

USE OF SWOT AND TOWS ANALYSES FOR ENHANCING SUSTAINABLE TRANSPORT PROJECT EVALUATION

Shibaura Institute of Technology Student Member ○Panalath Lathouly
Shibaura Institute of Technology Regular Member Michael Henry

1. INTRODUCTION

Lao PDR depends primarily on road transport, and Lao people are more likely to use private vehicles in transportation, particularly in Vientiane, the capital of Laos. The total number of private vehicles registered in Vientiane increased at an average annual growth rate of 17% during 2000–2009 and it has been constantly growing. Despite the fact of being an urban city, urban transport remains challenging in terms of congestion, air pollution, and road accidents. One major cause is the lack of efficiency in public transport. As a result, Vientiane has a high dependence on private vehicles. For instance, 67% accounted for motorcycle users while only 0.6% uses public transport.

The concept of sustainable transport has been promoted through several projects by external assistants such as the Vientiane Sustainable Urban Transport Project from ADB and the project of Vientiane Capital State Bus Enterprise from JICA. These project plans overall have progressed in terms of project completion. However, there are gaps in achieving sustainable transport. According to the ADB assistance assessment in the transport sector in Laos, the overall project outcome funded by ADB results is less efficient in terms of project implementation (ADB, 2010). Meanwhile, inefficient implementation of transport projects lead to remained public transport challenges and affects the country's development. To build a strategy to strengthen future sustainable transport projects, it is crucial to study the influential factors of existing projects. SWOT (Strengths, Weaknesses, Opportunities, Threats) and TOWS (Threats, Opportunities, Weaknesses, Strengths) frameworks are effective tools for analyzing project internal and external influential factors as well as building strategies for projects. The objective of this research is to review SWOT and TOWS frameworks used in other research studies related to public transport, project management, and sustainable development. The results will support future studies in selecting a reliable and effective tool for evaluating sustainable transport projects in Vientiane's capital city.

2. LITERATURE REVIEW

2.1 SWOT and TOWS

SWOT is an analytic tool of internal and external factors that influence a selected group, mainly in business, company, organization, and project. SWOT analysis method uses the SWOT matrix which includes four components. (1) Strengths and (2) Weaknesses are internal factors known as project self-evaluation, they are flexible to change over time depending on the project's performance referring to human resources and man-made such as employee skills, location, technology implementation, and organization culture. (3) Opportunities and (4) Threats are external factors that happened in the market and influenced the project which is out of the project's control for instance, political, environmental, economic, and cultural. One outstanding function of SWOT is it ensures that the strategy and policy can achieve effectiveness in a real situation (Zietsman et al., 2003).

TOWS analysis is a strategy development tool after conducting SWOT analysis. The core value of this framework is to maximize the positive influences of the target and minimize the negative ones (Berry et al., 2018). In TOWS the matrix is the combination of SWOT matrix which is: (1) Strengths and Opportunities (S-O), focusing on how to utilize the strengths in order to respond to the potential opportunities in the market; (2) Strengths and Threats (S-T), examines how strengths could prevent the threats affect; (3) Weaknesses and Opportunities (W-O), consider how the opportunities can support the weaknesses; and finally (4) Weaknesses and Threats (W-T), highlights how weaknesses can be developed and enhance the threats. The difference between SWOT and TOWS framework is that SWOT helps define internal and external factors that influence the company, while TOWS is responsible as a strategy development tool after SWOT results.

2.2 Research papers using SWOT and/or TOWS

There are several academic articles conducted using SWOT and TOWS in transportation and development fields. The common goal of using these tools is to evaluate internal and external factors. The following literature are selected from areas regarding smart city projects, urban planning, international projects, public transport, transport system, and sustainable development. The purpose is to confirm the ability of SWOT and TOWS mainly in creating sustainable strategies for smart cities, managing risk management for international projects, examining the potential of collaborating public transport systems, and finding the success factors of the intelligent transport system.

Urdabaev et al. (2021) applied SWOT analysis to propose initiative ideas in smart city projects. Researchers conducted a strategic analysis of smart city projects in the capital cities of Russia and Kazakhstan (Moscow, Nur-Sultan, and Almaty) focusing on systematizing diverse empirical data and providing evidence for decision-makers. The result of research revealed three cities' significant results mainly in defining the smart city concept of each, clarifying the main digital services, and summarizing similar challenges. The SWOT framework was accountable for the characteristics of a

Keywords: Public Transport, Sustainable Transport, Project Management, Strategy Development, Urban City Development, SWOT, TOWS

Contact address: 135 - 8548 東京都江東区豊洲 3-7-5 Tel: 03-5859-7427

sustainable smart city. A research study in Bratislava used SWOT analysis in investigating applying public transport for basic freight transportation system, a detailed analysis of all stages of these schemes has been conducted. The technological features between transportation types and urban public transport for freight deliveries are highlighted. The objective of this paper is to examine the possibility and potential of combining the public transport system with road transport for the carriage of goods of urban origin. The results provide credibility for implementation this type of system, and it was found that it is expedient to attract urban public transport for freight transportation, and a basic freight transportation system using public transport has been developed (Galkin et al., 2019).

SWOT is not only effective in business analysis but can also be useful in public transport management. Bugheanu conducted a SWOT analysis on the public transport network in the capital of Romania, Bucharest (Bugheanu et al., 2015). Analyzing the public transport network in the capital of Romania, Bucharest was the research's objective. Key themes to be analyzed are (1) internal and external factors influencing the underground transport system will be analysis, (2) weaknesses and strengths of the network, (3) opportunities and threats in the economic environment. SWOT analysis is represented as the method of finding the key themes. After completion, the result is expected to be applied in the development of a methodology for the implementation of a series of actions concerning management measures on the public transport system to improve the overall quality of the network.

Furthermore, SWOT analysis tool was conducted and succeeded in identifying threats and opportunities, resulting in providing improvements in traffic and transport in Thailand through C-ITS technique (Choosakun et al., 2021). The motivation for the research is from a case study in Thailand regarding intelligent transport system (ITS) implementation success. The researcher disagreed Thailand's automatic transportation has been successful because of cooperative-ITS (C-ITS). In order to examine, six countries were selected to find C-ITS conditions that support the success of ITS, and SWOT matrix and TOWS matrix were applied to identify influential factors compare to Thailand's case. In consequence, there were seven factors that influenced the success of C-ITS in Thailand. The seven findings have reflected both threats and opportunities for traffic and transport improvement in Thailand based on C-ITS.

TOWS is a great trigger for new opportunities for in-depth research in the risk management strategy development for international projects (Dandage et al., 2019). This research article aimed to discuss issues that prevent project success and develop risk management for international projects by selecting eight risk categories observed from international projects through a literature survey and feedback from project experts. One of the methods of this research was the TOWS matrix, which was used to develop strategies for effective project risk management. This matrix is based on project professionals' feedback and may vary according to the nature of the project. Outstanding finding from TOWS analysis has resulted in existing numbers of internal strengths of the project organization having been identified to develop strategies and overcome the variety of threats caused by the eight risks.

3. DISCUSSION AND CONCLUSION

By using SWOT, future stakeholders in enhancing sustainable transport project can have a clear point of view of the project's SWOT including strengths, weaknesses, opportunities, and threats. To further scale up the project's SWOT analysis, the TOWS matrix helps to visualize the potential strategy in boosting the advantage and lifting up the disadvantage. By using the SWOT analysis in evaluating the transport projects in Vientiane, it can effectively represent what has been done well in Vientiane's urban transport projects in a comparison of sustainable transport concepts to understand at a glance of similarity and differences in SWOT perspective and, finally, this information can guide to establishing effective strategy through TOWS matrix.

4. REFERENCES

- ADB. 2010. SECTOR ASSISTANCE PROGRAM EVALUATION FOR THE TRANSPORT SECTOR IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC. Lao People's Democratic Republic: Transport Sector. <https://bit.ly/40ks2cz>.
- Berry, T., 2018. What is a SWOT analysis. B Plans. Accessed October, 10.
- Bugheanu, A. M. (2015). SWOT analysis of public transport system in Bucharest. *Management Research and Practice*, 7(1), 14-31.
- Choosakun, A., Chaiittipornwong, Y., & Yeom, C. (2021). Development of the cooperative intelligent transport system in Thailand: A prospective approach. *Infrastructures*, 6(3), 36.
- Dandage, R. V., Mantha, S. S., & Rane, S. B. (2019). Strategy development using TOWS matrix for international project risk management based on prioritization of risk categories. *International Journal of Managing Projects in Business*.
- Galkin, A., Schlosser, T., Galkina, O., Hodáková, D., & Cápáková, S. (2019). Investigating using urban public transport for freight deliveries. *Transportation Research Procedia*, 39, 64-73.
- Lucidity Strategy Software. An introduction to TOWS Analysis. <https://bit.ly/3Zq7Cxo>
- Urdabae, M. T., & Utkelbay, R. E. (2021). SWOT analysis of smart city projects in capital cities of Russia and Kazakhstan. *R-economy*, 7(4), 235-243.
- Zietsman, J., Rilett, L. R., & Kim, S. J. (2003). SUSTAINABLE TRANSPORTATION PERFORMANCE MEASURES FOR DEVELOPING COMMUNITIES 6. Performing Organization Code.