JOURNAL LA MULTIAPP

VOL. 05, ISSUE 05 (609-629), 2024
DOI: 10.37899/journallamultiapp.v5i5.1481

Key Factors of Urban Public Transportation Services Implementation in Indonesia: A Knowledge Management Perspectives

Raihansyah Yoga Adhitama[1], Rafi Giffari[1], Dana Indra Sensuse[1], Imairi Eitiveni[1], Deden Sumirat Hidayat[2], Sofi Indria[3]

[1]*Faculty of Computer Science, Universitas Indonesia, Depok*
[2]*National Research and Innovation Agency Jakarta*
[3] *College of Vocational Studies IPB University, Bogor, Indonesia*

**Corresponding Author: Raihansyah Yoga Adhitama*
Email: raihansyah.yoga@ui.ac.id

Article Info

Article history:
Received 06 August 2024
Received in revised form 12 September 2024
Accepted 28 September 2024

Keywords:
Public Transportation Service
Knowledge Management Key Factor
Qualitative Study
Digital Platform

Abstract

It is well-recognized that the availability of public transportation has a significant impact on urban transportation networks. In Indonesia, the government is still having difficulties to establish a reliable public transportation system. One important aspect that can be utilized in establishing a reliable public transportation system is to utilize knowledge management in its services. This study aims to identify key factors from knowledge management perspectives related to the implementation of public transportation services. To achieve this objective, this study conducted qualitative research on 12 users of public transportation services in Indonesia. The results of this study indicate that there are several key factors related to the implementation of public transportation services from knowledge management perspectives, such as Real-Time Information, Digital Accessibility, User Engagement and Trust, Platform Functionality and Quality, Digital Inclusive Strategy, Knowledge Dissemination Method, Help Desk Reliability, and Knowledgeable Officer.

Introduction

Public transportation is the backbone of mobility in major cities around the world, including in Indonesia (Risso et al., 2023). By providing an efficient and affordable means of travel for the public, public transport plays an important role in reducing traffic congestion, improving accessibility, and minimizing the environmental impact of private vehicle use (Hensher, 2018; Risso et al., 2023). However, along with its benefits, public transportation services often face complex challenges, especially in the context of developing countries like Indonesia (Gwilliam, 2003; Vasconcellos, 2016).

Public transportation services in Indonesia, especially in major cities such as Jakarta, Surabaya, and Bandung, are faced with various problems that affect their performance (Assegaff, 2022; Zhou et al., 2017). Some of the main problems include schedule delays, inadequate capacity, lack of integration between transportation modes, and lack of information available to users (Cervero, 2013; Pojani & Stead, 2015; Zhou et al., 2017). This creates a sub-optimal experience for users and can hamper efforts to increase the use of public transportation (Chen et al., 2020).

The complexity of public transportation network design is often an obstacle to providing effective services (Gwilliam et al., 2015). Inadequate design can lead to increased travel time and uncertainty for users. In addition, the lack of integration between transportation modes is

ISSN: 2716-3865 (Print), 2721-1290 (Online)

also a serious problem (Gwilliam et al., 2015). Although some cities such as Jakarta have developed rapid bus systems such as TransJakarta, integration with other modes such as trains and city bus shuttles is still under development (*JPI - Integrasi Transportasi Jakarta Dan Keuntungannya Bagi Warga*, 2023; Risso et al., 2023). This can create gaps in service efficiency and accessibility for users.

The Indonesian government has made various efforts to improve the quality and coverage of public transportation services (Nurbaiti, 2021). The construction of major projects such as Mass Rapid Transit (MRT) and Light Rail Transit (LRT) in Jakarta is a positive step in increasing public transportation capacity and reducing traffic load in major cities (Hakim, 2023). In addition, the development of digital applications for public transportation monitoring and management is also underway to improve efficiency and user convenience (Gordon, 2021; Sofa, 2023).

Aspects that are considered important in improving the quality of public transportation services include the quality of human resources, service accessibility, and information management of each operating activity (Transport, 2021). The quality of human resources in this context includes the level of skills, knowledge and competence of staff involved in the provision of transportation services (Zhang et al., 2020). High quality human resources are critical to the successful operation and improvement of public transportation services (Zhang et al., 2020).

Accessibility of public transportation services refers to the extent to which they can be accessed and used by everyone, including individuals with different needs and limitations (Jing et al., 2022). Knowledge management plays an important role in ensuring information about services is available and easily accessible to all users (Gwilliam et al., 2015). This includes physical, informational, and economic aspects that ensure that all users can easily and efficiently use transportation services (Gwilliam et al., 2015).

Information management of any public transportation service operation activity involves the process of collecting, storing, analyzing, and distributing information related to daily operations (Transport, 2021). This information management is important to improve operational efficiency, safety, and quality of service for users (Transport, 2021). Knowledge management, as a systematic approach to creating, sharing, using, and managing organizational knowledge, is key in optimizing these aspects (Davenport & Prusak, 1998). With effective knowledge management, transport organizations can improve operational efficiency by ensuring staff have the necessary knowledge(Wiig, 1993). This means that relevant and up-to-date information must be available to all team members, be it about schedules, routes, or user needs(Sindakis et al., 2015). Good information management also ensures that data obtained from operational activities can be effectively analyzed to identify areas where services can be improved or enhanced (Štreimikienė et al., 2022).

In addition, knowledge management helps improve the quality of services provided to users by ensuring safe, convenient, and reliable services. Service accessibility is key in this regard, which includes the ability to provide users with accurate and useful information, including up-to-date departure schedules, optimal routes, and information on additional facilities and services (Oviedo et al., 2022). Knowledge management ensures that this information is available and easily accessible to all users through various channels, such as mobile apps, websites, and digital information boards (Mina-Raiu & Melenciuc, 2022).

A knowledge management approach also encourages innovation and continuous improvement by utilizing existing knowledge and constantly looking for new ways to improve services (Gordon, 2021). This means that transport organizations should be open to feedback from users and be ready to change or improve their services based on such input. Knowledge management is thus an important cornerstone in ensuring that public transportation services

ISSN: 2716-3865 (Print), 2721-1290 (Online)

are not only effective and efficient but also inclusive and sustainable (Durand et al., 2023; Mehmood & Imran, 2021).

In the context of this research, an understanding and perspective of knowledge management will be key in identifying key factors related to the implementation of public transportation services in Indonesia. Evaluation of these factors will assist in providing relevant recommendations to improve the quality of public transportation services by taking into account the information and knowledge management perspective. It is hoped that this research can make a significant contribution to the development of a more efficient, inclusive and sustainable public transportation system in Indonesia.

This research is organized in several chapters, starting with Chapter 1 which contains an introduction. Chapter 2 will review the literature related to knowledge management and public transportation services. Chapter 3 will explain the research methodology used. Chapter 4 will present the results and analysis of the research data. Chapter 5 will provide conclusions and recommendations based on the research results.

Literature Review

Relevant Studies

Many studies have been conducted in the field of public transportation and knowledge management. A study conducted by Kamil et al. (2021) explored the utilization of social media data to track and analyze public transport incidents. By classifying transportation information found from social media posts and analyzing the same data for spatial analysis, this study contributes to the development of classifiers for social media posts and GIS systems to understand the spatial aspects of service disruptions. The study also emphasizes the potential of social media as a rich data source for monitoring and analyzing public transport issues, especially in under-resourced languages such as Polish.

Another study by Bańka et al. (2022) investigated how Business Intelligence (BI) tools can improve the processing and analysis of passenger feedback in urban public transport organizations. The study highlights the advantages of automating these feedback processes by using BI tools, which streamline the flow of data between different systems involved in collecting, processing and analyzing passenger feedback.

Some public transport studies also focus on inclusivity strategies, which emphasize the importance of making public transport systems accessible and equitable for all users. A study conducted by Durand et al. (2023) took an interdisciplinary approach aiming to create an inclusive public transport system through the integration of digital technology and user participation. The study shows that collaboration between various disciplines can produce effective solutions to overcome the challenges of inclusiveness in public transportation. Still on the topic of inclusiveness, to understand the aspects of satisfaction felt by the elderly who use public transportation, Chaisomboon et al. (2020) conducted a study that evaluated the satisfaction of elderly users with a performance analysis approach to improve the quality of transportation services. The research was conducted by designing a satisfaction survey that was analyzed using various performance analysis methods. The research resulted in a list of special needs for elderly users as well as areas that need to be improved in public transportation services.

Furthermore, there are related studies that explain the involvement of users of public transportation services. These include research by Cartenì et al. (2020). The performance and suitability of public transportation service practices cannot be separated from the role of the public who influence the planning and decision-making process of public transportation service providers. Therefore, this research integrates public participation in the design of public transport services in an effort to build services that better meet the needs of users. It

ISSN: 2716-3865 (Print), 2721-1290 (Online)

concludes that public participation is key in the design of public transportation services that are responsive to user needs. Public involvement itself helps to improve the quality of decisions made, which has implications for user trust in public transportation services.

Key Factors from Existing Literature

As explained in the introduction, the researcher has previously conducted a literature review from a number of journal provider databases. Through the literature review, the author obtained key factors from the knowledge management perspectives in urban public transportation services according to the users. These key factors include Real-Time Information, Digital Accessibility, User Engagement and Trust, Platform Functionality, and Digital Inclusion strategies. The following table explains in full the results of the literature review conducted.

Table I. Key factors discovered from existing literature

Key Factor	Detail	Reference
Real-time Information	Real-time transport updates	(Nalmpantis et al., 2019; Sarker et al., 2019)
	Availability of transportation options	(Nalmpantis et al., 2019)
Digital Accessibility	Digital skills and accessibility improvement	(Durand et al., 2023)
	User-friendly digital service design	(Durand et al., 2023; Mehmood & Imran, 2021)
User Engagement and Trust	Training and support for users	(Durand et al., 2023)
	Engaging public discourse through digital platforms	(Mehmood & Imran, 2021)
	Trust in information accuracy	(Sarker et al., 2019)
Platform Functionality & Quality	Customization and personalization of digital platforms	(Jevinger et al., 2023; Molla et al., 2024)
	Integration and data governance on platforms	(Molla et al., 2024)
Digital Inclusion Strategies	Strategies to overcome digital divide	(Durand et al., 2023)

Research by Nalmpantis et al. (2019) and Sarker et al. (2019) show that real-time transportation updates are critical to improving the user experience of public transportation. Real-time updates allow users to make better travel decisions and be responsive to changing transportation conditions. Nalmpantis et al. (2019) also emphasized the importance of the availability of various transportation options for users. By having information about the various transportation options available, users can choose the most efficient and convenient route according to their needs.

Next, Durand et al. (2023) highlighted that digital skills and increased digital accessibility are essential to ensure that all users can take advantage of technology-based public transportation services. Digital education and training can help reduce the digital divide and ensure greater inclusion. User-friendly design of digital services is another key factor identified by Durand et al. (2023) and Mehmood & Imran (2021). User-friendly services increase user convenience and satisfaction, and ensure that technology does not become a barrier to the use of public transportation.

Furthermore, Durand et al. (2023) pointed out that training and support for users is essential to increase their engagement and trust in using digital-based public transportation systems. With adequate support, users can feel more comfortable and confident in using the service.

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Mehmood & Imran (2021) emphasized the importance of public engagement through digital platforms to create constructive and participatory discussions. Through these platforms, users can provide feedback and participate in the transportation planning process, which increases trust and transparency. Trust in the accuracy of information is another key factor identified by Sarker et al. (2019). Users tend to rely more on public transportation services if they believe that the information they receive is accurate and reliable.

Research by Jevinger et al. (2023) and Molla et al. (2024) show that the ability to customize and personalize digital platforms is essential to meet users' individual needs. Personalization increases user comfort and satisfaction in using public transport services. Molla et al. (2024) also highlighted the importance of data integration and governance on digital platforms. Good integration ensures that all relevant data is available and can be used effectively, while good data governance ensures the security and privacy of user information.

Durand et al. (2023) identified strategies to overcome the digital divide as a key factor in the implementation of public transportation services. These strategies include initiatives to improve technology accessibility and provide digital training for all levels of society, so that all users can enjoy the benefits of technology-based transportation services. The results of the literature review show that the implementation of knowledge management in public transportation services requires attention to various key factors, including real-time information, digital accessibility, user engagement and trust, platform functionality, and digital inclusion strategies. By considering these factors, transportation service providers can improve service quality and user experience, and ensure that technology is used to create a more efficient and inclusive transportation system.

Methods

Research Method

In this research, the researcher employs a qualitative research approach to explore the key factors of urban public transportation services implementation which involving knowledge management aspect. Qualitative research is an interpretive method of social science study that focuses on participants' interpretations of a particular phenomenon to understand them. Qualitative research is very helpful when attempting to comprehend the motives, beliefs, values, and feelings of individuals. Specifically, it is helpful in characterizing and/or responding to questions concerning the viewpoints of the groups being investigated, such as regarding instances, circumstances, activities, or events in their natural environments (Kathleen & Macdonald, 2012). Therefore, this approach is suitable for answering the previously defined research questions.

Sample and Data Collection

An essential component of this research is the data collection process, which offers the main source of information required to investigate the key factors influencing the implementation of urban public transportation services from knowledge management perspectives. For this study, we used in-depth interviews as our main data collection method. As a qualitative research method, in-depth interviewing involves carrying out long, personal interviews with a selected number of respondents to learn about their opinions on a given topic, initiative, or circumstance (Boyce & Neale, 2006). The interview instrument is structured into three parts which aims to understanding the participant experience with public transportation services, understanding the current situation of public transportation services, and identifying the knowledge management perspectives in public transportation services implementation. These interviews were carried out both online and face-to-face to accommodate the preferences and availability of the participants. Also, the data collection process was conducted over a two-week period, from May 6, 2024, to May 19, 2024.

ISSN: 2716-3865 (Print), 2721-1290 (Online)

As for the sampling techniques, purposive sampling method was used to choose the research participants. This method aims to address specific aspects of a population that are of interest to achieve the research objectives (Rai & Thapa, 2019). In this case, we selected those who have used the public transportation service. A total of 12 participants were interviewed, which was determined based on the saturation of data obtained in the first 12 interviews. To facilitate the interviews, we used zoom platform and recorded the session using the Zoom recorder and notebooks. While the data collection process was completed successfully, the process of the data collection experienced a few obstacles, mainly related to coordinating the interview schedule that was convenient for all participants. The details of each participant of this research are presented in the table below:

Table 2. Detailed information from each interview participant

Participant Code	Participant Code	Domicile	Occupation	Length of using Public Transport	Frequency of using public transport
Participant 1	P1	Bekasi	Private Employee	4 years	1 time /week
Participant 2	P2	Jakarta	Private Employee	2 years	5 times/week
Participant 3	P3	Jakarta	Private Employee and Student	3 years	5 times/week
Participant 4	P4	Bogor	Student	4 years	3 times/week
Participant 5	P5	Jakarta	Private Employee and Student	5 years	4 times /week
Participant 6	P6	Jakarta	Private Employee and Student	1 years	2 times/week
Participant 7	P7	Depok	Private Employee	6 years	2-3 times/week
Participant 8	P8	Bogor	Private Employee and Student	10+ years	5 times/week
Participant 9	P9	Bogor	Civil Servant	2 years	5 times/week
Participant 10	P10	Bekasi	Private Employee	10 years	5 times/week
Participant 11	P11	Bekasi	Private Employee	10+ years	5-6 times/week
Participant 12	P12	Jakarta	Private Employee and Student	3 years	1-2 times/week

Data Analysis

The data analysis process in this research is conducted by using thematic analysis method. Thematic analysis refers to a method or technique for finding, evaluating, and summarizing patterns or themes in data. This method briefly arranges and provides a (rich) detailed description of the dataset (Braun & Clarke, 2006) The thematic analysis is well-suited for this research since it enables us to investigate and analyze various aspects that affect the public transportation services implementation by involving knowledge management perspectives.

To conduct the thematic analysis, this research followed the six-step guide for conducting the thematic analysis as outlined by Braun & Clarke (2006). In the first step, we are familiarizing ourselves with the data collected from the interview. This process includes the transcription and the translation of the interview data to English since the interview process was carried out using Bahasa Indonesia. This step allows us to get a comprehensive understanding of the content of the interview data and helps to identify preliminary patterns and insights. In the second step, we proceed to generate initial codes from the data. The initial codes process involves identifying interesting features of the data and organizing them into meaningful groups. For the third step, we examine the collated codes to identify the potential themes. This process involves reviewing and merging codes that might form an overarching theme. The fourth step of this analysis is reviewing the identified themes. The process of reviewing the identified themes is useful to create a refined and accurate theme that reflects the data. This reviewing process involves combining separate themes into one while also analyzing themes

ISSN: 2716-3865 (Print), 2721-1290 (Online)

that might need to be broken down into separate themes. In the fifth step, we refined each theme by providing definition and names for all the identified themes. This process helps to ensure that each theme was contributed uniquely to answering the research questions. As for the last step, the themes are narratively presented.

Throughout the entire analysis process, google spreadsheets were chosen as the tool for organizing and managing the data. The google spreadsheet allows us to systematically examine the data, while also facilitating collaboration amongst the researchers. Despite the availability of data analysis software, this research conducts the analysis process manually using the interpretation skills of the researchers.

Results and Discussion

Identified Key Factors

After completing the interview process, the answers from each respondent were collected for processing using thematic analysis. Each respondent's answer was coded to obtain a list of labels (codes) in the first phase, namely Open Coding. From the open coding stage, a number of labels were produced, including "live chat and chatbot support services", "the need for chatbot services", "The need for more responsive digital services", and many others. Next, the list of open coding was further codified into more general themes resulting in Axial Coding. Previous open coding results such as "Importance of visual presentation of information", "Better visualization of information on the train is needed.", and "Increased detail of information provided in the app and stations" were grouped into a more general theme, namely Visualization of Information. Finally, the list of factors obtained from axial coding was converted to the most common theme from before. The theme will be the key factor, which can also be called Selective Coding. For example, Visualization of Information that has previously been obtained is grouped with other axial coding results, namely "Knowledge Sharing needs for specific information" to form the key factor "Knowledge Dissemination Method".

Table 3. Key factors obtained through empirical research

Open Coding	Axial Coding	Selective Coding (Key Factor)	Status
The need for assistance services that are always available such as live chat or chatbot services	Real-time, fast and high availability support services	Helpdesk Reliability	**New Key Factor**
The need for more responsive digital services			
The need for FAQ services			
The need for transparency in the follow-up of reports	Transparency of report handling		
The need for transparency in report handling			
The importance of the performance of digital applications of public transportation services	Increasing Application Quality	Platform functionality and Quality	Has been discovered through literature review
The need for an ads-free public transportation service app			
The need for continuous app maintenance and updates			
User distrust of technology ideas developed by the government	Skeptical of technology development		

ISSN: 2716-3865 (Print), 2721-1290 (Online)

	initiated by the government		
The need to socialize the application to the wider community	Socialization and Education on the use of public transportation service applications	Digital inclusion Strategy	Has been discovered through literature review
The need for education or education of the use of public transportation service applications			
Use of social media applications as a place for information exchange	Social Media as a dissemination of public transportation information	Knowledge dissemination method	**New Key Factor**
The usefulness of public transportation route information in social media content			
Awareness of users of special facilities needs to be increased	Awareness of special facilities		
There is a need to deliver clearer and more targeted information to users, especially new users, one of which is related to the separation of the women's and men's sections.	Knowledge Sharing needs for specific information		
The importance of more detailed information provided in the app and stations	Visualization of Information		
Importance of visual presentation of information			
Importance of street view feature			
Better visualization of information on the train is needed.			
Knowledge-based individually through officers affects users' sense of security	The Present of Knowledgeable Staff	Knowledgeable Officer	**New Key Factor**
The importance of the presence of officers to help users who are not familiar with technology			
The need for live location information of public transportation	Precision information of vehicle positioning points	Real Time Information	Has been discovered through literature review
The importance of community involvement factors in the development of public transportation services	User Engagement Channels and Practice	User Engagement and Trust	Has been discovered through literature review
Community involvement in reporting problems via social media has been quite effective			
The importance of creating a positive impression of public transportation services to increase user engagement	Trust and Positive Impression		

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Analysis of Each Identified Key Factors

Real Time Information

Based on the results of interviews with respondents, there are several views that describe the current state of real-time information on public transportation services. In general, many respondents feel that the real-time information available on transportation applications is not very optimal. P7 mentioned:

> *"If, for example, when I arrive at the bus stop at 7 o'clock, the bus is not there yet, that is quite disturbing and affects my travel experience". This shows that the accuracy of information is still a significant problem.*

Another interviewee, P1, even stated that if the absence of information presented in real time due to a broken screen could cancel his intention to use public transportation. P1 shared his experience below:

> *"When I arrived at the LRT station the screen information was in error so I decided not to use the LRT", which illustrates how important the accuracy of real-time information is in user decision-making.*

Most respondents agreed that real-time information is critical to improving user experience and efficiency in using public transportation services. With real-time information, users seem to have better control over their time. Here are P3's views on this matter.

> *"With the information I feel I have more control over what I want. I want to get to my destination as soon as possible. So with the information, I can work on that". Real-time information gives users more control to plan their trips more effectively."*

Not only that, P12 as a user hopes that there is information that tells the precise location of the train. Similar to P3, he thinks that with the availability of precise location information, he can more easily estimate the estimated time he needs to arrive at the public transportation,

> *"... Maybe information like where the train is located, that's what I need. So I can estimate the estimated time I need to arrive."*

Overall, respondents' views indicate that although there are currently shortcomings in the accuracy of real-time information, the existence of such information is still considered very important. Accurate real-time information not only increases user convenience and satisfaction but also provides certainty and efficiency in planning trips.

Digital Accessibility

Based on the interviews with respondents, views on digital accessibility in public transportation services show that despite progress, there are still some challenges that need to be overcome. One of the challenges is the difficulty in using the available digital applications. The design of the application is considered difficult to use with a design that makes users confused. P9 emphasized the importance of accessibility and user-friendly application design,

> *"... if for example there are ordinary people who have never used the application if the application is difficult to use and the design is confusing, it can make people lazy to use the application".*

This shows that an app that is easy to use and not confusing is very important to attract new users. In addition, most respondents agreed that the accessibility of digital information both inside the app and outside the app is very important to improve user experience in using public transportation services. P3 considers the strategic placement of information in the LRT (Light-Rail Transit) type of public transportation to be very helpful,

ISSN: 2716-3865 (Print), 2721-1290 (Online)

"I think the best place is at the entrance. So it's implemented in the LRT, so it's like I already know from the beginning".

This confirms that well-placed and easily accessible information is essential to help users plan their trips. In addition, the presentation of time information in ETA (Estimated time of Arrival) format is also considered easier to understand and preferred by users. This is evidenced by P3's statement that LRT transportation, which is relatively new in Indonesia, is a good example of presenting time in the ETA format. She further said that the ETA time presentation format on LRT is easier to understand than the presentation of KRL or Commuter Line public transportation.

"...If for example on the KRL, how many trains arrive, for example 15.26. So I have to check the clock again right Oh, now it's 15.26 Then after that I have to reduce the current time right For example, oh it turns out I have 5 more minutes. The problem is that on the LRT it's already written like Harjamukti Arriving in 4 minutes, that's it. I think it's best like that so I don't have to think anymore."

Overall, respondents' views show that while there are some challenges in digital accessibility in public transportation services, the presence of good digital accessibility and easy-to-understand presentation is essential to improve user experience and encourage continued use of the app.

User Engagement and Trust

Based on the interviews with the respondents, views on user engagement and trust in current public transportation services show significant variations. P8 revealed that there is already accessibility to provide feedback, one of which is through social media. Public transportation service providers have official accounts that serve as a platform for information dissemination and a means of communication between service providers and their users.

"...sometimes some feedback or sometimes complaints or sometimes criticism can also be read on Twitter or on Instagram or on social media and the average public transportation manager also has social media accounts that make it easy to access".

From these communication platforms, people often write complaints and criticisms about the facilities and performance of public transportation services. Based on its current implementation, the response to such feedback still needs to be improved. According to P8, the response to the feedback has not been optimized or openly visible on how the service provider handles it.

"... how they involve the community, so far it has been quite running. But maybe the corrective response is what I don't know, because there may have their own way."

From another respondent's perspective, P10 emphasized the slow response to problem reports. She sees a lack of performance on the part of service providers in terms of movement as potentially holding back the pace of public engagement to give their opinions on public transportation services in Indonesia. This shows that service to user complaints still needs improvement to build better trust.

"... when we report an issue maybe they still respond slowly or less responsively".

Most respondents agreed that user involvement and trust are very important to improve the quality of public transportation services. P8 emphasized the importance of community involvement in the development of public transport services, suggesting that user voice should be the basis of service development. P8 expressed the following opinion.

"...if I position myself as a citizen, of course we should be one of the sources of the developments in transportation. because after all, the community is the user".

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Overall, respondents' views indicate that although there are some challenges in terms of user engagement and trust, both are very important aspects for improving the quality of public transportation services. Service providers should focus on improving responsiveness to user feedback and ensuring the accuracy of information provided to build better trust.

Platform Functionality and Quality

Based on the results of interviews with respondents, most respondents think that good platform functionality is very important for the user experience in using public transportation services. P6 is one of the respondents who thinks that a platform that provides a wide variety of route options and other filters can increase the personalization aspect to its users. The following interview excerpt shows her preference when she wants to ride public transportation by using the Gotransit feature on the Gojek application.

> *"Then I asked my friend, which route doesn't cross where because I don't want to cross the pedestrian bridge. So I chose to finally get off at the Pasar Minggu Baru station Even though it's farther and the price is more expensive, but I know, I don't need to cross the pedestrian bridge...".*

According to her, personalization can tailor the travel experience to the behavior of users who may not choose to pass through certain areas. From the quote, it turns out that p6 is among the users who avoid certain areas such as pedestrian bridges even though it will be further to the destination and more expensive.

Even so, it cannot be denied that some other users think that personalization and customization are not important things that need to be considered by service providers. One of them is P4 who said that the essence of public transportation is that it is cheap and easily accessible to the public. He doesn't really care about personalization because he thinks that public transportation services are currently much cheaper than taking a private vehicle or online taxi.

> *P4 said "Yes, I can't imagine it because if for example I myself want to take public transportation. Yes, it's like I don't think about what's going on. After all, most people also and including me, if you want to take public transportation, you automatically want to find cheaper, compared to taking a private car or online taxi bike, it will be more expensive."*

In developing a useful platform for public transportation services, a number of respondents mentioned criteria related to the quality and functionality of the platform. P7 said

> *"If for example the application itself is not good, such as slow, lag, unresponsive or others, maybe people will be lazy to use the application of the service."*

P7 emphasized the importance of the performance of digital applications for public transportation services. According to him, if the quality of the application is not good, such as lag, slow, or unresponsive, people will also be lazy to use it. In addition, P9 said that applications should be presented without advertisements because they interfere with the process of using them.

> *"... I see that in some applications there are many advertisements, so if I am in a hurry to find a route it is quite disturbing for me"*

P10 is of the opinion that the public transportation service apps created so far are mostly unused apart from the Google maps app. Other apps tend not to update their apps too much. She wants other apps to be able to keep up with Google Maps, which can be updated continuously and is able to fulfill more of its users' needs.

ISSN: 2716-3865 (Print), 2721-1290 (Online)

"maybe because now we are only racing on Google Maps, because applications such as moovit and trafi have not really updated their applications, it seems very, very better if there are other applications that can balance Google Maps"

It's not enough to say that government service providers have been releasing apps that lack quality. Therefore, there is skepticism or doubt from the user side. P3 believes that it is difficult for the government to release applications that are truly able to solve user problems and are ideal for long-term use.

"...my sentiment towards digital government products is already really bad. But if one day they make something powerful and helpful, I will be happy. I will feel there is an ease to reach them. There will definitely be that benefit. But I don't feel confident that they will provide that."

Digital Inclusive Strategy

Based on the interviews with the respondents, views on the strategies taken by public transportation services in overcoming the digital divide show some of the steps that have been taken as well as the challenges that still exist. P2 mentioned that counseling and education to the public on the use of public transportation applications can help overcome the digital divide,

"For those who are not active on social media, I'm not sure how to work on it nowadays, it's all about social media.".

This shows that there is still a need for a more effective strategy in reaching out to people who are not active on social media.

On the other hand, P5 emphasized that conventional services such as ticket counters are still available to help users who do not have access or ability to use digital services,

"But the traditional ones are still not eliminated. So I think the ticket counters are still there even though people rarely buy them, but that's to prevent people who might not have access to them."

This shows that maintaining conventional services is an important strategy in overcoming the digital divide.

Most respondents agreed that strategies to address the digital divide are essential to ensure inclusivity and accessibility of public transportation services. Below are views and interview quotes that demonstrate the importance of such strategies. P2 highlighted the importance of outreach and education to the public, especially those less familiar with technology,

"Outreach and education to the community on the use of public transportation applications can help overcome the digital divide.". This shows that education is an important component in the strategy to overcome the digital divide.

In addition to P2, P10 also has the same belief that socialization on the use of applications can have a good impact on the digital divide that occurs in society.

"... socialization to the community such as parents or people who are not used to using the app so that they can feel the convenience of using public transportation."

Overall, respondents' views indicate that while there are some strategies already implemented by public transportation services to address the digital divide, there is still a need to improve education and outreach to the public. An effective strategy should include a combination of digital and conventional services to ensure inclusivity and accessibility for all users, especially for those less familiar with technology.

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Knowledge Dissemination Method

The key factor Knowledge Dissemination Method refers to the methods and channels used to disseminate information to users of public transportation services. This involves the use of various platforms and media to ensure the right information reaches users in the most effective and efficient way. The three main areas of coverage under this key factor are Social Media as a channel for information dissemination, Knowledge Sharing for Specific Information, and Information Visualization.

Social media has become an effective tool for disseminating information about public transportation services. Platforms such as WhatsApp, Telegram, Instagram, and Twitter are often used to provide real-time information on schedules, service changes, and current conditions. P11 notes that WhatsApp or Telegram groups are particularly useful for getting up-to-date information on bus schedules and live locations,

> *"there are services for transportation through WhatsApp groups or Telegram groups, almost every day, so we can get information for what time the bus will leave or live location".*

P4 admitted that social media such as Instagram and Twitter are very helpful in finding information about public transportation services,

> *"I definitely look for it through Instagram. Woosh's Instagram or PT KAI's Instagram. Well there he is already very helpful".*

Furthermore, there is Knowledge Sharing for Specific Information. Specific information that is important to users is often not well distributed, which makes users have to look for the information themselves or ask directly to the officers. This includes the separation of male and female carriages, information for people with disabilities, and information on special facilities.

P3 highlighted the need for better information dissemination regarding the separation of male and female carriages in Transjakarta and KRL, as well as special pin picking locations for pregnant women,

> *"specific information such as the separation of male and female carriages or sections in Transjakarta and KRL is very helpful although the information is often not well disseminated".*

P5 also emphasized that information about train lines is often confusing and needs more detailed explanation, especially for users who are less familiar with the route,

> *"maybe it should be told like this to what station buaran station ... yes, maybe it can be told what Cikarang line is on which rail or which rail".*

Next, there is the aspect of information visualization. Visual presentation of information is very important to ensure all users, including those with certain limitations, can understand and access information easily. Clear visual information can reduce confusion and improve travel efficiency. P3 emphasized the importance of information visualization on KRL to help users with hearing impairments.

> *"Regarding disabilities, also deaf friends if they take the KRL, it will be difficult to know what station they are at because there is no visual display".*

P4 noted the importance of visual signs at bus stops or stations to help users who may be lazy or reluctant to ask officers,

> *"I think if there are clear signs or in the application there is a clear sign or navigation, it is really enough".*

ISSN: 2716-3865 (Print), 2721-1290 (Online)

P6 underlined the need to improve the detail of information visualization in trains and stations,

> *"At the station the information on the signage is clear enough but I feels there needs to be better visualization inside the train".*

Knowledge Dissemination Method is a very important key factor in public transportation services. The use of social media, dissemination of specific information, and clear visualization of information are key methods that can improve user knowledge and experience. Public transportation service providers should focus on strengthening these three aspects to ensure relevant and important information is accessible to all users easily and efficiently.

Help Desk Reliability

Help Desk Reliability refers to the reliability and quality of assistance services provided by public transportation service providers. This factor includes several important aspects, such as speed of response, real-time availability of help services, as well as transparency and clear mechanisms for handling reports or complaints. Helpdesk reliability is critical to ensure that users feel heard, get timely assistance, and know how their issues are being handled. The scope of this key factor includes reliable helpdesk services and transparency in report handling.

Responsive and readily available support is an important aspect of Help Desk Reliability. Users expect services that can be accessed anytime and provide quick solutions to their problems. P7 emphasized the importance of a live chat feature or bot to help users who are not familiar with routes in Jakarta that can be accessed at any time.

> *"So if at any time there is a case such as people who are lost, they can use the feature instead of having to re-search for directions".*

Just like P7, P8 proposed the development of assistance services using chat methods, such as chatbots. The difference is, he directs if there is a specific question, then it can be directed to an agent who will answer. This makes the helpdesk a service that has a more systematic function with a clear resolution flow.

> *"Maybe at the beginning, use a chatbot first, then later when for example the question is more specific, then it will be directed to an agent who will answer".*

P1 also emphasized the importance of supporting services such as FAQs or a real-time help desk in emergency situations.

> *"Actually, we need FAQs, depending on the situation, if I'm in a panic situation, it's good if I can ask customer service, or open a forum, if anyone has experienced this, there is no solution. But if it's an urgent problem, I don't want to read that. If for example there is a help desk that is real time, it can be very useful.".*

In the problem resolution process conducted through the helpdesk, transparency in the handling of reports and complaints is essential to ensure that users are aware of the status and progress of the issues they report. In this regard, P1 emphasized the need for transparency and clear mechanisms in this process. P1 highlighted that while there was a good response from the transportation service to his complaint, there was no transparency on how his complaint was followed up.

> *"But he was comforting and explained that it was okay. And after I complained, the next day it wasn't like that anymore. So it should be okay even though there is no visibility where I can see how the handling process is".*

On the other hand, P3 feels that the lack of transparency and response to user feedback has reached viral levels. According to her, public transportation services do not listen to feedback

ISSN: 2716-3865 (Print), 2721-1290 (Online)

or reports from their users. In addition, the responsiveness of service providers is questionable because follow-up will only be carried out when the problem goes viral and is known to the wider community.

> *"My sentiment towards public transportation is that they don't listen. I saw on Twitter a few times... complaints about broken escalators show that service providers are often unresponsive unless the issue goes viral".*

Knowledgeable Officer

The key factor Knowledgeable Officer refers to the importance of having officers who have in-depth knowledge of public transportation services and are able to provide effective assistance to users. Informative and competent officers not only improve the user experience but also ensure that problems or emergency situations can be dealt with quickly and appropriately. The presence of knowledgeable attendants is also important to assist users who are less familiar with technology or information on available services.

The presence of officers who have in-depth knowledge of public transportation services is essential to increase users' sense of security and comfort. Informative staff can provide timely and appropriate assistance, especially in emergency situations or when users require specific information. P1 highlighted that officers who are knowledgeable and able to provide clear answers without having to ask questions to other parties are very helpful.

> *"Yes, the officer already has the knowledge needed. If asked, they don't throw it around anymore. It's really okay. There are standby at the platform and inside the train as well".*

This shows that the availability of knowledgeable and proactive staff can increase users' sense of security and comfort.

P6 noted the importance of officers to assist users who are less familiar with technology, especially in digital processes such as ticket purchasing.

> *"Even buying tickets is now digital... But in my opinion, there is still a need for guidance from the service provider in the form of officers".*

This shows that informative officers are needed to assist users in understanding and using the available services.

This chapter discusses the results and analysis obtained from the research on public transportation services in major cities in Indonesia. The analysis covers key factors identified through the interview process and thematic analysis, including real-time information, digital accessibility, user engagement and trust, platform functionality and quality, digital inclusion strategies, information dissemination methods, reliability of assistance services, and staff knowledge.

Real-time information is considered very important by users to improve the experience and efficiency of using public transportation services. The accuracy of information provided in real-time, such as vehicle location and estimated time of arrival, greatly influences users' decision to use public transportation. Previous research also shows the importance of real-time information in providing more control for users to plan their trips effectively (Mehdizadeh Dastjerdi et al., 2019). This supports our research findings that the accuracy of real-time information increases user convenience and satisfaction.

Digital accessibility in public transportation services is also an important concern. Difficult-to-use app design and unclear information can inhibit new users from using the app. This research is in line with previous findings that emphasize the importance of user-friendly app design to improve user experience and attract new users (Wook et al., 2020). Strategic

ISSN: 2716-3865 (Print), 2721-1290 (Online)

placement of information and presentation of time in an easy-to-understand format, such as ETA (Estimated Time of Arrival), greatly assist users in planning their trip. This is in line with previous research which shows that good information visualization can reduce confusion and improve travel efficiency (Ben-Elia et al., 2008; Saedi & Khademi, 2019).

User involvement and trust in public transportation services shows various assessments from the public. The accessibility to provide feedback through social media is considered positive, but the response to such feedback still needs to be improved. Previous research also shows that user engagement and trust are critical to improving the quality of public transportation services (Filippi et al., 2013; Shakya et al., 2021). This suggests that improved responsiveness to user complaints is key to building better trust.

The functionality and quality of digital platforms for public transportation services are critical to the user experience. Some users want personalization in route choice, while others prefer economical aspects. This finding supports previous research showing that good platform functionality and app quality can drive higher usage (Stocchi et al., 2019; Tarute et al., 2017). Good app quality, such as no lag and fast response, as well as being ad-free, is considered important to encourage the use of such apps (Popa et al., 2023). In addition, continuous maintenance and updating of apps is necessary to meet user needs (Verbelen et al., 2011).

The digital inclusion strategy aims to address the digital divide in the use of public transportation services. Education and socialization to the public regarding the use of public transport applications are considered important to overcome the digital divide. Previous research also emphasizes the importance of digital inclusion strategies to ensure accessibility for all users, including those who are less familiar with technology (Al-Jabir, 2023; Chiscano, 2020; Tiznado-Aitken et al., 2020). In addition, continuing to provide conventional services such as ticket counters is also important to ensure inclusivity and accessibility for all users.

Information dissemination methods include the use of various platforms and media to ensure the right information reaches users in the most effective and efficient way. Multiple channels relevant to user behavior and habits, such as websites, social media, or with digital screens in public places, are important so that information can reach users in a targeted manner so that no information is missed (Tangi et al., 2020; Zayet et al., 2021). The channel can be used as a medium for real-time information dissemination, clear information visualization, and better dissemination of specific information is necessary to improve user knowledge and experience (Meschede, 2019; Yang, 2022).

Assistance service reliability includes the quality and response speed of assistance services provided by public transportation service providers. Users expect assistance services to be responsive and available at all times, as well as transparency in handling reports and complaints. Previous research shows that reliable assistance services can ensure that users feel heard and get timely assistance, which is crucial for building user trust (Al-Hawari & Barham, 2019; Daronnat et al., 2021; Manuel, 2015).

Officers' knowledge of public transportation services is critical to providing effective assistance to users. Informative and competent officers can increase users' sense of security and comfort, especially for those who are less familiar with technology or information about available services. This finding is consistent with previous research showing that the presence of knowledgeable attendants can help users in emergency situations or when they need specific information (Byon et al., 2022).

Overall, the results of this study show that although there are some challenges in public transportation services in Indonesia, factors such as real-time information, digital accessibility, user engagement and trust, platform functionality and quality, digital inclusion strategies, information dissemination methods, reliability of assistance services, and officer

ISSN: 2716-3865 (Print), 2721-1290 (Online)

knowledge are critical to improving the quality of public transportation services. Service providers should focus on improving these aspects to ensure more efficient, inclusive and sustainable public transportation services. The findings of this study largely support previous research and provide additional insights into the importance of various factors in improving public transportation services in Indonesia.

Conclusion

This research examines the implementation of urban public transportation services from knowledge management perspectives in Indonesia. The purpose of this research is to identify and analyze the key factors influencing the implementation of public transport services in the context of knowledge management and evaluate the relevance and essence of these factors from the users' perspective. To achieve this, this research adopted a qualitative approach through in-depth interviews with users of public transport services in Indonesia.

Based on the findings from this research, several key factors from knowledge management perspectives are known to have an influence on the implementation of public transportation services in urban areas. Real-time information is vital for enhancing user experience and satisfaction by allowing effective journey planning, though current systems often lack precision, causing frustration and decreased trust. Digital accessibility is also crucial; user-friendly and easily navigable digital applications, together with well-placed and clear ETA information, could significantly improve user experience. User engagement and trust are closely linked to public transportation effectiveness. Although feedback mechanisms exist, current service provider responses are often slow and lack transparency, requiring more responsiveness and openness. Platform functionality and quality are also necessary to maintain, with users expecting fast, responsive, and ad-free applications that might offer practical solutions for daily commutes. Overcoming the digital divide through education and outreach is essential for the inclusivity of public transportation services. Maintaining conventional services alongside digital ones helps bridge the gap for less tech-savvy users. Efficient knowledge dissemination through social media and clear visual information, as well as knowledgeable officers providing real-time assistance, further enhance reliability and trust in public transportation services. Addressing these factors comprehensively can lead to improved service quality, increased user satisfaction, and a more efficient and inclusive public transportation system.

References

Al-Hawari, F., & Barham, H. (2019). A machine learning based help desk system for IT service management. *J. King Saud Univ. Comput. Inf. Sci.*, *33*, 702–718. https://doi.org/10.1016/J.JKSUCI.2019.04.001

Al-Jabir, M. (2023). The Importance of Digital Accessibility Policies in Promoting Inclusivity and Diversity. *Nafath*. https://doi.org/10.54455/mcn2304

Assegaff, S. B. (2022). Jakarta amid Indonesia's public transportation problems. *Antara News*.

Bańka, M., Daniłowski, J., Czerliński, M., Murawski, J., Żochowska, R., & Sobota, A. (2022). A Feedback Analysis Automation Using Business Intelligence Technology in Companies Organizing Urban Public Transport. *Sustainability (Switzerland)*, *14*(18). https://doi.org/10.3390/su141811740

Ben-Elia, E., Erev, I., & Shiftan, Y. (2008). The combined effect of information and experience on drivers' route-choice behavior. *Transportation*, *35*, 165–177. https://doi.org/10.1007/S11116-007-9143-7

Boyce, C., & Neale, P. (2006). Conducting In-Depth Interviews: A Guide for Designing and Conducting Interviews for Evaluation Input. Pathfinder International Tool Series,

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Monitoring and Evaluation-2, May 2006. *Attachment and Human Development*, *May*, 2–12.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology; In qualittaive research in psychology. *Uwe Bristol*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Byon, S., Kwon, E., Park, H., & Jung, E. (2022). An Implementation of Retrieving Situation-Aware Information for Emergency Incident. *2022 13th International Conference on Information and Communication Technology Convergence (ICTC)*, 1932–1934. https://doi.org/10.1109/ictc55196.2022.9952416

Cartenì, A., D'Acierno, L., & Gallo, M. (2020). A rational decision-making process with public engagement for designing public transport services: A real case application in Italy. *Sustainability (Switzerland)*, *12*(16), 1–26. https://doi.org/10.3390/SU12166303

Cervero, R. (2013). Transport infrastructure and global competitiveness: Balancing mobility and livability. *Annals of the American Academy of Political and Social Science*, *626*(1), 210–225. https://doi.org/10.1177/0002716209344171

Chaisomboon, M., Jomnonkwao, S., & Ratanavaraha, V. (2020). Elderly users' satisfaction with public transport in thailand using different importance performance analysis approaches. *Sustainability (Switzerland)*, *12*(21), 1–20. https://doi.org/10.3390/su12219066

Chen, X., Bai, Y., & Lian, L. (2020). Exploring the factors influencing the use of public transport by the elderly in urban China. *Transport Policy*, *85*, 1–9.

Chiscano, M. (2020). Improving the design of urban transport experience with people with disabilities. *Research in Transportation Business and Management*, 100596. https://doi.org/10.1016/j.rtbm.2020.100596

Daronnat, S., Azzopardi, L., Halvey, M., & Dubiel, M. (2021). Inferring Trust From Users' Behaviours; Agents' Predictability Positively Affects Trust, Task Performance and Cognitive Load in Human-Agent Real-Time Collaboration. *Frontiers in Robotics and AI*, *8*. https://doi.org/10.3389/frobt.2021.642201

Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business Press.

Durand, A., Zijlstra, T., Hamersma, M., Hoen, A., van Oort, N., Hoogendoorn-Lanser, S., & Hoogendoorn, S. (2023). "Who can I ask for help?": Mechanisms behind digital inequality in public transport. *Cities*, *137*. https://doi.org/10.1016/j.cities.2023.104335

Durand, A., Zijlstra, T., Hamersma, M., 't Hoen, A., van Oort, N., Hoogendoorn, S., & Hoogendoorn-Lanser, S. (2023). Fostering an inclusive public transport system in the digital era: An interdisciplinary approach. *Transportation Research Interdisciplinary Perspectives*, *22*(July), 100968. https://doi.org/10.1016/j.trip.2023.100968

Filippi, F., Fusco, G., & Nanni, U. (2013). User Empowerment and Advanced Public Transport Solutions. *Procedia - Social and Behavioral Sciences*, *87*, 3–17. https://doi.org/10.1016/J.SBSPRO.2013.10.590

Gordon, A. (2021). The Role of Public Transportation Systems in Promoting Sustainable Mobility in Green Cities. *Humanities Commons*.

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Gwilliam, K., Boon, C., & Pratiwi, M. (2015). Urban experiments with public transport for low carbon mobility in Asian megacities. *Transport Research Part A: Policy and Practice*, *85*, 1–18.

Gwilliam, K. M. (2003). Urban transport in developing countries. *Transport Reviews*, *23*(2), 197–216. https://doi.org/10.1080/0144164032000079178

Hakim, I. (2023). *Indonesia's Urban Mass Transit Development Program*.

Hensher, D. A. (2018). Tackling road congestion – What might it look like in the future under a collaborative and connected mobility model? *Transport Policy*, *66*, A1–A8. https://doi.org/10.1016/j.tranpol.2018.02.007

Jevinger, Å., Johansson, E., Persson, J. A., & Holmberg, J. (2023). Context-Aware Travel Support During Unplanned Public Transport Disturbances. *International Conference on Vehicle Technology and Intelligent Transport Systems, VEHITS - Proceedings*, *2023-April*(Vehits), 160–170. https://doi.org/10.5220/0011761000003479

Jing, Q. L., Liu, H. Z., Yu, W. Q., & He, X. (2022). The Impact of Public Transportation on Carbon Emissions—From the Perspective of Energy Consumption. *Sustainability (Switzerland)*, *14*(10). https://doi.org/10.3390/su14106248

JPI - Integrasi Transportasi Jakarta dan Keuntungannya bagi Warga. (2023). JPI.

Kathleen, A., & Macdonald, D. (2012). Research methods in physical education and youth sport. In *Research Methods in Physical Education and Youth Sport*. https://doi.org/10.4324/9780203807170

Manuel, P. (2015). A trust model of cloud computing based on Quality of Service. *Annals of Operations Research*, *233*, 281–292. https://doi.org/10.1007/s10479-013-1380-x

Mehdizadeh Dastjerdi, A., Kaplan, S., de Abreu e Silva, J., Nielsen, O. A., & Pereira, F. C. (2019). Participating in environmental loyalty program with a real-time multimodal travel app: User needs, environmental and privacy motivators. *Transportation Research Part D: Transport and Environment*, *67*, 223–243. https://doi.org/https://doi.org/10.1016/j.trd.2018.11.013

Mehmood, A., & Imran, M. (2021). Digital social innovation and civic participation: toward responsible and inclusive transport planning. *European Planning Studies*, *29*(10), 1870–1885. https://doi.org/10.1080/09654313.2021.1882946

Meschede, C. (2019). Information dissemination related to the Sustainable Development Goals on German local governmental websites. *Aslib Journal of Information Management*, *71*(3), 440–455. https://doi.org/10.1108/AJIM-08-2018-0195

Mina-Raiu, L., & Melenciuc, M. (2022). The Role Of Digitalisation In The Process Of Improving The Quality Of Urban Public Services. *Theoretical and Empirical Researches in Urban Management*, *17*(4), 22–35.

Molla, A., Duan, S. X., Deng, H., & Tay, R. (2024). The effects of digital platform expectations, information schema congruity and behavioural factors on mobility as a service (MaaS) adoption. *Information Technology & People*, *37*(1), 81–109. https://doi.org/10.1108/ITP-03-2022-0226

Nalmpantis, D., Roukouni, A., Genitsaris, E., Stamelou, A., & Naniopoulos, A. (2019). Evaluation of innovative ideas for Public Transport proposed by citizens using Multi-Criteria Decision Analysis (MCDA). *European Transport Research Review*, *11*(1), 1–16. https://doi.org/https://doi.org/10.1186/s12544-019-0356-6

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Nurbaiti, A. (2021). Jakarta wins global 2021 Sustainable Transport Award for integrated transportation. *The Jakarta Post*.

Oviedo, D., Cavoli, C., Levy, C., Koroma, B., Macarthy, J., Sabogal, O., Arroyo, F., & Jones, P. (2022). Accessibility and sustainable mobility transitions in Africa: Insights from Freetown. *Journal of Transport Geography*, *105*, 103464. https://doi.org/https://doi.org/10.1016/j.jtrangeo.2022.103464

Pojani, D., & Stead, D. (2015). Sustainable urban transport in the developing world: Beyond megacities. *Sustainability*, *7*(6), 7784–7805. https://doi.org/10.3390/su7067784

Popa, R., Andrei, G., & Armășelu, Ș. (2023). STUDY ON THE USE OF DIGITAL PLATFORMS. *Towards Increased Business Resilience: Facing Digital Opportunities and Challenges*. https://doi.org/10.56177/11icmie2023.14

Raczycki, K., Szymański, M., Yeliseyenka, Y., Szymański, P., & Kajdanowicz, T. (2021). Spatial data mining of public transport incidents reported in social media. *Proceedings of the 14th ACM SIGSPATIAL International Workshop on Computational Transportation Science, IWCTS 2021*. https://doi.org/10.1145/3486629.3490696

Rai, N., & Thapa, B. (2019). A study on purposive sampling method in research. *Kathmandu:Kathmandu School of Law*, 1–12.

Risso, C., Nesmachnow, S., & Faller, G. (2023). Optimized Design of a Backbone Network for Public Transportation in Montevideo, Uruguay. *Sustainability*, *15*(23), 16402. https://doi.org/10.3390/su152316402

Saedi, R., & Khademi, N. (2019). Travel time cognition: Exploring the impacts of travel information provision strategies. *Travel Behaviour and Society*. https://doi.org/10.1016/J.TBS.2018.09.007

Sarker, R. I., Kaplan, S., Anderson, M. K., Haustein, S., Mailer, M., & Timmermans, H. J. P. (2019). Obtaining transit information from users of a collaborative transit app: Platform-based and individual-related motivators. *Transportation Research Part C: Emerging Technologies*, *102*(September 2018), 173–188. https://doi.org/10.1016/j.trc.2019.03.011

Shakya, N., Pathak, S., Bajracharya, B., & Matin, M. (2021). User Engagement for Sustaining Services. *Earth Observation Science and Applications for Risk Reduction and Enhanced Resilience in Hindu Kush Himalaya Region*. https://doi.org/10.1007/978-3-030-73569-2_17

Sindakis, S., Depeige, A., & Anoyrkati, E. (2015). Customer-centered knowledge management: challenges and implications for knowledge-based innovation in the public transport sector. *Journal of Knowledge Management*, *19*(3), 559–578. https://doi.org/10.1108/JKM-02-2015-0046

Sofa, A. (2023). Mengulik Fitur Transportasi Publik di JAKI. In *Smart City Jakarta*.

Stocchi, L., Michaelidou, N., & Micevski, M. (2019). Drivers and outcomes of branded mobile app usage intention. *Journal of Product & Brand Management*. https://doi.org/10.1108/JPBM-02-2017-1436

Štreimikienė, D., Mikalauskienė, A., & U., M. – D. (2022). Role of information management in implementing the Green Deal in the EU and the US. *Journal of International Studies*, *15*(4). https://doi.org/https://doi.org/10.14254/2071-8330.2022/15-4/1

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Tangi, L., Benedetti, M., Gastaldi, L., Noci, G., & Russo, C. (2020). Mandatory provisioning of digital public services as a feasible service delivery strategy: Evidence from Italian local governments. *Gov. Inf. Q.*, *38*, 101543. https://doi.org/10.1016/j.giq.2020.101543

Tarute, A., Nikou, S., & Gatautis, R. (2017). Mobile application driven consumer engagement. *Telematics Informatics*, *34*, 145–156. https://doi.org/10.1016/j.tele.2017.01.006

Tiznado-Aitken, I., Lucas, K., Muñoz, J., & Hurtubia, R. (2020). Understanding accessibility through public transport users' experiences: A mixed methods approach. *Journal of Transport Geography*, *88*, 102857. https://doi.org/10.1016/J.JTRANGEO.2020.102857

Transport, I. (2021). Public transport: the backbone of mobility for today and tomorrow. *Intelligent Transport*.

Vasconcellos, E. A. (2016). Transport metabolism, social diversity and equity: The case of São Paulo, Brazil. *Journal of Transport Geography*, *54*, 356–362. https://doi.org/10.1016/j.jtrangeo.2016.06.023

Verbelen, T., Stevens, T., Simoens, P., Turck, F., & Dhoedt, B. (2011). Dynamic deployment and quality adaptation for mobile augmented reality applications. *J. Syst. Softw.*, *84*, 1871–1882. https://doi.org/10.1016/j.jss.2011.06.063

Wiig, K. M. (1993). *Knowledge Management Foundations: Thinking About Thinking - How People and Organizations Create, Represent, and Use Knowledge*. Schema Press.

Wook, T., Mohamed, H., Noor, S., Muda, Z., Zairon, I., & Khaleel, F. (2020). User Experience Evaluation Towards Interface Design of Digital Footprint Awareness Application. *Asia-Pacific Journal of Information Technology and Multimedia*, *09*, 17–27. https://doi.org/10.17576/apjitm-2020-0901-02

Yang, H. (2022). Internet-based New Media in Information Visualization. *2022 World Automation Congress (WAC)*, 356–361. https://doi.org/10.23919/WAC55640.2022.9934643

Zayet, T., Ismail, M., Varathan, K., Noor, R., Chua, H., Lee, A., Low, Y., & Singh, S. (2021). Investigating transportation research based on social media analysis: a systematic mapping review. *Scientometrics*. https://doi.org/10.1007/s11192-021-04046-2

Zhang, Y., Li, H., & Wang, J. (2020). Characteristics, Impacts and Trends of Urban Transportation. *Sustainability*, *14*(10), 6248.

Zhou, X., Zhang, L., & Cao, X. (2017). Public transport for smart cities: Recent innovations and future directions. *Journal of Urban Planning and Development*, *143*(4), 4017021.

ISSN: 2716-3865 (Print), 2721-1290 (Online)