to better understand the needs of agencies and adjust their research and project proposals accordingly.

Key findings of the research include the following:

- A rigorous benefit-cost analysis (BCA) requires agencies to gather data across a wide range of impacts, including, but not limited to:
 - Capital costs for a variety of ownership models
 - Expected maintenance costs
 - Staff retraining costs

- Safety benefits of the technology
 - Estimated improvements to travel time and travel time reliability
 - Fuel, oil, and other operating costs
 - Service changes
 - Public opinion and acceptance of automated transit
- There is little public information available for many of these cost and benefit categories. Much of the data that do exist come from small-scale pilot tests and may not be broadly applicable. Agencies also do not always have the resources to seek out available information, as there is no single clearinghouse for this information and much of it is unpublished.
 - Agencies have a variety of specific decision-making processes for capital investments, but there are some discernable findings:
 - One common approach is to assess a project with respect to the agency's strategic goals or objectives, with projects assessed qualitatively on their ability to achieve those goals.
 - There is large variety in the types of quantitative measures used to analyze projects, with some agencies conducting BCAs and others using simplified scoring measures, though agencies generally encourage their staff to quantify measures when possible.
 - There is a distinction between agencies that view automation as inherently a benefit in and of itself vs. those that view it only as a means to an end.
 - Some agencies view the learning potential and the benefits of innovation as important considerations for automation projects.
 - A variety of inter-related barriers hinder the ability of agencies to fully assess the business case for transit automation. Broadly, these barriers fall under the categories of regulations, applicability of previous research, operational changes, and customer acceptance. It is possible to overcome these barriers, as proven by the agencies that have already conducted or are conducting transit automation pilots; however, these barriers can increase the costs associated with an automation project or cause an agency to abandon the project altogether.

Benefits

This report is intended to aid transit agencies in assessing their business case for transit automation. It may also be used as a guide for structuring a BCA for transit automation, as it provides details on how to conduct such an analysis. Other audiences may also benefit, including academic and research institutions, OEMs, and other organizations involved in the pursuit of automated transit bus technologies.

Project Information

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