SYSTEMATIC LITERATURE REVIEW: ANALYSIS OF DETERMINANTS OF THE QUALITY OF BRT TRANSPORTATION USING THE KAIZEN METHOD

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Abstract

Transportation comes from the Latin word transportare, and has 2 utilities, namely place utility and time utility to facilitate relationships between other communities. Article searches are carried out using the "Google Scholar" and "ResearchGate" databases. The preparation of the research follows the basic steps of research which include determining the research objectives, conducting a literature review on the development of the Kaizen method. This paper finds that the kaizen method has been used in various social fields, transportation and so on. Road transport is a major contributor to CO2 emissions due to dependence on fossil fuels. The main causes of emissions are motor vehicles, buses, taxis, and intercity foam. The main reference for the design and development of Transjakarta is the BRT system. Transjakarta is considered as one of the cities in the world that has failed to achieve high quality BT services. Building a sustainable transportation system for big cities and complexes is not an easy thing. The Transjakarta BRT system is projected to be a sustainable solution for the ever-increasing needs of urban transportation. Various problems and shortcomings are interconnected such as: Inefficiency (low carrying capacity), physical problems (design and construction), operational issues of mismanagement and political issues of lack of transparency and corruption. Refers to the best practice of the BRT system in the world, development of regulations and plans have been studied and implemented extensively.

Keywords: quality, transportation, Transjakarta, BRT, Kaizen, systematic literature review

INTRODUCTION

The word transportation comes from the Latin word transportare, and has two utilities, namely place utility & time utility (Limbong, 2011). Many people have higher expectations for reliable transportation, because of the increasingly sophisticated quality of transportation provided. The greater the public interest in public transportation. The increasing demand for transportation infrastructure demands the resilience of the national transportation infrastructure (Weiland & Zagorodny, 2019). Public transportation is a relevant place to study CE (Carreira et al., 2014). Interaction between regions is reflected in the state of transportation facilities (Elliot-Hurst, 1974).

The best quality is the most important thing because quality is the fulfillment of services to consumers. Busway is currently developing and is developing among the community to help public travel who wants to use bus transportation at low fares (Sukwadi, Yang, & Liu, 2011). The Bus Rapid Transit (BRT) of
efficient and democratic public transportation” has received various supports from several parties (Lo, 2010). The system has been recognized as a cost-effective option for urban public transportation, due to very low fares (Gunawan & Kusnendar, 2011). Mode shifts private transportation to the busway system contributes to emission reductions (Hook et al., 2010; Nugroho, Fujiwara & Zhang, 2011). How many emissions can be reduced by establishing policies, technology, technology items, and transportation infrastructure, as well as investigating the frequency and intensity of accidents, traffic-related damage (Jiang et al., 2017). Additional carbon emission cover and law enforcement and politics (Hua & Dong, 2019). The parameters for measuring the quality of public transportation include: 1) tangibles, 2) reliability, 3) responsiveness, 4) communication, 5) safety, 6) comfort, 7) connection, 8) convenience, 9) empathy, and 9) understanding the customer (Parasuraman, Zeithami, & Berry, 1988). The public is the payer and user of transportation, because the public will be giving money and using the busway (Chowdhury et al., 2018). The punctuality of the bus is one of the factors that measure the work efficiency of TransJakarta buses (Hutapea, 2010). Transportation in one intervention is considered important for early busway users (Jones, Cohn, & Ogilvie, 2013). Transportation is an important part of economic and social life because transportation makes it easier to connect with people from different regions, transportation can also facilitate relationships between other communities (Skrúcaný et al., 2019). The high ability of the transportation system encourages residential buildings. high level (Guan., (2019); Yang at al., (2020). Housing is a proxy for sitting, causing population density which will affect the bustle of public transportation. Busway is the fastest BRT network development in the world (Lo, 2010). Improving the quality of transportation will lead to more active travel (Rissel et al., 2012; Freeland et al., 2013; Lachapelle & Noland, 2012). The main reference for BRT design and development is the Transumilenio BAT system in Bogotá, Colombia (Cervero, 2013). Factors such as planning and behaviour change policies are very important (Akbari et al., 2020; Hasan et al., 2020).

The research aims to determine the quality requirements of a transportation so that it can be suitable for use by the community, because the feasibility of a transportation is the most important part to satisfy the journey of public transportation users. In addition, to find out the standard of busway transportation that is feasible to operate, because the busway is one of the transportation that is developing and is very effective for the community, especially urban communities who want to streamline transportation expenditures, the feasibility of a busway must be paid more attention to maintain the safety and comfort of its passengers.

LITERATURE REVIEW

Quality

Quality is an important role in the company, because it has a symbol of trust that is valuable in the eyes of consumers (Nastiti, 2014). Quality is the totality of the characteristics of a product that supports the ability to satisfy specified needs (Hariastuti, 2017). Russell in Glykas et al. (2015), quality according to the American Society for Quality (ASQ) can be defined in three ways: 1) Quality is based on perception customer of the product or service design and how well the design fits with original specifications; 2) It is the capability of the product or services to meet stated or implied needs; 3) Quality is achieved by meeting certain requirements has been set by the company.

Transportation

Transportation is the transfer of goods and people from their place of origin to their destination (Nasution, 2016). Transportation is a derivative need or second need, in community economic activities (Aziz and Asrul, 2014). According to Steenbrink (1974), transportation is the movement of people or goods using tools or vehicles from and to geographically separated places.
Transportation according to Miro (2012) in general can be interpreted as an effort to move or move people or goods from a location called the location of origin, to another location which can be called the destination location, for certain purposes by using certain tools as well. Soewedo (2015), transportation is a tool that is able to fight distance to meet geographically separated needs. From the place of origin. Transportation is moving or transporting goods or passengers from one place to another. Transportation is said to be good, if the trip is fast enough, does not experience congestion, the frequency of service is sufficient, safe, free from the possibility of accidents and comfortable service conditions (Morlok, 1981).

**Bus Rapid Transit**

BRT is a high-quality, customer-oriented urban mobility that provides fast, convenient and cost-effective service, Wright and Hook (2007). BRT is a fast transport that combines the quality of rail-transit and the flexibility of buses, Thomas (2001). BRT is a flexible mass transportation system with a rubber-tired neat transit mode that combines service vehicles, special lanes and other elements in an integrated system with a positive identity that gives a unique image (Levinson et al., 2003). BRT is a means of transportation. cost-effective means of providing quality and high-performance transit services Ancora (2012).

**Kaizen**

Kaizen is a Japanese term for the concept of Continuous Incremental Improvement. Kai means change and Zen means good. Kaizen means continuous improvement that involves everyone (Cane, 1998). Kaizen is a small and gradual improvement, but the kaizen process can bring big results dramatic over time. An important aspect in kaizen is prioritizing the process for improvement Wiratmanii (2013). Kaizen can be said to be a concept that "overshadows" various "unique" practices such as customer orientation, total quality control, robotics, quality control circles, quality improvement (Ekoanindiyi, 2013).

**MATERIALS AND METHODS**

Systematic Literature Review is a literature review method that identifies, assesses, and interprets all findings on a research topic, to answer research questions that have been determined previously (Kitchenham & Charters, 2007). Article searches were carried out using the “Google Scholar” and “ResearchGate” databases. The preparation of the research follows the basic steps of research which include determining the research objectives, conducting a literature review on the development of the Kaizen method. Create a conceptual framework, conduct analysis and discussion related to Kaizen methods and identification. The framework for this literature review process can be seen in Figure 1.
RESULTS AND DISCUSSIONS
This summary is based on the articles obtained and the mapping is carried out. Therefore, the results are provided in Table 1. It contains a data collection containing the year and the opinion of the founders who have expressed opinions about the quality of a transportation, from the very first opinion to the latest opinion, because the more recently a journal is put forward, the more valid a journal follows the times.

<table>
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<tr>
<th>No</th>
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<tr>
<td>1</td>
<td>Esmalian et al. (2022)</td>
<td>Transportation Research Part Transport and Environment</td>
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<td>2</td>
<td>Ismiyati, Firdaus, and Arubusman (2016)</td>
<td>Transjakarta Bus Maintenance Management in Achieving Minimum Service Standards</td>
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<td>4</td>
<td>Febriza, Fredy, and Zen (2021)</td>
<td>Design Development Using Kansei Engineering Approach for Bus Chair</td>
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<td>6</td>
<td>Wahyuningsih and Wartiningsih (2018)</td>
<td>The Effect of Service Quality on the Influence of Consumer Satisfaction on Transjakarta Public Transportation Users (Case Study on Commercial Administration Students at the Jakarta State Polytechnic</td>
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<td>7</td>
<td>Elfian and Ariwibowo (2018)</td>
<td>The Influence of Service Quality on Consumer Satisfaction of Transjakarta Buses at Kampung Melayu Terminal</td>
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<td>Wibowo, Weningtyas, and Rahmah (2018)</td>
<td>The quality of information system services on public</td>
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<td>9</td>
<td>Lafkihi, Pan, and Ballot (2019)</td>
<td>Freight Transportation Service Procurement: A Literature Review and Future Research Opportunities in Omnichannel E-commerce</td>
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<td>10</td>
<td>Yen, Mulley, and Tseng (2018)</td>
<td>Inter-modal Competition in an Urbanised Area: Heavy Rail and Busways</td>
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<td>11</td>
<td>Oluyede et al. (2018)</td>
<td>Unpacking Transportation Barriers and Facilitators to Accessing Health Care: Interviews with care Coordinators</td>
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<td>12</td>
<td>Xia et al. (2022)</td>
<td>A Daily Container-to-train Assignment Model Based on The Passenger Transportation-like Organisation Strategy for Railway Container Transportation</td>
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<td>13</td>
<td>Aminzadegan et al. (2022)</td>
<td>Factors Affecting the Emission of Pollutants in Different Types of Transportation: A Literature Review.</td>
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<td>14</td>
<td>Van et al. (2022)</td>
<td>Assessing transportation system efficiency in its relationship with urban housing: A data envelopment analysis</td>
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<td>17</td>
<td>Susilo et al. (2022)</td>
<td>A Reflection of Motorization and Public Transport in Jakarta Metropolitan Area</td>
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<td>18</td>
<td>Rachman, Nooraeni, and Yuliana (2021)</td>
<td>Public Opinion of Transportation integrated (Jak Lingko), in DKI Jakarta, Indonesia 21</td>
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<td>20</td>
<td>Nasution, Erwin, and Bartuska (2020)</td>
<td>Determinant Study of Conventional Transportation and Online Transportation</td>
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<td>24</td>
<td>Tao et al. (2017)</td>
<td>Modelling loyalty and behavioural change intentions of busway passengers: A case study of Brisbane, Australia</td>
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<td>26</td>
<td>Filippova and Sheng (2020)</td>
<td>Impact of bus rapid transit on residential property prices in Auckland, New Zealand. Journal of transport geography,</td>
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<td>27</td>
<td>Nelson and Hibberd (2019)</td>
<td>Express busways and economic development: Case study of the Miami-Dade South Express Busway. Research in Transportation Economics,</td>
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This journal found that the kaizen method has been used in various social fields, transportation, and so on. From the articles obtained, each article is grouped based on the classification obtained 20% about quality, 25% about transportation, about 40% BRT and 15% about busway (Figure 2).

This journal is used to measure how effective the Kaizen concept is in identifying problems. Kaizen can be implemented in a very wide field. Kaizen as a sustainable development approach has been implemented in improvement projects (Al-Hyari et al., 2019). Kaizen can provide training that is have a major impact on both employees and the company (Main, 2019).
The search was conducted on articles obtained between 2010 and 2022 for the greatest number of publications were articles in 2018 and the least number were articles in 2010 and 2015. The grouping related to the year of publication can be seen in Figure 3.

The kaizen method can be used by the company’s management team to evaluate the company, especially the sales force to find and do it in the sales force team so that they can show results as much as possible to maintain funds, increase productivity and income. Figure 4 is a continuation of the Kaizen Method from this journal.
DISCUSSIONS
Environmental Impact of the Road Transport Sector

Road transport is a major contributor to CO₂ emissions due to dependence on fossil fuels (Emberger, 2017). The main causes of emissions are motor vehicles, buses, taxis, and intercity foam (Chapman, 2007). The negative impacts of urban road transportation are congestion, fuel consumption, accidents and damage to infrastructure, pollution for drivers and local communities, water pollution, vibration, damage to urban image (Anas & Lindsey, 2011). Several factors are considered to reduce the negative impact of transportation.

It is believed that planning, regulation and policy making are very important (Chapman, 2007; Akbari et al., 2020; Hickman et al., 2013; Chavez-Baeza & Sheinbaum-Pardo, 2014; Hasan et al., 2020; Javid, Nejat, & Hayhoe, 2014). Strategies that can be used to reduce greenhouse gas production are urban planning, policies and regulations, and vehicle alternatives.

Urban planning is like managing administrative rules and regulations (ARM) (Akbari et al., 2020; Herold & Lee, 2017). Proper planning for public transportation in traffic can prevent system delays, improve customer satisfaction, reduce and control traffic (Bristow et al., 2009; Dulal et al., 2011; Kopelias et al., 2020; Demir et al., 2014; Bouman et al., 2017; Akbari et al., 2020; Anas & Lindsey, 2011; Hensher & Ton, 2002; Berrittella et al., 2007; Rojas et al., 2013; López-Navarro, 2014; Gan & Damen, 2003; Chen et al., 2021; O’Toole, 2008).

Making policies and regulations in the field of transportation such as studies on standardization and stricter rules in the field of road transportation (Chapman, 2007; Demir et al., 2014; Akbari et al., 2020; Hasan et al., 2020; Tamannaei, Zarei, & Rasti-Barzoki, 2021; Brand et al., 2013), construction of highway barriers (Bouman et al., 2017; O’Toole, 2008; Tamannaei et al., 2021; Poudenx, 2008; Corbett & Winebrake, 2007), restrictions on publisher permits and charges parking costs and congestion (Jiang et al., 2017; Hensher & Ton, 2002; Poudenx, 2008), improve public transportation and encourage people to use public transportation instead of private vehicles (Dulal et al., 2011; Emberger, 2017; Nakamura & Hayashi, 2013; Anas & Lindsey, 2011; Hasan et al., 2020; Hensher & Ton, 2002; Berrittella et al., 2007; Rojas et al., 2013; Tamannaei et al., 2021; Poudenx, 2008; Qin et al., 2019).

Switching private vehicles to public transportation and other environmentally friendly modes of transportation (such as walking or cycling) (Dulal et al., 2011; Tamannaei et al., 2021).

Technological changes will play a role in reducing emissions (Chapman, 2007; Akbari et al., 2020). Some of the elements are a) zero emission vehicle technology (Wang, Wang, & Abareshi, 2020); b) alternative fuels (Trevisan and Bordignon, 2020); c) hydrogen fuel cell (Salvi and Subramanian, 2015); d) biofuel namely mono-alkyl esters obtained from vegetable oils or animal fats (Emberger, 2017); e) fleet renovation (Emberger 2017); f) sophisticated public transportation system.

Next, the most effective factors in reducing pollution in road transport are: 1) economic factors, 2) travel price, 3) fuel price, 4) competitive pricing, 5) tax considerations, 6) pollutant quota allocation (Timilsina et al., 2011; Demir et al., 2014; Tamannaei et al., 2021; Hung et al., 2019; Hua & Dong, 2019). The higher the demand for transportation, the higher the quality and cost of transportation. (Sarkar et al., 2012; Zhang et al., 2019).

Factors that can be used to reduce the demand are: 1) controlling road traffic depending on supply and demand factors; 2) manage demand to reduce transportation; 3) controlling the need for travel that reduces motorized vehicles, reduces traffic jams, reduces road risks; 4) precise demand management planning (Emberger, 2017; Zhang et al., 2019; Qin et al., 2020; Akbari et al., 2020).

Several factors that will increase the number of trips are: 1) freight transportation; 2) not using public transportation; 3) not using...
alternative vehicles; and 4) not considering the most optimal route (Ehmke et al., 2016).

Barriers to reducing pollution in transportation are: 1) lack of efficient carbon and pollutant trading markets; 2) invalid allocation; 3) lack of constitution and laws; 4) increase in transportation costs and goods prices; 5) the law on carbon commercialization encourages competition in the export of transportation services (Herold & Lee, 2017; Hoffman, 2010; Avetisyan, 2018; Corbett & Winebrake, 2007). Completion of vehicle speed control barriers, namely: 1) delay increase; 2) increased congestion; and 3) extend the transport process (Corbett et al., 2019).

Some of the things that make transportation users dissatisfied are: 1) increase in fuel prices and taxes that cause price increases transportation goods and services; 2) Restrictions and rationing in some industries that cause travel time delays; and 3) encouraging customers to use alternative types of transportation and public transportation makes passengers wrong assumptions about reducing social services (O’Toole, 2008; Graham & Glaister, 2004).

The challenges of using biofuel energy sources are: 1) Lack of agricultural space to produce the needed oil seeds; 2) optimal economic technology for producing biofuels from oil seeds; 3) the right catalyst to increase the amount of fuel obtained from oilseeds; 4) Biofuel storage; and 5) Nationalization of the emission characteristics of biofuels in the transportation sector (Azar et al., 2006; Chauhan et al., 2009).

BRT Problems and Challenges

The main reference for the design and development of Transjakarta is the BRT system (Cervero, 2013). Transjakarta is considered as one of the cities in the world that has failed to achieve high-quality BT services, Cervero (2013). Some problems and challenges of BRT are considered. Despite its status as the world's largest BRT network with a total of more than 250 km, Transjakarta has a much lower passenger capacity compared to other BRT systems in the world (ITDP Indonesia 2014).

Regarding design and delivery problems, defects have been identified in relation to the design and construction of Transjakarta (Ernst, 2005). Inadequate road surface improvement has resulted in the degradation of the nets at several bus stops. Lack of integration between transportation systems causes poor percentages and traffic congestion.

The construction of Transjakarta is designated as the BRT system with the lowest cost in the world (Cervero, 2013). The low-cost budget for the construction of the Transjakarta infrastructure component causes maintenance costs and additional construction costs (Ernst, 2005). On transparency and Institutional Issues, TransJakarta shows that the phase 1 TransJakarta contract has been carried out in a non-transparent manner.

On the optimization of the BRT system, several things must be highlighted, namely: 1) BRT system vehicles are fully prioritized; 2) BRT vehicles run fast and constantly; 3) Fixed headway during the study period; 4) Passenger arrival rate is set and does not change; 5) The duration for stopping and acceleration is fixed.

CONCLUSIONS

Given the importance of the environment around the world and the recognition of the transportation industry as the second largest source of greenhouse gas emissions in all industries, controlling and examining pollutant factors, making regulations and considering policies to prevent problems is one of the priorities of a developing and progressive society.

Building a sustainable transportation system for big cities and complexes is not an easy thing. The Transjakarta BRT system is projected to be a sustainable solution for the ever-increasing needs of urban transportation. Various problems and shortcomings are interconnected such as: Inefficiency (low carrying capacity), physical problems (design) and construction), operational problems (mismanagement) and political problems (lack of transparency and corruption.
Refers to the best practices of the BRT system in the world. Regulations and development plans have been studied and carried out extensively. International standards are available with clear criteria. Implementation is always a problem. Professional public services are characterized by accountable and responsible administration (government officials) the criteria are effective, simple, transparent, efficient, responsive, timely, and adaptive. If these qualities are used in the development and operation of TransJakarta, it will become the next successful gold rank sustainable BRT system.

In order for an environment that is free from all transportation pollution, it is better to improve a comprehensive protocol to face the next challenges, examine the problem of fuel, pollution, etc., conduct an investigation on road taxes to prevent the increase in the price of goods due to fuel, research solutions to deal with monopoly opposition in high-risk transportation, improve low-risk transportation technologies such as rail and sea transportation.

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