CHAPTER III

RESEARCH AND DESIGN METHOD

3.1 Research Method

The author utilizes a mixed methods approach for data collection, which involves combining different research methods. The author opted for this approach based on Cresswell (2007) suggestion that blending quantitative and qualitative data collection, analysis, and estimation can enhance the comprehensiveness and accuracy of findings and outcomes. Consequently, according to Cresswell, this approach is considered the most effective for exploring both individual and societal issues. Both approaches were necessary to acquire information that is descriptive in nature and quantifiable. For qualitative data, the author conducted interviews and held a focus group discussion (FGD). In contrast, for quantitative data, an online survey using Google Forms was conducted.

3.1.1 Qualitative Method

Qualitative method defined as a data collection method based on insight (Careswell, 2007). The author implemented qualitative method by interviewing relevant parties and experts aligned with current topic and held a focus group discussion with group of people who are in the same categories as target audience. The said relevant parties are Paul Hessels as the director in Indigo Studio, the of caretakers and teachers of Yayasan Sayap Ibu, and the last one is some of the users of KRL Commuterline with wheelchair, they are Qurrata Ayuna and Maudita Zobritania with her partner Azar Widadsyah from Accessible Leisure.

3.1.1.1 Interview

The interview process was carried out first with KRL Commuterline user Qurrata Ayuna, who uses a wheelchair. The online interview took place on Wednesday, September 20, 2023. The following interview with signage expert Paul Hessels from Indigo

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Studio occurred at Indigo Office on Friday, October 27, 2023. The final interview was conducted online on Saturday, November 4, 2023 involving Maudita Zobritania and Azar Widadsyah, the people behind Accessible Leisure.

1) Interview with Qurrata Ayuna

The result of an interview with Qurrata Ayuna, 27 years old, as the user of KRL Commuterline in wheelchair solely for a purpose to gain insights on how people with wheelchair travels, whether she was alone in her trip or with guardian/companion, and try to understand about the accessibility of KRL Commuterline. Not only that, the author also trying to collect information related to how legible the signages in KRL Commuterline, how she navigates herself in the station and in the train.
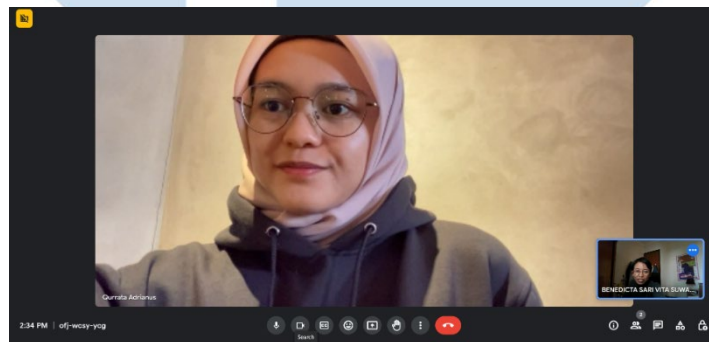

Figure 3. 1 Interview Documentation with Qurrata Ayuna

Based on the interview, Qurrata Ayuna explained that currently she's travelling with guardian/companion, because previously she used to travel alone in 2019 and by travelling alone she had experienced so various difficulties on roaming around the train station, from the signage placement is too high for her to read, the obscure placement of the signage, up to the difficulties on understanding the signage whether it is in transit stations or non-transit stations, and inside the train carriage, many signs are positioned in overly intricate locations, particularly on the ceiling, making it

challenging for her to see them. In her interview, she also added that accessibility in public transport increases the chances for people like her to travel, entertainment, or even employment. The fact that people like her rarely seen travelling around already shows how people with disabilities are more like an after-thought, not as an equal part of society.

The author also asked Qurrata Ayuna whether she is aware or not concerning the existence of KRL Disability Service Center. She answered by she is not aware of said service and usually try to find on duty officers when she's travelling with KRL Commuterline. She also stated, the fact that KRL Disability Service Center exists solidifies the fact that signages in many KRL stations are in some way, obsolete. She also stated that she's not represented or helped with the current signages KRLCommuterline have so far, there are a lot of room for future improvements.

Quratta Ayuna explains that the type of existing signages in KRL Commuterline stations and trains, are not even helping the abled-body people, mainly shown on the placements of the sign, baffling directory signage. She also stated how her guardian/companion also have difficulties on understanding which platform they have to wait, and identification signage is not easily to be find intuitively.

2) Interview with Paul Hessels

In an interview with Paul Hessels, a senior art director of Indigo Studio, he highlighted that signages in Jakarta is insufficient and often entangled with government bureaucracies. He suggests acknowledging the extend of the signage issues to create effective signage. Hessels noted widespread problems with poorly maintained and inaccessible signage, particularly in Kemang and public

transportation. These issues include not only placement and visual hierarchy but also the use of poorly made materials, affecting the readability, legibility, and visibility, especially for those with low vision.

Discussing on his project creating signages for MRT Jakarta with a focus on accessibility, Hessels highlighted the need to identify the scope of disabilities to assist in terms of navigation at MRT Jakarta stations. While the project tried to access many types of disabilities, he acknowledged that these disabilities alone is can not be fully helped if the structure of existing facilities are not accessible for people with disabilities. Considering people with disabilities also have the same right to travel as people without disabilities, public transport should have catering to everyone.

Figure 3. 2 Interview Documentation with Paul Hessels

When the author showing Hessels existing signages in KRL Commuterline stations and train carriages, he emphasized the importance of finding material suitable for tropical weather when designing signages for people with disabilities. Maintaining consistency by standardizing the layout and arrangement of visual

elements, texts, and icons is crucial for creating uniformity across all KRL Commuterline stations.

3) Interview with Maudita Zobritania and Azar Widadsyah

During an interview with Maudita Zobritania and Azar Widadsyah, the individuals behind Accessible Leisure, where travel accessibility is crucial, they emphasized the significance of accessible signage in public transportation. Recognizing the importance role of public transportation in transporting everyone, especially individuals with disabilities, to leisure destinations or work, the necessity is certainly visible.
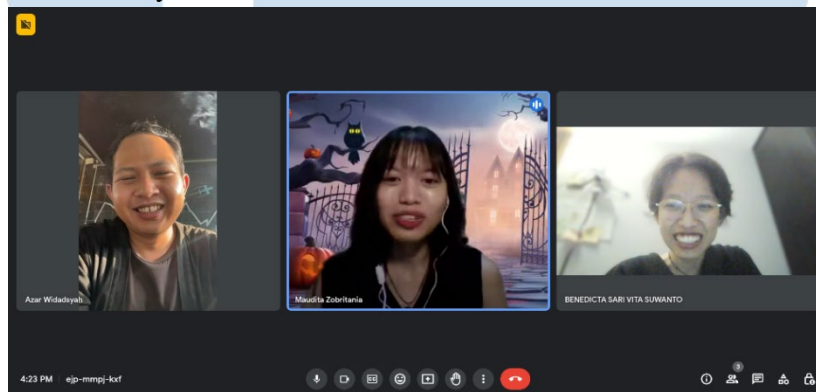

Figure 3. 3 Interview Documentation with Maudita Zobritania and Azar Widadsyah

While Zobritania has limited personal experience in terms of using KRL Commuterline, having lived in Japan where commuting with electric train is common, she is familiar with the various train lines in Japan's big cities. In the interview she shares her experiences using Japan's electric trains and how the signages being placed and laid out. She highlighted the way Japan's electric train conveying information with visual communications, which is lacking in KRL Commuterline. Her partner, Widadsyah also explained that him as regular person without disabilities baffled with the amount of visual inconsistency of signages in KRL Commuterline, and how the

signages being displayed for formality purposes instead of helping people navigating themselves inside the station.

After the author presented various signages in some of KRL Commuterline stations, both individuals commented on the placement, and emphasized the urgent of need for standardization of visual elements in signage, including texts, icons, and colors. They pointed out the lack of distance indicators for elevators or lifts in every station, emphasizing the significance of such indicators for individuals using wheelchairs and their companions who need to estimate the distance they have to cover. Therefore, it is acute to put distance indicators for signages.

3.1.1.2 *Focus Group Discussion*

Focus Group Discussion (FGD) has not yet been carried out formally, but the author has conducted a spontaneous brief discussion in person, with two parents of students from SLB Ulaka Penca on Friday, September 8, 2023 at Universitas Multimedia Nusantara. They are Nur Ali and Abdul Wahab. The discussion was held to gain some insight from the point of view of the guardian/companion of the disabled commuting using KRL Commuterline, how both parents and their children navigate themselves, and how existing signage can be improved.

Figure 3. 4 Documentation of Visits from SLB Ulaka Penca

Based on the spontaneous brief discussion with two parents, it is known that the existing signage KRL Commuterline is too small, and the placement of the signage is too high, according to Nur Ali. He also explained he has two children both with cerebral palsy, currently using wheelchair as means to be afoot and the illness way affect the visibility of his children and it is related to how the the KRL Commuterline map is not communicative and not informative in terms of indication of location, route, or what station they were on. Other information received from Abdul Wahab, he become the guardian/companion both for his daughter with down syndrome and his blind wife. he explained that there's no other media available to help his blind wife navigate while in the station or train, and still relying on the help of officers or sound announcements.

Then author conducted an established Focus Group Discussion involving two caregivers, five teachers responsible for students with various disabilities, including those using wheelchairs and with MDVI (Multiple Disabilities Visual Impairment) at Yayasan Sayap Ibu, took place on Wednesday, December 6, 2023. The participants, Doni Romdoni, Nurhikmah, Sulistriawan, Adella, Chenny Salma Dev, Mustopa Kamil, Muhammad Nurmayuda, and Egi Fuzi, were asked about their awareness of signages while assisting students with wheelchairs. Out of seven participants, five acknowledged awareness of the signages and various signages found in KRL Commuterline stations.

The discussion delved into the challenges faced by teachers, caregivers, and their students in understanding and navigating stations. Only one person found the KRL Commuterline signage decently understandable, while others highlighted issues with sound announcements, small texts, placement, and contrast, which crucial

factors for students with disabilities. The conversation then shifted to identifying existing public transportation in Jabodetabek as examples for KRL Commuterline. Two mentioned MRT Jakarta's best design for accessible signage, two named TransJakarta, and others were uncertain, and believing that other forms of public transport do not adequately cater to people with disabilities. When asked about signage standardization, all participants unanimously emphasized the necessity of standardizing signage for inclusivity among individuals with disabilities and the general public.

Figure 3. 5 Documentation of Caregivers and Teachers of Yayasan Sayap Ibu

3.1.1.3 Existing Studies

The author conducted an existing study on learning the existing signage of KRL Commuterline at one of the transit station and some of the non-transit stations. In this part, the author observed on how the signage being placed, the legibility of the signage, how the signage convey messages, and the user flow whether in station or in the train.

Figure 3. 6 Directory Signage in Tanah Abang Station

Designing Accessible Signage …, Benedicta Sari, Universitas Multimedia Nusantara

Here are some problems regarding the signages being displayed in many KRL Commuterline station and train. The signage sometimes utilize two languages, yet the other use only one language, and the texts are too long. In terms of legibility and readability of the signage, there are too many icons and the size of the text is small, various icons are placed in one signage and it made the signage looks too busy and baffling.

Figure 3. 7 Identification Signage in Tanah Abang Station

The business of content is evident not just at KRL Commuterline stations but also within the train carriages. The map inside the train displays all five Jabodetabek Line routes, and its placement is excessively high, making it inconvenient even for regular commuters. The small size of the map and the tiny text for each piece of information further compound the issue.

Dual-purpose signage is a common feature at KRL Commuterline stations, typically combining identification and directional information. This results in an overload of information within a single signage unit.

Figure 3. 8 Map inside of train carriage

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In one of the transit stations, the size of the signage are competing with the size of billboards and neon boxes surrounding the signage, and the obscure placements of some signages, therefore it created confusion for both regular people and people with disabilities.

Figure 3. 9 Identification and Direction Signage in Kebayoran Station

3.1.1.4 Reference Studies

This reference studies from Joshua Tauberer on his trip to Japan on 2020 and document it on his Medium page. Signage at Odawara Station, Japan utilizing large signs and legible symbols with two language, Japanese and English to help user to identify the place from afar. Digital signs also utilized and and switch between Japanese and English, including station names written in Romanized form, the digital sign displayed above the door inside train cars within the Tokyo subway system. Digital signage shows which carriage the visitor is in, and shows that the nearest escalator and elevator access is in particular carriage.

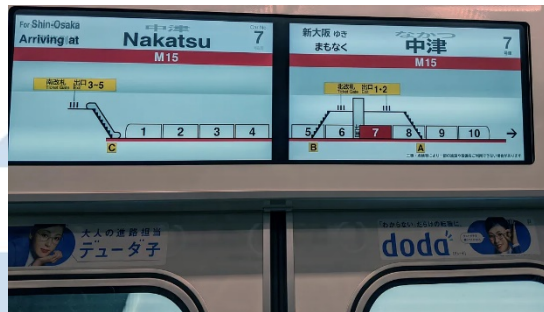*Figure 3. 10 Identification Signage in Odawara Station*

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Figure 3. 11 Digital Signage alternating between Japanese and English

Walking and queuing signs are signified by floor decals indicating where passengeers should stand in relation to the train doors when the train arrives at the station. Thsese decals are typically placed on the floor to the left and or right of the door location, ensuring that individuals waiting to board know where to position themselves to avoid blocking passengers disembarking from the train. In some cases, separate decals are used to mark areas where passengers should not stand. In narrower spaces, these decals are curved to maintain an orderly queue rather than abruptly ending. During busy periods when queues extend beyond the floor decals, attendants may be present, holding "End of Line Here" signs to guide passengers.
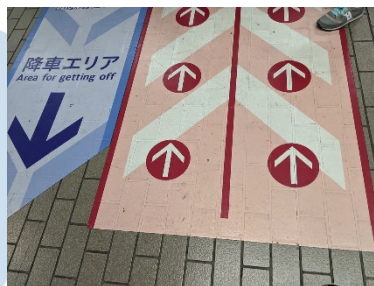

Figure 3. 12 Floor Decal in Tokyo Shinkansen platform

Figure 3. 13 Wall-mounted Identification Signage at Jimbocho Station

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Figure 3. 14 Platform sign on Tokyo's Yurikamome line

Station numbers and platform identifications follow a specific format, using Roman alphabet abbreviation of the train line and sequential number enclosed within a colored outlined circle. Platform signage displays a list of stations on the line along with their corresponding sequential numbers. An upward arrow indicates the direction in which trains travel on that particular track or platform.
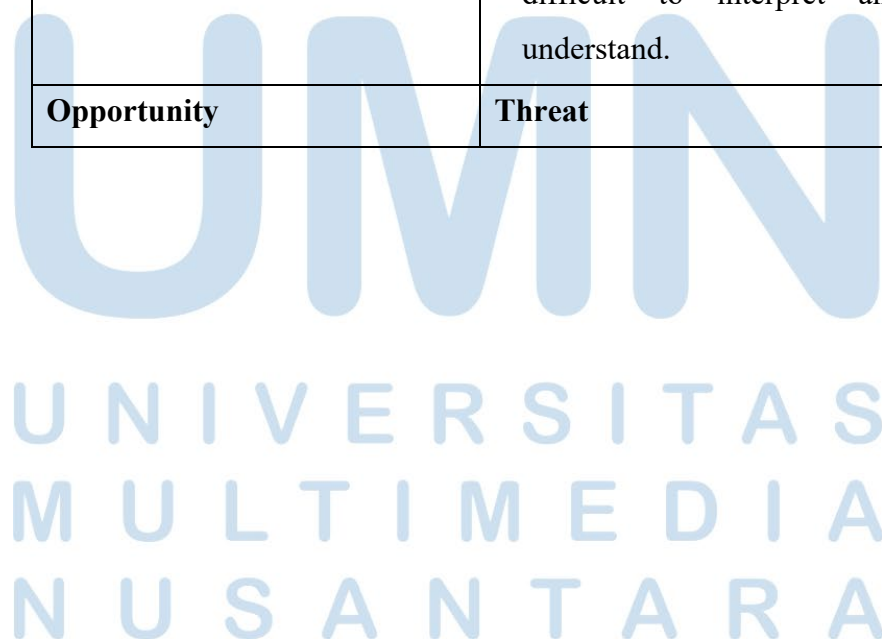
3.1.1.5 SWOT Analysis

A SWOT analysis is an effective framework used to assess an organization or a project by examining its Strength, Weakness, Opportunities, and Threats. This analysis helps in evaluating the effectiveness of project planning and execution. The author conducted SWOT analysis on the design of this final project.

Table 3. 1 SWOT Analysis on Accessible Signage

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Strength	Weakness
• Some symbols and icons are fathomable. • Each train station already has a Regulatory Sign, Identification Sign, and Directory Sign. • The sign can still be read, because there is a contrast between the color of the letterform and the background.	• There are inconsistencies of the signage that confuses both regular people and people with disabilities. • Orientation signage are nowhere to be found. • The placement of signage is not targeted. • Signage does not yet have definite size and design standards. • The size of the text is too small and too long. • Overloaded with too many information in one signage. • The icons on the signage are difficult to interpret and understand.
Opportunity	**Threat**

• Disabled visitor and/or their guardian/companion able to navigate and orient themselves. • Disabled visitor and/or their guardian/companion can travel with ease, without asking the officer on duty.	• Visitors with disabilities get lost. • Unable to reach destination. • Visitors with and without disabilities are waiting on the wrong platform. • Individuals with disabilities often face challenges in identifying the specific destination or location they want to visit. • Visitors have the potential to get off at the wrong station.

3.1.1.6 Conclusion

Based on all research results using qualitative methods, the author concludes that accessibility in KRL Commuterline for individuals with disabilities and guardians/companion needs a lot of improvements especially for the signage also wayfinding. The problem between accessibility and people with disabilities is a problem that people rarely notice. Many people with disabilities in Indonesia continue to experience difficulties due to the complexity of understanding signage and wayfinding systems.

3.1.2 Quantitative Method

Quantitative method is a data collection method measured with statistics and carried out in a structured manner to show high accuracy and validation (Yusuf, 2014). The author employs a quantitative approach by employing a questionnaire tool in the format of Google Form as a means of

conducting research and assessing the legibility of signage at KRL Commuterline stations. Questionnaire are sporadically shared through various social media with the intended target respondents according to research scope that have been determined. The number of survey respondents was calculated using the Slovin formula with a 10% margin of error, based on the 2021 population data for DKI Jakarta in total 4.286.088 for age groups 15 – 19 up until 40 - 44 in subject to BPS data of 2022. Below is the calculation of the sample size through this formula:

$$\eta = \frac{N}{1 + N(e)^2}$$

Description:

η = Sample

N = Population

e = Margin of Error

$$\eta = \frac{4.695.196}{1 + 4.695.196 \ (0.1)^2}$$

$$\eta = \frac{4.695.196}{1 + 46.951,96}$$

$$\eta = \frac{4.695.196}{46.952,96}$$

$$\eta = 99,997 \ \approx 100$$

From the distributed survey, 103 participants were gathered, categorized based on the subsequent demographic criteria.

Designing Accessible Signage …, Benedicta Sari, Universitas Multimedia Nusantara

Table 3. 2 Attributes of Survey Respondents

Questions	Answers	Percentage
Age	<15 years old	1%
	16 – 18 years old	2.9%
	19 – 21 years old	24.3%
	22 – 24 years old	41.7%
	>25 years old	30.1%
Sex	Male	56.3%
	Female	43,7%
Residence	Jakarta	37.9%
	Bogor	11.7%
	Depok	6.8%
	Tangerang	36.9%
	Bekasi	6.8%
Occupation	Self-employed/Entrepreneur	18.4%
	Employee	40.8%
	Undergrad Student	34%
	Student	2.9%
	Educator	1%
	Freelance	2%
Are you a person with disability?	Yes	13.6%
	No	86.4%

The attributes of the respondents are dominated by men with percentage of 56.3% and women with percentage of 43.7%, coming from the age group over 25 years old as much as 30.1% who resides in Jakarta and Tangerang with percentage 37.9% and 36.9%. The most significant occupations are employee by 40.8% and undergraduate student by 34%. The

author asked whether the respondent is a person with disability and 86.4% of people answered no, the rest 13.6% answered yes.

Table 3. 3 Research on Group of People With Disabilities

Questions	Answers	Percentage
Have you ever used KRL Commuterline for the last 1-5 month?	Yes	78.6%
	No	21.4%
What made you choose to use KRL Commuterline?	Accessible	5 (35.7%)
	Affordable fare	9 (64.3%)
	Punctual	3 (21.4%)
	Fast	4 (28.6%)
	Does not like to use KRL Commuterline	2 (14.3%)
How frequent you use KRL Commuterline?	Scale 1 (Rarely)	2 (14.3%)
	Scale 2	3 (21.4%)
	Scale 3	3 (21.4%)
	Scale 4	3 (21.4%)
	Scale 5 (Frequently)	3 (21.4%)
Are you aware or ever heard of KRL Disability Service Center?	Yes	14.3%
	No	85.7%
If yes, have you tried using the service?	Yes	7.1%
	No	92.9%
If no, what makes you doubt or never tried to use the service?	Never aware for such service exists	11 (78.6%)
	Relying help from on duty officers	3 (21.4%)
	My guardian/companion is already helpful	-

	Able to navigate myself independently	4 (28.6%)
	No need for such service	5 (35.7%)
If yes, were you helped by the service?	Yes	-
	No	100%
The following is an example of signage at Tanah Abang Transit Station. Can the signage/wayfinding be read/understood/seen easily?	Scale 1 (Difficult)	1 (7.1%)
	Scale 2	8 (57.1%)
	Scale 3	1 (7.1%)
	Scale 4	3 (21.4%)
	Scale 5 (Easy)	1 (7.1%)
Do you find it easy to understand the information on the KRL?	Scale 1 (Difficult)	6 (42.9%)
	Scale 2	4 (28.6%)
	Scale 3	1 (7.1%)
	Scale 4	1 (7.1%)
	Scale 5 (Easy)	2 (14.3%)
Are you able to navigate yourself easily in any/all KRL Commuterline stations?	Scale 1 (Difficult)	2 (14.3%)
	Scale 2	5 (35.7%)
	Scale 3	4 (28.6%)
	Scale 4	1 (7.1%)
	Scale 5 (Easy)	2 (14.3%)
	Scale 1 (Difficult)	2 (14.3%)

Is the placement or position of platform and direction signs, signage or wayfinding easy to see and read?	Scale 2	6 (42.9%)
	Scale 3	3 (21.4%)
	Scale 4	2 (14.3%)
	Scale 5 (Easy)	1 (7.1%)
Do you easily find/see directions with existing platform and direction signs, signage, or wayfinding?	Scale 1 (Difficult)	3 (21.4%)
	Scale 2	6 (42.9%)
	Scale 3	3 (21.4%)
	Scale 4	1 (7.1%)
	Scale 5 (Easy)	1 (7.1%)
In your opinion, what affects the readability of signage?	Size	13 (92.9%)
	Location/Placement	13 (92.9%)
	Typeface	7 (50%)
	Color	11 (78.6%)
	Language	3 (21.4%)
	Nothing	-
	Others (Icon/animation)	1 (7.1%)

	Others (Consistency)	1 (7.1%)
Is accessible signage on KRL Commuterline needed?	Yes	92.9%
	No	7.1%

It is found among people with disabilities is that they prefer traveling around with KRL Commuterline because of the affordable fare, presented by 64.3% and the closest factor of why people with disability prefer traveling around with KRL Commuterline are accessible to reach with 35.7%. On the question of how frequent user with disability use KRL Commuterline ranges from scale 2 up to 5 by 21.4% with 1 by rarely use KRL Commuterline and 5 very frequently. All of the people with disability in this survey never heard, know, and use the KRL Disability Service Central, they prefer relying help from on duty officer, and some don't need the service. People with disabilities find that signage in Tanah Abang Transit Station are somewhat easy to understand, and navigate themselves based on the various results of the survey. Signage placement for directory is not easy to find where it lays on a scale 2 by 57.1%. The affecting factors of signage readability for people with disabilities are the size, placement, typeface, color, and other visual indicators such as icon or animation. Majority of the respondents answered yes to the need of designing accessible signage for KRL Commuterline with 75%.

Table 3. 4 Research on Group of Regular People Without Disabilities

Questions	Answers	Percentage
What made you choose to use KRL Commuterline?	Accessible	50 (56.2%)
	Affordable fare	73 (82%)
	Punctual	23 (25.8%)
	Fast	41 (46.1%)
	Does not like to use KRL Commuterline	10 (11.2%)
How frequent you use KRL Commuterline?	Scale 1 (Rarely)	19 (21.3%)
	Scale 2	20 (22.5%)
	Scale 3	20 (22.5%)
	Scale 4	21 (23.6%)
	Scale 5 (Frequent)	9 (10.1%)
Are you aware or ever heard of KRL Disability Service Center?	Yes	70.8%
	No	29.2%
The following is an example of signage at Tanah Abang Transit Station. Can the signage/wayfinding be read/understood/seen easily?	Scale 1 (Difficult)	5 (5.6%)
	Scale 2	21 (23.6%)
	Scale 3	36 (40.4%)
	Scale 4	21 (23.6%)
	Scale 5 (Easy)	6 (6.7%)
Do you find it easy to understand the information on the KRL as in the following	Scale 1 (Difficult)	4 (4.5%)
	Scale 2	21 (23.6%)
	Scale 3	31 (34.8%)
	Scale 4	26 (29.2%)
	Scale 5 (Easy)	7 (7.9%)

picture?

Are platform and direction signs, signage, or wayfinding easy to understand in a short time?	Scale 1 (Difficult)	7 (7.9%)
	Scale 2	24 (27%)
	Scale 3	29 (32.6%)
	Scale 4	21 (23.6%)
	Scale 5 (Easy)	8 (9%)
The following is an example of signage at Kebayoran Station, whether the platform and direction signs, signage or wayfinding are easy to understand in a short time?	Scale 1 (Difficult)	6 (6.8%)
	Scale 2	31 (35.2%)
	Scale 3	25 (28.4%)
	Scale 4	20 (22.7%)
	Scale 5 (Easy)	6 (6.8%)
	Scale 1 (Difficult)	4 (4.5%)
	Scale 2	15 (16.9%)

Is the placement or position of platform and direction signs, signage or wayfinding easy to see and read? 	Scale 3	30 (33.7%)
	Scale 4	32 (36%)
	Scale 5 (Easy)	8 (9%)
Do you easily find/see directions with existing platform and direction signs, signage, or wayfinding? 	Scale 1 (Difficult)	3 (3.4%)
	Scale 2	16 (18%)
	Scale 3	29 (32.6%)
	Scale 4	30 (33.7%)
	Scale 5 (Easy)	11 (12.4%)
In your opinion, what affects the readability of signage?	Size	81 (91%)
	Location/Placement	78 (87.6%)
	Typeface	56 (62.9%)
	Color	55 (61.8%)
	Language	19 (21.3%)
	Nothing	-
	Others (Text should be brief, bold, and contrasting)	1 (1.1%)
	Others (Composition)	1 (1.1%)
	Yes	97.8%

Is accessible signage on KRL Commuterline needed?	No	2.2%

Majority People without disabilities prefer to use KRL Comuterline because of fastness and affordable fare. The frequency of regular people commuting with KRL varied from sometimes to rare, and fell in scale 1 for rarely up to 4, quite frequent. Interestingly, there are 29.2% of total respondents answered they have heard about KRL Disability Service Center, and the majority 70.8% answered never heard of said service before. The level of difficulty or easiness of signage in Tanah Abang Transit Station varied from decent or easy to understand in scale 4, up to slightly difficult in scale 2. In terms of signage placement respondents dominantly answered on scale 3 and 4 which falls for decent up to easy to find. The affecting factors signage readability, most answered with size, location/placement, color, and typeface. Majority of the respondents answered yes to the need of designing accessible signage for KRL Commuterline with 97.8%.

3.2   Design Method

The author use method for the process of designing accessible signage for people with disabilities according to Gibson (2009) method on creating signage and wayfinding, in his book The Wayfinding Handbook, here are the phases:

1)   Research and Analysis

In this planning phase, starts by conducting interview with user, focus group meeting, and performing site surveys to grasp the demands and other operational needs that must be addressed by sign system. The aim is identifying user patterns and needs to establish the basis for the design system, then defining the problem that needs to be solved.

2) Strategy

After conducting research by interviews, analysis, and discussions, the strategy phase helping to create a systematic framework. This framework outlines how signage and way finding will provide information and directions within a given location. This phase also helps to establish the design objectives for the signage system.

3) Programming

Remaining within the planning phase, it is important to consider pivotal decision points and other key locations that requires signage. On a plan, plot each sign location, and create draft of the message for each category of signage.

4) Schematic Design

Moving on to designing phase, selecting primary design types and explore various design possibilities. This involves different shapes, materials, color palettes, typography, and content. While trying to find different approaches to content and visual vocabulary. At the onset of this phase, identity and branding design might also be addressed. By the end of this stage, design vocabulary and direction should be defined.

5) Design Development

In this phase, finalizing designs for each sign type, and incorporating the design elements from the schematic design phase. Additionally, try consulting with architect or engineer about structural issues and architectural integration.

6) Construction Documentation

In this stage, findings from the design development phase are integrated into digital models showing sign placements across the designated site. Moreover, specific locations and arrangements for each signage type are established and finalized.