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# ADOPTING SUSTAINABILITY URBAN TRANSPORT INDEX (SUTI) INTO AIR FREIGHT SYSTEM

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**Abstract:** Measuring the sustainability of transportation services can be challenging without proper methods. United Nations has developed an Excel-based tool, the Sustainability Urban Transport Index (SUTI), to assess sustainability in Asian urban transport. This tool includes ten indicators covering environmental, social, and economic dimensions. The aim is to extend SUTI's use beyond public transport to other areas. This study focuses on applying SUTI to the air freight system, requiring the integration of new elements into a tailored framework. Some indicators from the original SUTI cannot be directly applied to air freight. After a literature review, four indicators were identified for replacement with new methods and formulas. The proposed framework allows practitioners to evaluate the sustainability performance of Malaysia's air freight system. It helps identify areas for improvement, implement targeted strategies, and monitor the effectiveness of sustainability initiatives in the industry.

Keywords: Sustainability Urban Transport Index (SUTI), air freight, environmental, social, economic.

## Introduction

United Nations (UN) defines sustainable development as a growth that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. The United Nations has been actively addressing critical issues such as water scarcity, population growth, climate change, energy, pollution, health and safety, human rights, and poverty. Improving transportation has the potential to contribute to economic growth and social development by increasing mobility and improving access to resources and markets. The UN has been promoting sustainability, sustainable development and sustainable transport in order to bring enhancements to transport systems and existing policies. The concept of sustainability, as advocated by the United Nations, revolves around the idea of meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. It emphasises the interconnectedness and interdependence of environmental, social, and economic factors. Formerly, organisations did not take sustainability development seriously and neglected its impacts towards the environment and society (Manresa & Rivera, 2021), but eventually, external pressures forced them to view sustainability from a new perspective. Until recently, sustainability practices have been widely discussed among industries and they focus on progressing towards the 17 sustainable development goals (SDGs) by the UN to help balance the economic, social and ecological objectives in the industries. Sustainability also begins to bring competitive advantages and longevity towards its practitioners. Interest in sustainability initially reflects the concerns of long-term risks of current resource consumption, keeping in view the goals of being fair to future generations.

In today's world, accessing air freight services has become more convenient than ever, thanks to the rapid growth of the e-commerce market. The increasing share of e-commerce in both the global and domestic markets has driven the transportation industry, particularly air transport services, to become more responsive in offering quick delivery options, including same-day delivery. Consumers are now willing to pay extra charges for transportation costs in order to minimise the waiting time between placing a service request and its actual fulfilment. However, this emphasis on speedy delivery can undermine the sustainability goals that service providers strive to achieve.

While aeroplanes are chosen as the most efficient mode of transport, it is important to acknowledge that they also contribute significantly to carbon emissions. The aviation industry has a poor history when it comes to greenhouse gas emissions, and this problem is expected to worsen as the e-commerce industry, which currently accounts for 20% of total air cargo shipments (Todd, 2021), continues to grow. To prevent further environmental degradation, it is crucial for the transportation industry to recognise that resource consumption must be balanced with environmental, social, and economic considerations.

Firstly, let's discuss the dimension of environmental sustainability. Elkington (1997) suggests that environmental variables should be considered in measuring natural resource utilisation. It has been found that the transportation industry, particularly the air freight sector, is a significant contributor to greenhouse gas emissions in Malaysia, highlighting the need for sustainable fuel policies. In 2021, Malaysia's Ninth Prime Minister, Ismail Sabri Yaakob, introduced new policies aimed at controlling air quality and carbon emissions in the country. These policies include taxing polluters, promoting the development of energy-efficient vehicles, and prohibiting the construction of new coal-fired power plants. The Prime Minister envisions Malaysia becoming a carbon-neutral country by 2050 (12th Malaysia Plan, 2021). Additionally, researchers and engineers in the transportation sector are actively seeking alternative energy sources to replace fossil fuels. Mohsin *et al*. (2017) investigated the potential of biodegradable fuels as a solution, but Kaniapan *et al*. (2021) argued that relying on biodegradable fuels may conflict with food production, leading to increased food prices and potential disruptions to Sustainable Development Goals (SDGs) One and Two. Thus, this topic remains a subject of debate.

Moving on to the social dimension of sustainability, it primarily concerns the well-being and equality of the population. Social sustainability focuses on aspects such as population safety, societal rights, health, and security. Social equity can be a unique way for organisations to create and communicate their values, thus gaining a competitive advantage in the marketplace. In the context of logistics systems, all stakeholders, including users and consumers of products or services, must be included in sustainable development efforts. For example, Bartle (2021) discovered that low-income consumers face challenges in accessing air freight services, particularly after the COVID-19 pandemic, as they may struggle to afford additional shipping costs.

Lastly, economic sustainability is an important aspect of achieving overall sustainability. Haddach (2020) explains that economic sustainability includes elements such as service reliability, reactivity, operational flexibility, product quality, and financial performance. Sustainable operations can influence the economic performance of transportation services, impacting operational costs, revenues, profits, and productivity, especially in the growing air freight services sector (Janic, 2002). While moving towards sustainable environmental and social practices can enhance a company's reputation, it is important to acknowledge the additional costs involved (Manresa & Rivera, 2021). Balancing these factors requires systematic approaches to measure the performance of sustainable transport systems. The United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) has developed an Excel-based tool called the Sustainability Urban Transport Index (SUTI) to assess the sustainability performance of public transport in Asian cities.

However, there has been limited application of the SUTI tool in assessing the sustainability of air freight systems. Therefore, this study aims to adapt the SUTI tool from public transport to air freight systems, introducing new variables and elements within each of the ten SUTI indicators. The newly constructed framework is expected to aid in measuring the sustainability performance of air freight logistics systems. The following sections will discuss the inclusion of these new variables within the ten SUTI indicators and review the contributions of previous studies.

### *Sustainability Urban Transport Index (SUTI)*

In a recent study by Regmi (2020), the Sustainability Urban Transport Index (SUTI) tool was employed to assess the sustainability of urban mobility in four Asian cities. The focus was primarily on the provision of public transport services to the general population, including aspects such as investment in public transport infrastructure, affordability of services, user satisfaction, and more. The SUTI tool serves as a conceptual framework consisting of ten indicators, aiming to evaluate the performance of urban transport systems across the three dimensions of sustainability. Developed by the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), this tool assists researchers in assessing the state of public transport in Asian cities.

The rapid growth of urbanisation in Asian cities has placed significant stress on transportation systems and infrastructure. This, in turn, has resulted in issues such as congestion, accidents, excessive reliance on fossil fuels, increased greenhouse gas emissions, reduced productivity, and adverse impacts on quality of life and health. In response to the escalating demand for urban mobility stemming from rapid urbanisation and rural-urban migration, it is crucial for Asian countries and cities to implement integrated policies and invest in the improvement of urban public transport systems and services (ESCAP, 2007).

The SUTI framework is designed to assess the progress of transportation in contributing to the achievement of the Sustainable Development Goals (SDGs). To develop this framework, existing literature and policies on sustainable development and transport, as well as the SDGs, were considered. The aim was to ensure that the index encompasses topics that are essential for measuring sustainable urban transport.

The effectiveness of the SUTI tool has been demonstrated through its successful application in measuring the sustainability of the urban transport index in 15 cities. These cities include Colombo, Hanoi, Kathmandu, and Greater Jakarta in 2017, followed by Bandung, Dhaka, Ho Chi Minh City, Surabaya, Surat, and Suva in 2018, and Bhopal, Khulna, Thimphu, Tehran, and Ulaanbaatar in 2019. The ten SUTI indicators, which are presented in Table 1, form the basis of the framework.

Information on indicators in Table 1 is gathered from the ESCAP (2020) data collection guideline. The guideline was provided along with the sustainability urban transport index tool from the United Nations ESCAP website. It is to be noted that not all of the above indicators can be directly employed to measure the sustainability of air freight system because some of the indicators are not applicable to the air freight industry and are modified while maintaining the range values and unit of measurement which have been fixed by United Nations ESCAP. The objective of this study is to adopt SUTI tools to measure the sustainability performance of an air freight business. Hence, after reviewing the literature, variables used to measure the SUTI indicators are collected and then summarised in the next section.

## Materials and Methods

In order to adopt this framework that the United Nations ESCAP has constructed to assess the sustainability of urban transport in Asian cities, the adaptation to measure the air freight business is done in stages.

Table 1: SUTI indicators

| Indicators | Description | Additional Information | Range Value | | Weightage |
|---|---|---|---|---|---|
| | | | Min | Max | |
| 1 | Extent to which transport plans cover public transport, intermodal facilities and infrastructure for active modes | Experts score the public transport plans | 0 | 16 | 0.1 |
| 2 | Modal share of active and public transport in commuting | Modal share of users who use public transport over private motorised vehicle | 10% | 90% | 0.1 |
| 3 | Convenient access to public transport service | Number of inhabitants are living within 500 metres buffer zones | 20% | 100% | 0.1 |
| 4 | Public transport quality and reliability | Users' satisfaction using 7-point Likert scale ('Very satisfied' to 'Very unsatisfied') | 30% | 95% | 0.1 |
| 5 | Traffic fatalities per 100,000 inhabitants | Number of persons killed per 100,000 inhabitants | 10 | 0 | 0.1 |
| 6 | Affordability – travel costs as share of income | Percentage of users' monthly income | 35% | 3.5% | 0.1 |
| 7 | Operational costs of the public transport system | Percentage of operational costs covered by fares | 22 | 100 | 0.1 |
| 8 | Investment in public transportation systems | Percentage of transport investment spending | 0% | 50% | 0.1 |
| 9 | Air quality (pm10) | PM10 mean annual value in the city | 150 | 10 | 0.1 |
| 10 | Greenhouse gas (GHG) emissions from transport | Total emission of GHG | 2.75 | 0 | 0.1 |

The first stage is to understand the three dimensions that build the framework, with return of a single value and informative spider diagram for users to understand the indicator in a more efficient way. The sensitivity analysis on the impact of each indicator was done by analysing the weightage introduced in SUTI tool. Saltelli (2002) took the sensitivity analysis as a study of how the uncertainty in the output can be apportioned to different sources of uncertainty in the model input. In this study, the SUTI score is calculated first by assuming that all indicators are weighted equally and then when one indicator was favoured over the other nine indicators. The sensitivity analysis was done by using the original data from Ho Chi Minh City due to its availability (ESCAP, 2018). Table 2 displayed the new calculated values including the normalised score which was calculated using Eq. 1. Values gathered for each indicator were returned in different units of measurements and range thus, Eq. 1 was used to eliminate the difference using the normalisation approach. Moreover, normalisation is a scaling technique in which values are shifted and rescaled to achieve standardisation between all values.

$$\text{Normalised } (I_i) = N(I_i) = \frac{(x_i - \min(I_i))}{max(I_i) - \min(I_i)} \times 100 \quad \text{(Eq. 1)}$$

Table 2 displays the calculation of the SUTI score in Ho Chi Minh City for the year 2018 before and after implementing the weightage system as mentioned in ESCAP (2019) guideline. The total weightage value must be equal to 1. In a column labeled (a), the SUTI score for public transport in Ho Chi Minh City Vietnam was calculated using Eq. 2 when all indicators are equally weighted at 0.1.

$$SUTI = [N(I_1) \times N(I_2) \ldots \times N(I_n)]^{\frac{1}{n}} \quad \text{(Eq. 2)}$$

where $n$ indicates the number of indicators. The SUTI formula is based on the geometric mean formula which is the average of a set of products and the calculation of which is commonly used to determine the performance results of an investment or portfolio.

To implement the weightage system, this study integrates the formula to Eq. 3 which is the weighted geometric mean and expressed as,

$$SUTI = [N(I_1)^{w_1} \times N(I_2)^{w_2} \ldots \times N(I_n)^{w_n}]^{\frac{1}{\Sigma n}} \quad \text{(Eq. 3)}$$

In the column labelled (b), the SUTI score was calculated again using Eq. 3, in which the weight for every indicator is assumed to be the same. Note that the weighted score for Ho Chi Minh City sustainability performance in column (b) is 37.62, which is the same as the original score calculated in column (a). This confirms that Eq. 3 is justifiable to calculate the score.

In the second stage, focused on validating the weightage system of SUTI. It is assumed that Indicator 6 (Affordability – travel costs as a share of income) contributes 50% to the sustainability impact of the business, hence, the weightage is 0.5 and the remaining nine indicators have an equal 0.056 value of weightage. The SUTI score was calculated again using Eq. 3 in the column labelled (c). It is to observe if this action will impact the overall score and to see if the tool can be flexible in measuring sustainability when it comes to focusing on one dimension only. So, based on the score in column (c), the value obtained is 57.33.

In the third stage, each indicator is analysed based on its applicability to the air freight business. As Indicator 1 discusses the perceptions of urban transport advisors on public transport, therefore, this study excluded Indicator 1 due to data availability and relevancy to the air freight system. Also, Indicator 1 requires the city's blueprint for public transport

Table 2: Ho Chi Minh City score

| Indicator | Weightage (100%) | Indicator Value | (a) Normalised Score | (b) Normalised Score * Weightage | Weightage (100%) | (c) Normalised Score * Weightage |
|---|---|---|---|---|---|---|
| 1 | 0.1 | 7 | 43.75 | 1.46 | 0.056 | 1.23 |
| 2 | 0.1 | 28.52 | 23.15 | 1.37 | 0.056 | 1.19 |
| 3 | 0.1 | 75.8 | 69.75 | 1.53 | 0.056 | 1.27 |
| 4 | 0.1 | 41.77 | 18.11 | 1.34 | 0.056 | 1.17 |
| 5 | 0.1 | 8 | 20.00 | 1.35 | 0.056 | 1.18 |
| 6 | 0.1 | 4.42 | 97.08 | 1.58 | 0.5 | 9.85 |
| 7 | 0.1 | 46 | 30.77 | 1.41 | 0.056 | 1.21 |
| 8 | 0.1 | 13.3 | 26.60 | 1.39 | 0.056 | 1.2 |
| 9 | 0.1 | 104.58 | 32.44 | 1.42 | 0.056 | 1.21 |
| 10 | 0.1 | 0.38 | 86.18 | 1.56 | 0.056 | 1.28 |
| | **SUTI Score** | | **37.62** | **37.62** | | **57.33** |

to be evaluated which is not applicable to the nature of air freight business which does not disclose such data publicly, Indicator 1 had to be removed. After excluding Indicator 1 from the framework, the SUTI score was reduced to 56.42. The remaining nine indicators were grouped into relevant dimensions (environment, social and economic).

## Results and Discussion

As mentioned before the objective of this study was to check if, SUTI tools could adapted to measure the sustainability of the air freight business, based on the data collection guideline (ESCAP, 2019), the remaining SUTI indicators are classified according to their dimensions of sustainability. Table 2 summarises the classification.

There are three indicators that measure the environmental sustainability of public transport which are Indicator 2, Indicator 9, and Indicator 10.

Based on past studies, there are several alternative methods or formulas that can be used to adapt and adopt SUTI indicators when transitioning the tool to measure the sustainability of the air freight system. For instance, in order to measure the modal split ratio in Indicator 2, ESCAP (2020; 2022) used the ratio of the total population that used public transport over personal motorised vehicles, meanwhile Vierth *et al*. (2018) use the level of tonne-kilometre of each mode of transport. On the other hand, Hwang and Ouyang (2014) used a utility function to develop a freight modal split model that is similar to urban passenger travel demand forecasting mode. This method is more closely related to the original SUTI Indicator 2. The authors constructed a macroscopic logit market share model for mode choice decisions as a function with a set of explanatory variables (e.g., oil price, freight value, shipment distance, etc.).

Next, Indicator 9 is developed to measure the air quality in the city resulting from public transportation. The annual average level of fine particular matter (PM10) is the unit of measurement, and this indicator can also be used to measure air quality which results from air freight business. The same idea also goes to Indicator 10, as it measures the greenhouse gas emissions that are released by public transport. The amount of gas emission is defined by the total carbon emissions per year over the total population in the area of study. This approach also can measure the greenhouse gas emissions by air freight business. Figure 1 displays the mapping of the adoption of the SUTI indicators, 2, 9 and 10 into air freight system frameworks for environmental dimension.

Indicators 3, 4 and 5 are classified within the social dimension of sustainability measures. Indicator 3 is the convenient access to public transport. Higher accessibility performance by the services reflects a sustainable transport system. It is the major indicator in the SUTI framework that measures the social equity that needs to be accomplished. Originally, the formula to compute the accessibility of public transport is the total population in 500 metres in buffer zones (bus station, train station, etc.) but the method can be irrelevant when applied to the accessibility of air freight system. So, in this study, a generic formula from Van den Heuval (2014) is adapted to measure accessibility to the air freight business. Caresse *et al*. (2021) and Chandra and Thai (2022) also used this Gravity-based formula to measure accessibility using distance or travel time. The location-

Table 3: Classification of the indicators

| No. | Sustainability Dimension | Indicators |
|---|---|---|
| 1 | Environment | 2, 9, 10 |
| 2 | Social | 3,4,5 |
| 3 | Economic | 6,7,8 |

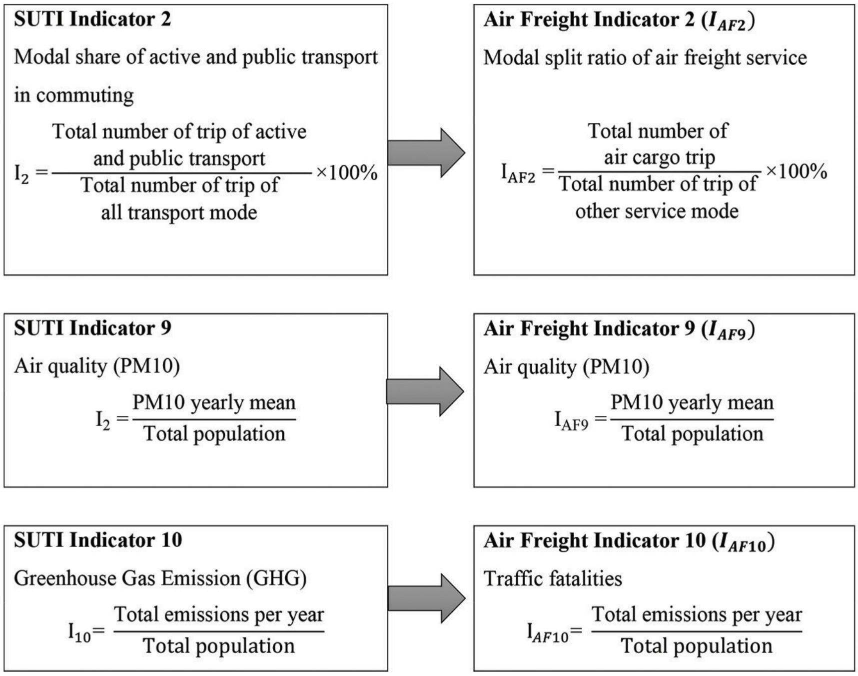


Figure 1: Mapping the SUTI indicators into air freight framework (Environment dimension)

based measure identifies the tonnage of goods or commodity movement from one point to another, incorporating distance or travel time in a gravity-based potential accessibility measure. The study also concluded that better accessibility of freight transport resulted in lower transportation costs and shorter time to the market.

Indicator 4 on the other hand measures the quality and reliability of public transport services. Ahn (2018) identified several factors that influence customer satisfaction in air freight forwarding services by proposing some practical solutions for improving customer satisfaction in their freight forwarding experiences. The factors are: (1) Service reliability, (2) freight, service fees and variety of products and services, (3) customer service, and (4) office and agent network. Meng *et al*. (2010) concluded that there are five key service criteria factors of air cargo logistics providers, of which one is the performance satisfaction value. Using factor analysis to weigh and rank the criteria based on their importance. The four key satisfaction components are reliability, agility, customisation and flexibility of the service. Indicator 4 for the air freight business can be adapted by getting feedback from customers on its business.

The third indicator of social dimension from SUTI is a measure of the traffic fatalities per 100,000 inhabitants. Traffic fatalities are defined to be the number of persons that were killed during the use of public transport or public transport fatalities. The highest ratio value is 15 and the lowest is 0 which means nearly zero deaths happen in that year. Since this only requires a simple report from the authority, this method is qualified to measure the traffic fatalities in the air freight business system as well. Thus, Figure 2 summarises the mapping of adopting indicators 3, 4 and 5 into the air freight system framework. The formulas of the gravity-based model are also displayed in the figure.

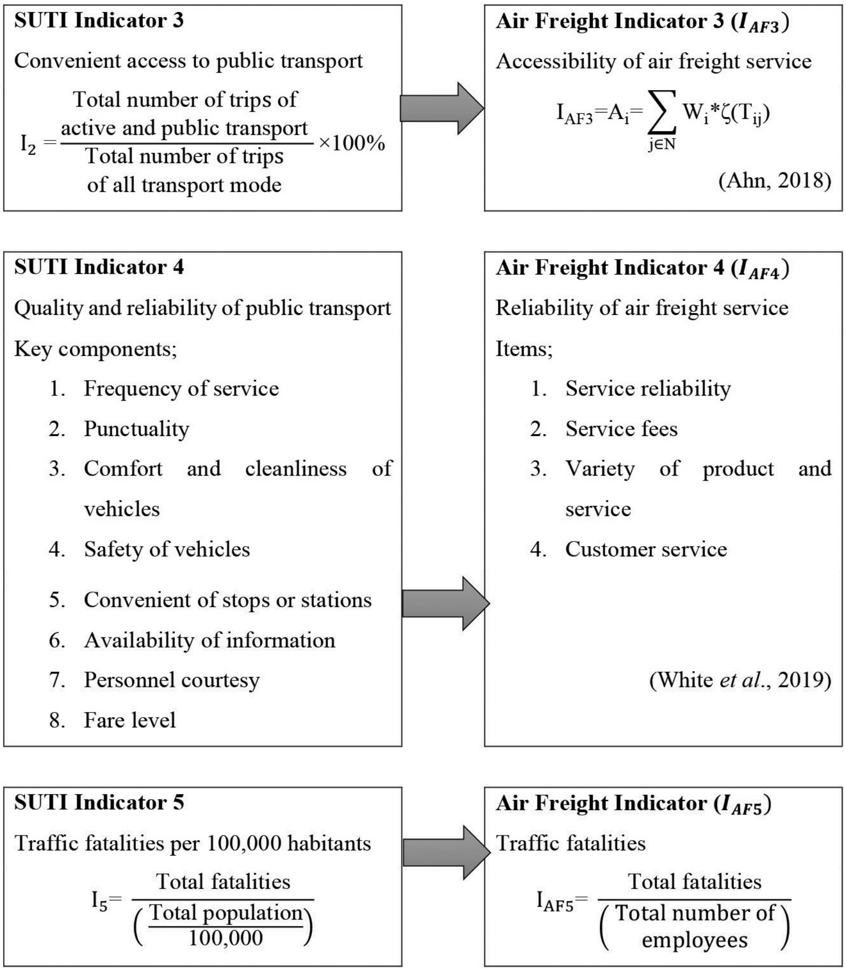


Figure 2: Mapping the SUTI indicators into air freight framework (Social dimension)

The last dimension to discuss is the economic dimension. It incorporates three indicators 6, 7 and 8. In terms of affordability in Indicator 6, SUTI measures the indicator based on the percentage users spend on public transport based on their monthly income. In the UN ESCAP study, it is found that the users from the lowest income quartile (25%) can afford to use public transport twice every day in a month. However, this indicator can be hard to use in measuring the affordability of air freight systems, hence, this study proposes to consider an approach suggested by White *et al.* (2019), which is to perform a simple survey on air freight users regarding the affordability of the service.

As Indicator 7, SUTI is used to measure the operational cost of public transport using the estimated market shares and fare box ratio of each public transport mode. The operational cost value for overall public transport is computed by the total product of market share and fare box ratio of each mode. The same method can be used in assessing the operational cost of air freight service.

The other Indicator 8, is the investment in public transport systems which is strongly related to economic sustainability. Indicator 8 measures the overall investment that has been made in public transport and its facilities. This is because according to the UN ESCAP guideline it is difficult to interpret 'transport investment by mode' from a sustainability point of view. Rather than that, SUTI proposed to focus on the share of public transport in the total investment. The proposed calculated value is to compute the ratio of the total investment in transport facilities over the total investment transport. A high share towards 50% is an indicative of an incredibly significant commitment from the authorised body to public transport and a low share towards zero indicates insufficient support. In this study, it is proposed that the share is measured by calculating the ratio of the total investment logistics company made towards sustainability policy over the total investment company. In fact, the data can be easily extracted from the annual reports of logistics companies. Figure 3 displays the proposed mapping for air freight framework for economic dimensions using SUTI indicators.

This paper attempts to adjust and broaden the application of the SUTI tool from measuring the sustainable development of public transport in the city to also measuring the sustainability performance of air freight business. The general purpose of SUTI is to help quantitatively measure sustainable development besides providing a sustainable framework for practitioners specifically in the air courier business sector. Figure 4 displays the overall SUTI framework for assessing the sustainability performance of the air freight system available in Malaysia.

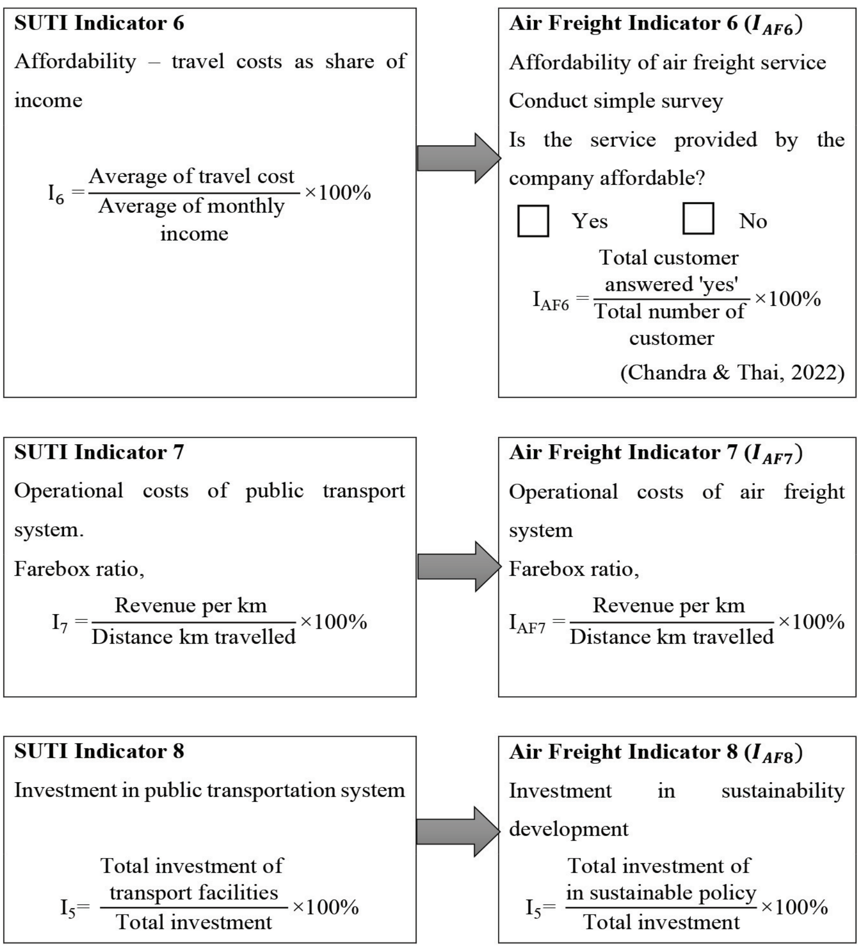


Figure 3: Mapping the SUTI indicators into air freight framework (Economic dimension)

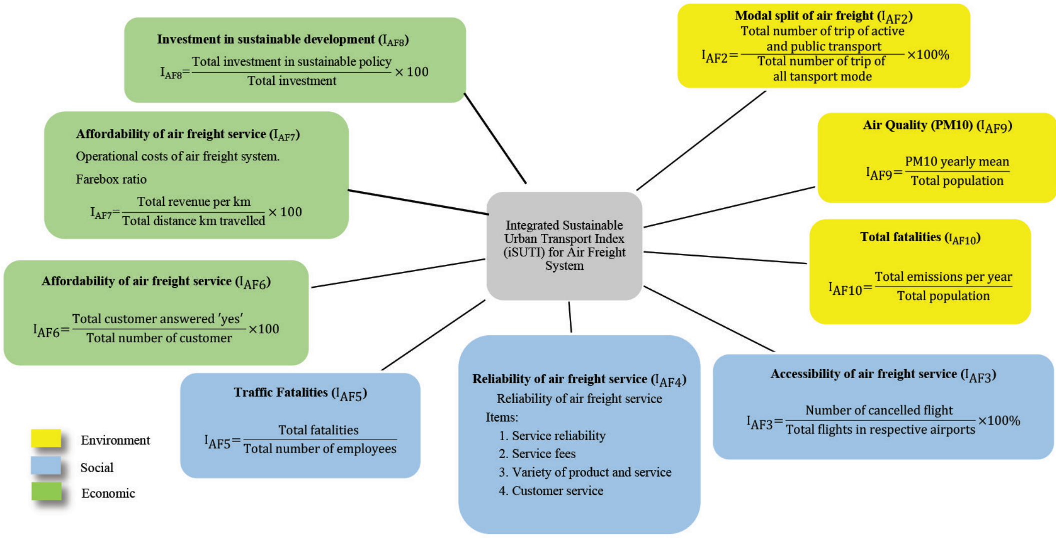


Figure 4: SUTI framework for air freight system

***Sample Result: A Case Study***

The SUTI score based on the proposed framework is calculated for an established total logistics company in Malaysia. The company is selected based on the data availability and their willingness to participate in the research. It has been established for more than 20 years with more than 500 satisfied clients and has delivered more than 50,000 tonnes of goods through its sea and air freight businesses. Table 4 summarises SUTI results for the previous years, 2017 up to 2021. Note the results when equal weights are being allocated for all indicators. There has been an increasing trend since 2019 due to the increase in awareness of sustainable initiatives within the company. The SUTI score helps the company to be able to report their performance in supporting the SDGs initiative in terms of sustainable practices.

The improvement in SUTI implementation for air freight is the ability to change the focus on more impactful indicators. For example, if the company focuses more on Indicator 6, affordability, by giving it 50% weightage, 0.5, the SUTI score does not improve but reduces by almost 15% (14.97%). Hence, this result allows the company to plan for its future decisions to ensure better engagement for sustainability in the air freight business.

**Conclusion**

Logistics companies are faced with the challenge of meeting the increasing demand for transport services. With the rising competitiveness and dynamic nature of the industry, the ability to transport goods quickly has become crucial, leading to a higher demand for air freight services. Air freight plays a fundamental role in transporting goods, particularly in cross-border e-commerce, where consumers expect fast and efficient delivery.

However, over time, the drawbacks of air freight have become more apparent, and consumers are now placing greater emphasis on sustainability. As Malaysia, along with 192 other world leaders, adopted the 2030 Agenda for Sustainable Development, sustainable practices in the air freight sector align with Goal 11 of the agenda. Therefore, it is essential for air freight companies to measure their performance in supporting sustainability.

The modified Sustainability Urban Transport Index (SUTI), based on an automated Excel tool, provides a means to evaluate the sustainability performance of air freight services. This framework enables the development of standardised indicators and offers low-level functionality, allowing responsible bodies and

Table 4: SUTI Score for a selected company

| Indicator | Equal Weight | 2017 | 2018 | 2019 | 2020 | 2021 | New weight | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 0.11 | 1.578 | 1.574 | 1.591 | 1.693 | 1.813 | *0.056* | 1.256 | 1.254 | 1.261 | 1.301 | 1.346 |
| 3 | 0.11 | 1.461 | 1.462 | 1.462 | 1.462 | 1.462 | *0.056* | 1.211 | 1.211 | 1.211 | 1.211 | 1.211 |
| 4 | 0.11 | 1.524 | 1.524 | 1.524 | 1.524 | 1.524 | *0.056* | 1.237 | 1.237 | 1.237 | 1.237 | 1.237 |
| 5 | 0.11 | 1.660 | 1.660 | 1.660 | 1.660 | 1.660 | *0.056* | 1.292 | 1.292 | 1.292 | 1.292 | 1.292 |
| 6 | 0.11 | 1.612 | 1.612 | 1.612 | 1.612 | 1.612 | ***0.500*** | **8.770** | **8.770** | **8.770** | **8.770** | **8.770** |
| 7 | 0.11 | 1.577 | 1.577 | 1.577 | 1.577 | 1.577 | *0.056* | 1.259 | 1.259 | 1.259 | 1.259 | 1.259 |
| 8 | 0.11 | 0.000 | 0.000 | 1.288 | 1.288 | 1.576 | *0.056* | 0.000 | 0.000 | 1.136 | 1.136 | 1.258 |
| 9 | 0.11 | 1.599 | 1.598 | 1.601 | 1.598 | 1.599 | *0.056* | 1.267 | 1.267 | 1.268 | 1.267 | 1.267 |
| 10 | 0.11 | 1.590 | 1.585 | 1.584 | 1.586 | 1.586 | *0.056* | 1.264 | 1.262 | 1.261 | 1.262 | 1.262 |
| **SUTI Score** | | 0 | 0 | 49.308 | 52.425 | 68.726 | | 0 | 0 | 49.448 | 50.987 | 58.438 |
| % Difference | | | | | | | | | | -0.003 | 0.0274 | 0.1497 |

organisations to focus their efforts on achieving sustainability goals across all indicators.

Implementing this proposed framework can assist air freight logistics companies in measuring their overall progress in sustainable development and identifying areas that require improvement based on the SUTI indicators. Moreover, it can support companies in their marketing efforts, as sustainable products and services are increasingly appealing to customers, while simultaneously promoting safer and environmentally friendly practices, thus contributing to a stronger ecological footprint.

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