

IMPACTS OF NATIONAL LEVEL FUEL SUPPLY SHORTAGES: CASE STUDY BASED ON RECENT FUEL SHORTAGES IN SRI LANKA

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ABSTRACT

The impacts of fuel supply shortages at the national level can have far-reaching consequences on many aspects of society. One critical area that is affected is mobility, which is essential for everyday life, commerce, and economic growth. The research aims to identify the impacts of national-level fuel supply shortages with reference to Case study based on fuel shortages in Sri Lanka in 2021 to 2022. The study collect data from both transport service providers and transport service users' perspectives, using literature review (Published materials on fuel shortage), interviews and questionnaire surveys to gather information. The findings of this research will have important implications for policymakers and stakeholders in the transportation sector. The research will provide insights into the potential effects of fuel supply disruptions on travel demand and overall country and it will help to mitigate their impact.

Keywords: Mobility, Fuel shortages, Impacts, Sri Lanka

1. INTRODUCTION

Sri Lanka's economic crisis, which began in 2019, has resulted in great hardship for the people lives in Sri Lanka and to the government of the country. Multiple factors have contributed to the economic crisis in Sri Lanka such as economic mishandling [1], rise in foreign debt, 2019 tax cuts on the domestic economy, national policy shift to organic and biological farming, downfall of the tourism sector, Easter bomb attacks, and the effect of the COVID-19 virus [2]. Due to these causes, Sri Lankan rupee deflated to its lowest in April 2022, becoming the world's worst-performing currency (depreciated by 80% against USD). One major impact of the economic crisis was the fuel shortage. During the height of the crisis, fuel consumption in Sri Lanka plummeted by 60% (approximately 90,000 barrels per day to just 36,000 barrels per day). As the main consumer of petrol and diesel, the transport sector was severely affected by this unprecedented experience of fuel supply shortage. The national-level fuel shortages have had a direct impact on demand for mobility. The issues for demand for mobility led to short term and long-term issues which were not experienced before both at local and international level. Therefore, this research intended to investigate about impacts of national level fuel supply shortages by taking the Sri Lankan fuel shortages issue.

1.1 Aim

This research intended to identify the impacts of national-level fuel supply shortages with reference to the fuel shortages in Sri Lanka in 2021 to 2022.

1.2 Objectives

- A. Identify the direct and indirect impacts of national-level fuel supply shortages on transport and other sectors.
- B. Identify the problems faced by transport users due to national-level fuel supply shortages.

2. METHODOLOGY

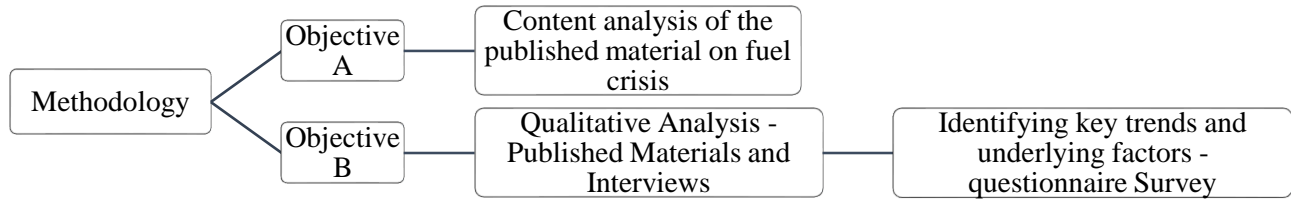


Figure 1: Summary of the Methodology

2.1. Analyzing Data

Interview data was analyzed using qualitative analysis. After finding data for questionnaire surveys, factor analysis using SPSS software was used to analyze those data. Before starting the analysis reliability and validity requirements of obtained data was checked to understand the suitability of obtained data for perform the analysis. Sample size was calculated using data from Department of Census and Statistics Sri Lanka. The calculated sample size was nearly 400 participants and participants involved for this survey was 403 people. Sampling method was random sampling for this study

Sample size Population of Sri Lanka = 20,359,439 to 2012 (Department of Census and Statistics, Sri Lanka)

$$n = \frac{N}{(1+NE^2)} \quad (n=\text{sample size } N=\text{Population } E=\text{Error Tolerance})$$

Confidence Level = 95% Margin of Error = 5%. Therefore n = 400.

3. RESULTS

3.1. Impacts on users

Table 1: Impacts Factor Analysis – Transport Selection and Travel Behaviors

Impacts	Mean of Agreements	Factor	Variance %
My decision to travel or not was affected by the availability of my most preferred mode	3.81	Changes in Travel Decisions.	53.730
My decision to travel or not was affected by the availability of fuel	4.07		
My decision to travel or not was affected by the cost of transportation	4.10		
My regular travel mode was changed due to fuel crisis	4.15	Changes in Travel Behavior and Reduction in Travel Frequency.	17.676
My travel mode selection was affected by fuel price	4.30		
My travelling was minimized due to fuel crisis	4.31		

Table 1 shows the impacts for transport mode selection and travel behavior after factor analysis. All the impacts identified from questionnaire survey was analyzed using factor analysis and identified factors for transport mode users’ can be shown as Figure 2. All three sections of impacts named transport mode selection and trip generation, users’ common impacts and public transport impacts were analyzed separately. Using that different factors were identified.

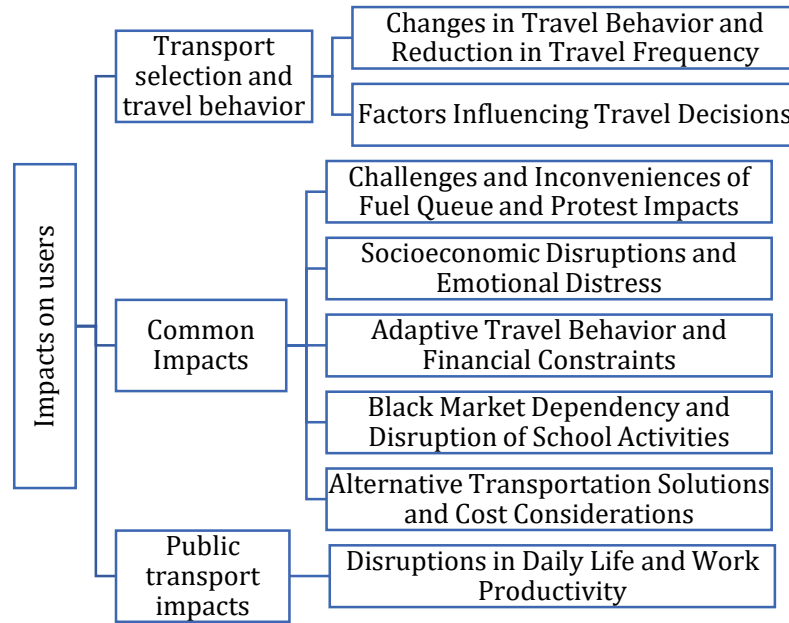


Figure 2: Identified impacts for Users after analysis

3.2. Impacts on Country

Table 2: Impacts on Country

	Direct impacts	Indirect impacts
Social	<ul style="list-style-type: none"> Fuel queue deaths. Regular power cuts 	<ul style="list-style-type: none"> Partial switch to online education. Damage to the hospital sector. Rise Job losses
Economical	<ul style="list-style-type: none"> Financial losses for businesses and economy Inability to provide essential services. Scarcity of supplies. Power plant shutdown. Tourism sector damaged. 	<ul style="list-style-type: none"> Affected shipping and aviation sectors. Halted freight transportation Negative impact on the agricultural sector. Increase living expenses.
Political	<ul style="list-style-type: none"> Protests 	<ul style="list-style-type: none"> Political instability.
Environmental	<ul style="list-style-type: none"> Fuel allocation for wildlife conservation department was reduced. 	<ul style="list-style-type: none"> Minimized air pollution. Popularity of organic farming.

4. CONCLUSION

Some key impacts raised due to fuel crisis are still reflecting in Sri Lanka. Therefore, effective management of such situations is imperative for any country's stability and progress. During the fuel crisis, a considerable number of users switched to public transport; however, the insufficiency of fuel supply for public transport increased. Therefore, need to increase fuel allocation to sustain an efficient public transportation.

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