

**UNDERGRADUATE THESIS**

**SATISFACTION ANALYSIS OF WHEELCHAIR  
USERS REGARDING ACCESSIBILITY  
AT MRT JAKARTA STATIONS**



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**PARAHYANGAN CATHOLIC UNIVERSITY**  
**FACULTY OF ENGINEERING**  
**DEPARTMENT OF CIVIL ENGINEERING**  
(Accredited Based on SK BAN-PT Nomor: 11370/SK/BAN-PT/AK-ISK/S/X/2021)  
**BANDUNG**  
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## PERNYATAAN

Yang bertandatangan di bawah ini, saya dengan data diri sebagai berikut:

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Menyatakan bahwa **skripsi** / tesis / disertasi\*) dengan judul:

### **Satisfaction Analysis of Wheelchair Users Regarding Accessibility at MRT Jakarta Stations**

adalah benar-benar karya saya sendiri di bawah bimbingan dosen pembimbing. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika keilmuan yang berlaku dalam masyarakat keilmuan. Apabila di kemudian hari ditemukan adanya pelanggaran terhadap etika keilmuan dalam karya saya, atau jika ada tuntutan formal atau non formal dari pihak lain berkaitan dengan keaslian karya saya ini, saya siap menanggung segala resiko, akibat, dan/atau sanksi yang dijatuhkan kepada saya, termasuk pembatalan gelar akademik yang saya peroleh dari Universitas Katolik Parahyangan.

Dinyatakan: di Bandung

Tanggal: 18 Juli 2022



Amara Azharine Railuna

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## **ABSTRACT**

One of the objectives in the development of the transportation system is to build a user-friendly public transportation facilities that are accessible for everyone and from every location. However, disabled-friendly access to public transportation is considered lacking in Jakarta or not well maintained or used properly. This issue implies the inequality and social exclusion of the disabled, including wheelchair users. This study aims to analyze the wheelchair users' satisfaction level regarding accessibility at MRT Jakarta stations. Data were collected using a questionnaire to wheelchair users as well as direct measurement. Customer Satisfaction Index (CSI), Importance-Performance Analysis (IPA), and nonparametric analysis were employed in this study. This study found that wheelchair users were satisfied with the accessibility at MRT Jakarta stations. Four area of improvement consists of the object placement, the font size and brightness of the information sign, the height of the toilet, and the priority to use the priority waiting area.

**Keywords:** Accessibility, Wheelchair User, Satisfaction, Customer Satisfaction Index (CSI), Importance-Performance Analysis (IPA)

# ANALISIS KEPUASAN PENGGUNA KURSI RODA TERHADAP AKSESIBILITAS DI STASIUN MRT JAKARTA

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## ABSTRAK

Salah satu tujuan pembangunan sistem transportasi adalah untuk membangun sarana transportasi umum yang ramah pengguna yang dapat diakses oleh semua orang dan dari setiap lokasi. Namun akses angkutan umum ramah difabel dinilai kurang di Jakarta atau tidak terpelihara dengan baik atau digunakan sebagaimana mestinya. Isu ini menyiratkan ketidaksetaraan dan pengucilan sosial penyandang disabilitas, termasuk pengguna kursi roda. Penelitian ini bertujuan untuk menganalisis tingkat kepuasan pengguna kursi roda terhadap aksesibilitas di stasiun MRT Jakarta. Pengumpulan data dilakukan dengan menggunakan kuesioner kepada pengguna kursi roda serta pengukuran langsung. Indeks Kepuasan Pelanggan (CSI), Importance-Performance Analysis (IPA), dan analisis nonparametrik digunakan dalam penelitian ini. Penelitian ini menemukan bahwa pengguna kursi roda merasa puas dengan aksesibilitas di stasiun MRT Jakarta. Empat area perbaikan terdiri dari penempatan objek, ukuran font dan kecerahan papan informasi, ketinggian toilet, dan prioritas penggunaan ruang tunggu prioritas.

**Kata Kunci:** Aksesibilitas, Pengguna Kursi Roda, Kepuasan, *Customer Satisfaction Index* (CSI), *Importance-Performance Analysis* (IPA)

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The author realizes that this undergraduate thesis was still far from perfect. But, the author hopes that this thesis contributes in the study of public transport accessibility, especially in Indonesia. The author welcomes any suggestions for improvement in the future.

Bandung, July 2022

Amara Azharine Railuna



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## LIST OF NOTATIONS AND ABBREVIATIONS

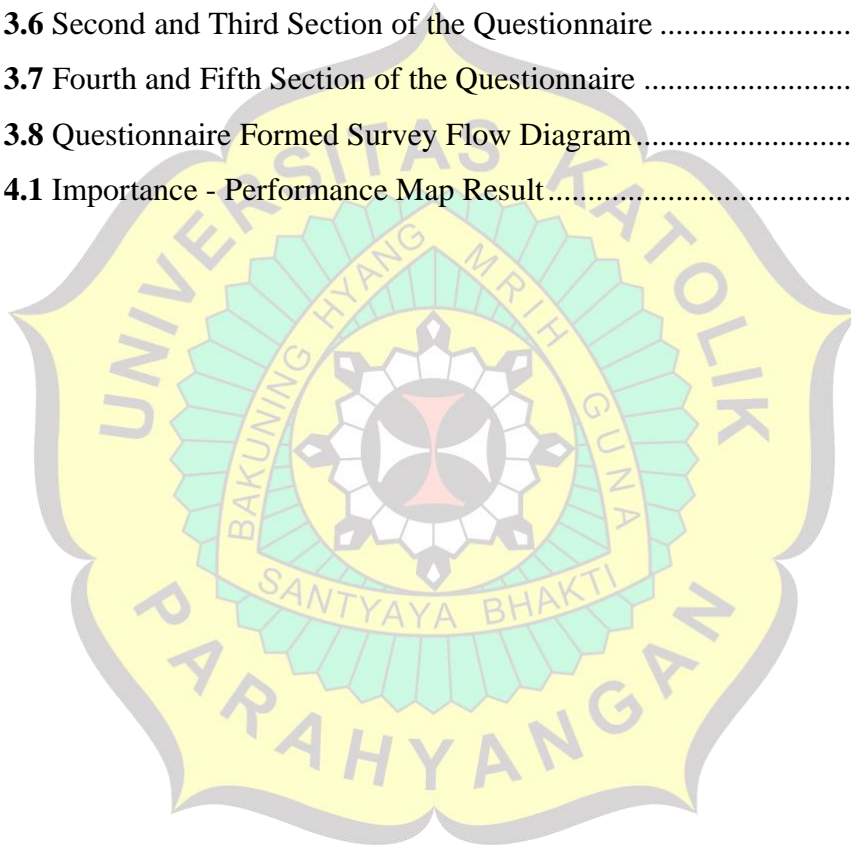
$\rho$	= p-value
$\alpha$	= Significant Level
$\mu$	= Mean
%	= Percentage
c	= Number of column
CSI	= Customer Satisfaction Index
DDA	= Dissability Discrimination Act
DKI	= <i>Daerah Khusus Ibukota</i>
e	= Margin of Error
HMI	= Human Machine Interfaces
HS	= Highest Score on the scale
IPA	= Importance-Performance Analysis
k	= Number of attributes
MIS	= Mean Importance Score
MRT	= Mass Rapid Transit
MSS	= Mean Satisfaction Score
N	= Number of Population
n	= Minimum Sample Size
PT	= <i>Perseroan Terbatas</i>
r	= Number of row
$R_j$	= Column – j ranked number
$R_k$	= Column -k ranked number
SRT	= Semi Rapid Transit
WF	= Weight Factor
WS	= Weight Score
WT	= Weight Total
$\bar{x}$	= Average score of attributes' performance
$X_j$	= Attribute j's average satisfaction score
$X_j$	= Average performance score of attribute j
$\bar{y}$	= Average score of attributes' importance

$y_j$  = Attribute j's average importance score  
 $Y_j$  = Average importance score of attribute j



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# CHAPTER 1

## INTRODUCTION

### 1.1 The Background of the Study

Accessibility is a provision that accommodates the needs and preferences of the users, including those who were disabled, regarding any place, space, item, or service whether it's physical or virtual, must be easily approached, reached, and understood (United Nations, 2015). When it was supported with deeper research, accessibility can provide city and transportation planners with a valuable tool (Hansen, 1959). Providing access to a transport system is a very important first step. If the system is unable to allow residents to seek opportunities throughout the city and reach their essential activities, then it has not fulfilled its objectives (Delmelle & Casas, 2012). Recently, the study of accessibility has been used to conduct social equity assessments by focusing on specific transportation modes and/or groups of users (Grise, 2018). As an example is a study regarding accessibility for the disabled.

Accessibility for the disabled at public facilities is defined as the convenience that is provided for those with disabilities so they can move around and do their activities easily, paying a lot of attention to usability so they can have an equal chance with other people with no disabilities (Susanto & Sudiro, 2018). Accessibility is important for people with disabilities as it could enhance their active participation in the community and allow them to contribute to their environment, both socially and economically (Welage & Liu, 2011). A study conducted by Miller, Gillinson & Huber (2006) found that people with disabilities such as wheelchair users being more concerned with public transportation to travel. It was found that in the United Kingdom, almost half of the number of people with disabilities depend on public transport. That is why it is very important to create a transport system that is accessible, so the mobility of users can run smoothly (Miller, Gillinson & Huber 2006).

The government of DKI Jakarta tries to create public transportation that not only reaches every area in the city but also reaches every society, especially those who are disabled. The reason is that one of the most important aspects of a good public transportation system is to fulfill the needs of every citizen and make sure people with disabilities are well facilitated (ANTARA, 2021). It is also stated at PT. MRT Jakarta's official website (2020), that they have already created disabled-friendly public transportation. All the accessibility can be reached in every area that is integrated with the station, such as 200 meters around the station, on the station, the platform to move from the station to the train, also inside the train itself, the company also held a training to train the staff about the services for the disabled (Nasrullah, 2022). The effect of the provided access can be seen in a study conducted by Thompson & Schofield (2017) that the absence of access barriers will influence customer satisfaction.

Another important parameter for choosing transportation facilities by users is satisfaction. Satisfaction in general is defined as a spectrum of happiness or disappointment which occurs because they compare the performances they get, with their expectations (Kotler, 2014). According to Fitzsimmons & Fitzsimmons (2010), every contact from the user is the moment of truth where there are chances that it could be satisfied or unsatisfied. The customer has the right to have expectations from a system or services and can compare them with the perceived service. If the score of the expected service is lower than the perceived service, it will create something called quality surprise which leads to satisfaction, and vice versa (Harnadi, 2019). The term customer's right is not only available to non-disabled people, but also to the disabled, but in fact in Indonesia groups of disabled people are still being mistreated, compared to other developed countries, where the disabled were relatively more free, independent, and equal (Siregar, 2021). Instead of making valuable contributions as an individual, the disabled mostly become more vulnerable (Mogaji & Nguyen, 2021).

There are already a couple of studies regarding this topic. For instance, Hamersma et.al (2014) oversaw a study regarding the link between accessibility and satisfaction in the Netherlands. They shown that in current perceptions about accessibility don't give a direct impact to customer satisfaction. Meanwhile, in



Italy, Inturri et.al (2021) concluded that in a main area of the city, accessibility can result in a high satisfaction level.

The key advantage of observing the transport system from this point of view is that it can show various perspectives. For example, a 'perfectly reasonable regulatory standard' from the perspective of managers, can be considered a 'pointless impediment' from the perspective of wheelchair users. It also can show which of these perspectives is prominent and visible, whilst the others are marginal and invisible (Star, 1991). In order to minimize those situations, a more in-depth understanding of the dynamic process between customer and supplier, and also information about the customer are needed to get better policies and decisions making at all levels of society, including citizen-oriented analysis regarding their living condition (Eklof & Westlund, 1998).

## **1.2 The Research Questions**

Access to public transportation in Jakarta is considered lacking and it makes the society face a lot of difficulties to commute in comfort (Hikam, 2019). This problem affects all of society, especially the disabled. It is also said that one of the problems that disabled people in Indonesia face is the lack of facilities that are comfortable and make it easier for them to do their daily activities (Hikmawati & Rusmiyati, 2011). According to Siregar (2021), disabled-friendly access is still very minimal in Indonesia. Even if there is, it is often not well maintained and/or not used properly. For instance, in the case of priority privilege where its main purpose is to give convenience to the disabled, it is often used by the non-disabled.

A study regarding customer satisfaction levels is needed to identify and analyze the hopes, needs, and wishes of the users (Harnandi, 2019). The result of the study can be linked with the company's need to create continuous improvement. Measuring customer satisfaction is considered the most reliable method to define the customer's choices and expectations, due to its effective, direct, and meaningful method (Siskos & Grigoroudis, 2010). Customer satisfaction plays an important role in the continuity and improvement of a company (Andayani, Yuniarto & Zain, 2018) when a company listens and responds to the customer's needs and hopes it will create satisfaction as well loyalty (Ellinger et al., 1999).

The number of those kinds of studies in Indonesia is still minimal, especially from the perspective of wheelchair users. Need to remember according to Budd & Ison (2020), the disabled are the biggest minority in the world. In that case, this is the reason they really need adequate facilities so they can be more independent, most of the facilities in public transportation systems in Jakarta do not fulfill the minimum standard of accessibility (Teng & Putranto, 2020). The success of a system is influenced by a couple of factors, one of the most important is the level of customer satisfaction. By achieving a great satisfaction level, the company can increase the quality of welfare services (Motefakker, 2015). Thus, a study regarding the satisfaction of wheelchair's users should be explored in public transport facilities in Indonesia, such as MRT Jakarta Stations.

### 1.3 The Objectives of the Study

The purposes of this study are as follows:

1. To analyze the satisfaction level of wheelchair users regarding accessibility at MRT Jakarta stations.
2. To compare the accessibility attributes of MRT Jakarta stations based on wheelchair users' perception and direct measurement.
3. To analyze the area of improvement regarding accessibility at MRT Jakarta stations.

### 1.4 The Scope of the Study

The scopes of this study are as follows:

1. The objects of this study are wheelchair users at DKI Jakarta.
2. The definition of accessibility used in this study is the one proposed by the United Nations in 2015.
3. The accessibility attributes used in this study are from *Keputusan Menteri Pekerjaan Umum RI Nomor 468/KPTS/1998* and Universal Design stated by National Disability Authority in 2014.
4. The data analyzed are primary data obtained by distributing questionnaires to the research object and by conducting an observation at MRT Jakarta stations.

5. The secondary data are gained from PT MRT Jakarta.
6. The analysis methods used in this study are the Customer Satisfaction Index (CSI) & Importance-Performance Analysis (IPA), and Friedman Test.

### **1.5 The Research Methodology**

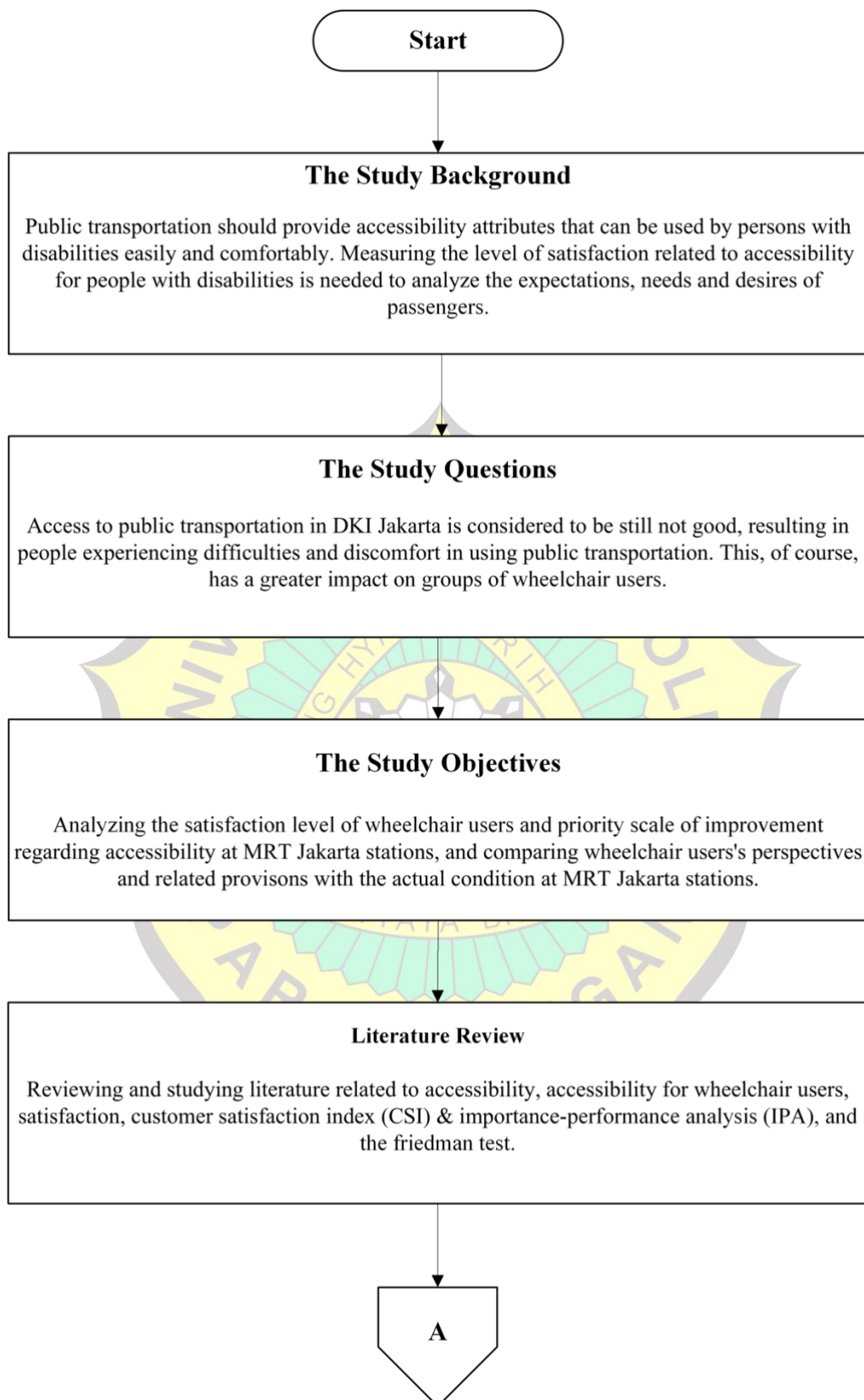
The first step of this study is to determine the background of the study, and eventually create some questions regarding the topic, which is the satisfaction of wheelchair users regarding accessibility at MRT Jakarta Stations, also created the objectives of the study. The next step is to study and review some literature about accessibility, accessibility for wheelchair users, satisfaction, customer satisfaction index (CSI) & importance-performance analysis (IPA), and the Friedman test.

The data that will be analyzed is the primary data, obtained by distributing questionnaires to the research object, with the help from related community and foundation, and by conducting an observation into several MRT Jakarta stations. The questionnaire will contain three main subjects, the sociodemographic characteristic, the respondent's travel characteristic, and the respondent's judgment regarding accessibility. The question regarding the sociodemographic characteristics and respondents' travel characteristics will be in the form of multiple-choice questions, meanwhile, the questions about respondents' opinions and satisfaction regarding accessibility attributes will be in the form of the Likert scale. On the other hand, the observation will measure some accessibility attributes, namely the gate, the information sign, the ramp, the elevator, the corridor, the object placement, and the service. It will be supported by the secondary data which is the number of MRT Jakarta's priority pin users, the location of all MRT Jakarta stations and accessibility attributes that MRT Jakarta has provided, these data are gained directly from PT. MRT Jakarta

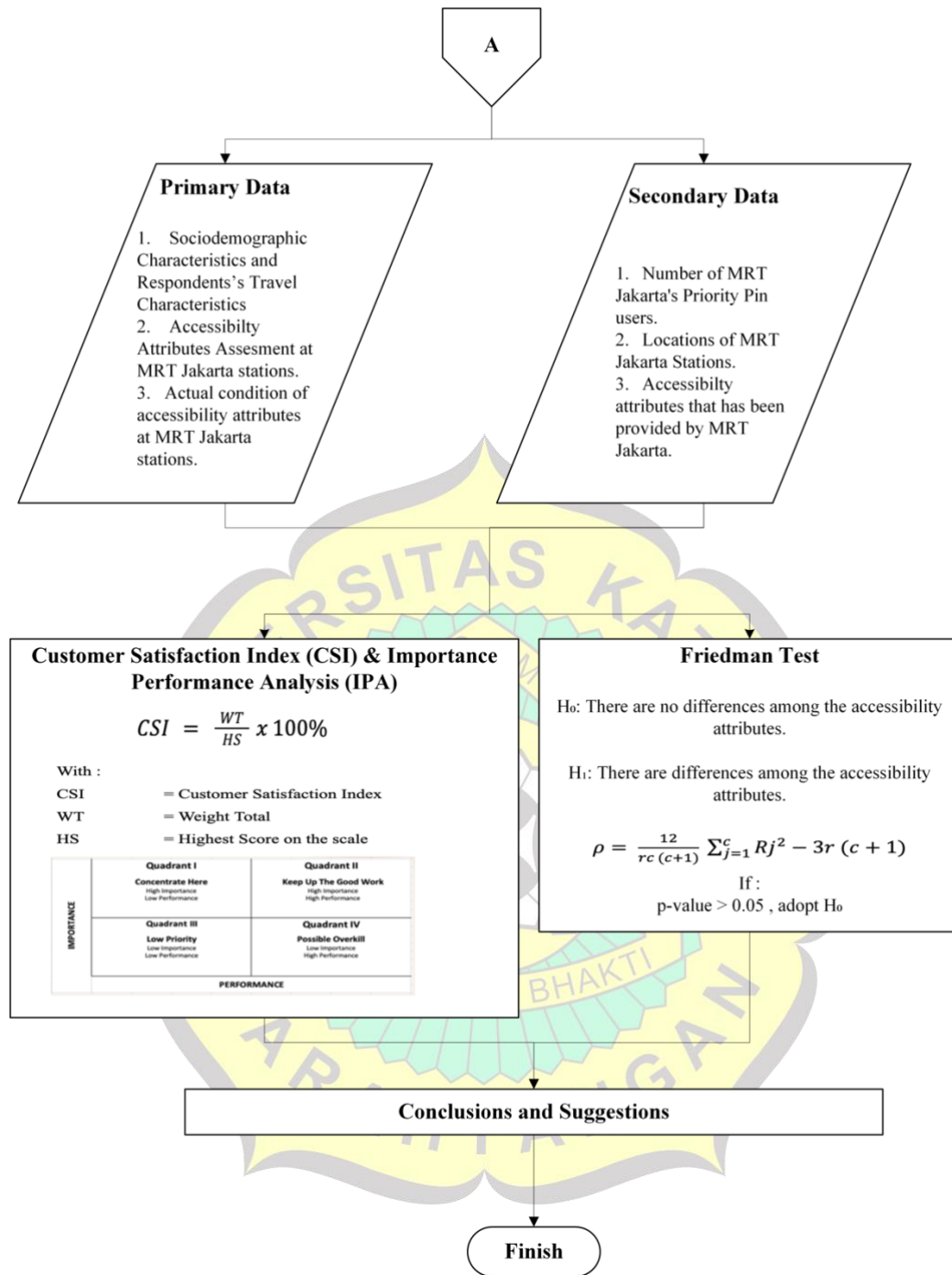
The data analysis will be conducted using two methods, the customer satisfaction index (CSI) and importance-performance Analysis (IPA) are used to determine the level of user satisfaction level and discover the priority rank of the accessibility attributes according to wheelchair users. The Friedman test will also be conducted to find out is there any differences in the satisfaction level within the variables. After all the data have been analyzed, conclusions and suggestions can

be created. All stages of the research are described in the form of a flow diagram as shown in Figure 1.1.





**Figure 1.1** Research Flow Diagram



**Figure 1.1** Research Flow Diagram (Cont.)