CHAPTER - 3

RESEARCH METHODOLOGY

This chapter outlines the procedure undertaken to conduct the study. The study estimates the inequality of healthcare services in three bordering districts namely Karimganj, Dhubri and South Salmara of Assam in India and establish a relationship between multiple stakeholders that can contribute to advance health equity. The research problem identified in the previous chapters requires a comprehensive and robust investigation process. The research problem demands mixed approach, involving qualitative and quantitative approaches. A blend of the quantitative and qualitative methods has been found to the most suitable way to investigate the equity and different stakeholders for advancing equity in healthcare (Fleurbaey & Schokkaert, 2011).

3.1 Research Design

The research design is formulated to address the research problem of the study. The research problem is approached through mixed methods, and it employs embedded design to seek information from three different participants: Community, Healthcare professionals, and Media practitioners. The embedded design of mixed-method is identified to be suitable for gaining a broader perspective as a result of using different methods instead of using the predominant method alone (Creswell, 2009). The embedded design has two variants: *embedded experimental model* and *embedded correlational model*. This study is guided by the *embedded experimental model* with a two-phased approach, where the quantitative dataset establishes the study, and qualitative data is subservient within the methodology (Creswell & Clark, 2007). The qualitative data in this design come after the intervention of quantitative data. The two-phased sequential approach is useful when the researcher needs qualitative information after the quantitative intervention to explain the information (*ibid.*).

In the context of the study, the quantitative research data is seen to be appropriate in engaging with the dynamics of knowledge systematically that concerns the social world. On the other hand, the qualitative study helps in acquiring information on the framing and representation of healthcare and its related phenomenon by the news media.

With a view to assess the joint role of healthcare workforce and media towards addressing health equity for marginalised community, the study participants are categorized into three sections: Community, Healthcare workforce, and Media Professionals. A comprehensive illustration of methods, sampling design, and statistical techniques to address the study's research problem.

The planning for each section is outlined below:

- The operational definition of the variables

- Population

- Data sources

- Sampling techniques

- Tools

- Data collection process

- Analysis of the data

3.2 Participant from the Community

3.2.1 Variables Involved

-*Wealth Index* refers to the composite measure of a household's cumulative items, owned by the household members. It is measured by collecting information about the consumable goods and generating a score for each household on a continuous scale of relative wealth (Rutstein & Johnson, 2004).

-Housing Index: It refers to the measure of basic needs that meet the human living standard by providing shelter from weather conditions, personal security, and healthy conditions for all the members of any age group. A composite score is generated against all the basic parameters of improved living conditions for every household, relatively on a continuous scale.

-Accessibility of Healthcare Services: It is referred to as fair distribution and access to healthcare services, irrespective of the individual's socio-demographic, economic, and geographic determinants.

-Availability of Healthcare Services: In the context of the study at hand, availability is referred to as sufficient supply of medicines and medical equipment, adequate healthcare staff including the presence of infrastructures to serve the health need of the population.

-Utilization of Healthcare Services: The utilization has been conceptualized as healthcare services for preventing and curing health issues, maintaining health well-being, and obtaining information about health status and prognosis.

-Maternal Health: It is referred to as the health and hygiene condition of women during pregnancy and childbirth, and postnatal period.

-Child Health: It is an environment that ensures every child makes a healthy start to life through adequate nutrition, routine health check-ups, and providing necessary vaccination and immunization.

3.2.2 Population

The population for the study is considered as the women between the age group of 15-49, from 33 districts of Assam. The reproductive women population are specifically targeted because previous studies have illustrated that status of women and child health represents health and wellbeing of any region (Hajizadeh et al., 2014; Kim et al., 2020; Wagner et al., 2018).

Assam performs the least in maternal and child health outcomes, which leads to considering the women of productive age from the state (IIPS s& ICF, 2015). The state of Assam is crucial to the north-eastern region of India. It shares two international borders: Bhutan and Bangladesh, mostly hilly and forest in the Bhutan part, and flat/plain, riverine on the Bangladesh side. Assam has a history of unresolved migration issues, causing several conflicts among various groups in different parts of Assam. At the same time, the Bangladesh border has virtually no natural impediments, border settlements are heavily inhabited, and agriculture extends all the way to the frontier. The territory along the border is heavily inhabited, with most residents being landless workers. The nature of borderland in Assam adversely affects the socio-economic condition, literacy, and health and well-being of individuals residing close to the border. Assam has a population of 31 million people, with one-third of the population living in poverty. Despite government initiatives towards poverty alleviation, Assam has declined rapidly over the period, which remains higher than the national poverty average. According to a World Bank assessment on Assam, 43 to 60 percent of the population lives below the poverty line in districts that share international borders: Dhubri, South Salmara and Karimganj (The World Bank, 2017).

3.2.3 Data Sources

Primary data were collected from a cross-sectional survey conducted in three districts: Dhubri, South Salmara, and Karimganj of Assam.

3.2.4 Sampling Technique

Out of the population of 33 districts of Assam, three districts were selected that shares border with Bangladesh, as it happens to be least performing districts among all other districts. The least performing districts are selected for the study because despite having similar services across the state, it becomes pertinent to understand the reason behind poor performance in all the segment of the healthcare.

Karimganj, Dhubri, and South Salmara are the three districts, with seven, thirteen, and two Development Blocks, respectively. Four Development Blocks along the border have been chosen. As a result, 24 villages were chosen from the four Development Blocks adjacent to the border area, within a 15-kilometer radius of the border road running parallel to the border barrier. Figure 1 presents the data collection sites, shaded in grey.

Map1: Data Collection Sites (Shaded in grey) Source: (Nath et al., 2020)

South Salmara, Dhubri & Karimganj
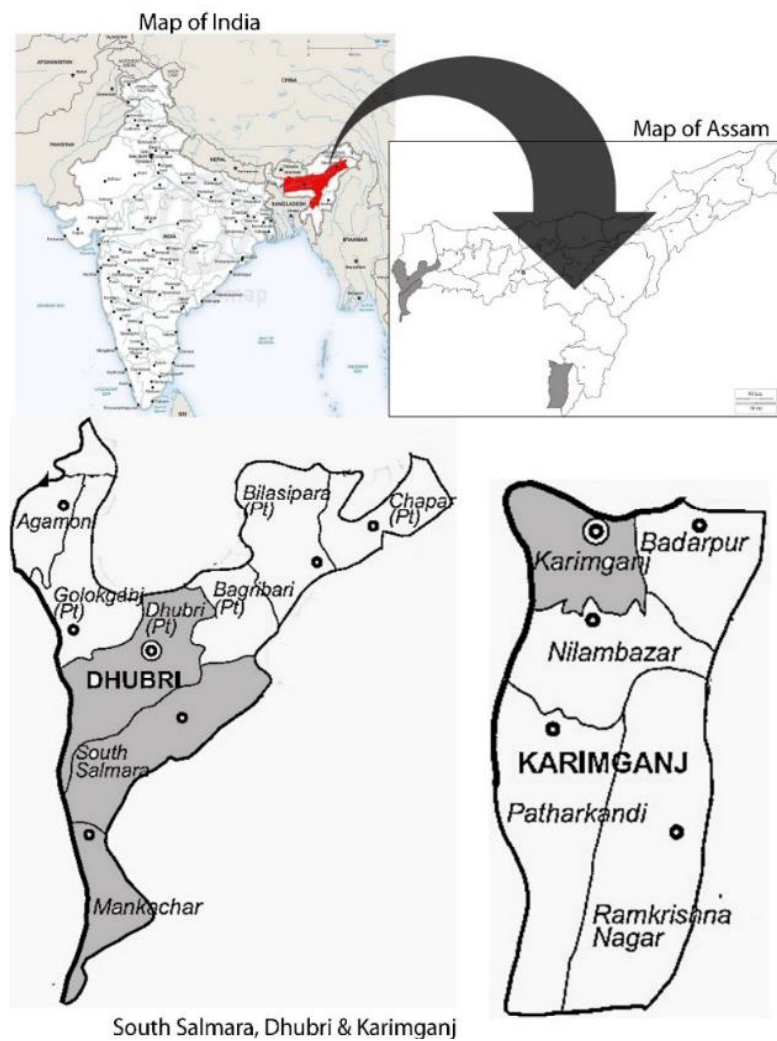
The sampling frame was created using data supplied by each district's National Rural Health Mission (NRHM) centre. The sampling frame includes 26,757 women between the ages of 15

and 49 from 24 villages who are presently pregnant, have given birth, or had a miscarriage during the past five years. The probability sampling technique is used to select the representative sample from the sampling frame of 26,757 (NRHM, 2019). The Cochran formula is used to determine an optimum sample size given a desired degree of precision, a specified level of confidence, as well as an estimated fraction of the attribute present in the population (Bartlett et al., 2001). Using Cochran's formula, the representative sample properly mirrored the population (Charan & Biswas, 2013; Dell et al., 2002). The formula is used to get

the representational cases $\dfrac{\frac{z^2*p(1-p)}{e^2}}{1+\left(\frac{z^2*p(1-p)}{e^2 N}\right)}$ of sample design, where N is the population size, p

is the percentage or proportion of the population that chose an option, e is the sampling error, and z is the number of standard deviations a particular fraction is distant from the mean. The assumptions are as follows: a confidence level of 95% equals to 1.96, a sample error of 0.05, and a percentage of 45 percent equals to 0.45. Finally, 355 women from all three districts are deemed to be a representative sample. The sample's distribution by district is shown in the table below:

Table 1 District-wise distribution of the sample

District	Sample (N)
Dhubri	111
South Salmara	119
Karimganj	125

3.2.5 Tools Used

A structured interview was conducted with the respondents of the community. The structured interview schedule is partially adopted the National Family and Health Survey (NFHS). Further, the interview schedule was tailored into two questionnaires: *Household Questionnaire* and *Individual Response Questionnaire* used to collect information from the community. The individual response questionnaire was further divided into three categories: *Availability*, *Accessibility,* and *Utilization* based on the objective of the study. Both individual and household response questionnaires comprise closed-ended and pre-coded questions where the interviewer reads out the questions exactly and in the same order as they are printed on the schedule.

3.2.6 Data Collection Process

The survey took three months to complete, which started in June and continued until August. Being a structured questionnaire, uniformity is maintained throughout the phase. The questionnaires administered in the Bengali language, keeping in mind the majority language in the three studied districts. The researcher prepared the schedule in a booklet format, with a consent form on top. The researcher readout for every respondent who cannot read, and a thumb impression is taken for one who cannot write. The survey researcher asked every question and recorded the answers on the pre-coded questionnaire. The household and individual response questionnaires are administered to the women aged 15-49 years old, from the 24 villages of Assam close to the India Bangladesh border.

3.2.7 Data Analysis

The data analysis for section one is limited to the quantitative method. The individual response and household questionnaires were pre-coded and closed-ended. As per the assumptions for probability sampling and parametric statistics were used to analyse the data using STATA 15.1, i.e., Statistics and Data Analysis. Both inferential and descriptive statistics were used to analyse

the data. Wealth Index and Housing Index is calculated through *Principal Component Analysis (PCA)*, which is discussed extensively in the coming chapter. For reproductive and child health variables, *Concentration Index, and Binary and Multinomial Logistic regression* are used to measure the availability, accessibility, and utilization of healthcare services. Concentration index presents inequality in access to healthcare services with respect to the wealth and housing conditions of the community. Furthermore, binary and multinomial logistic regression presented the effect of socioeconomic determinants on accessibility and utilization of services.

3.3 Healthcare Workforce

3.3.1 Variables Involved

-Community Service and Engagement: It refers to active and continual collaboration that intends to serve a public purpose by building the capacity of every individual in a community that focuses on delivering expertise, resources, and services to community individuals and the public in general.

-Competency and Skills: It is referred to as clinical and non-clinical skills and competency to tackle the social issues associated with the community that affects the health outcome of the entire population.

-Working for Advocacy: It refers to the role of the healthcare workforce in information public debate and encouraging policies through writing for media and understanding the complex nature of media messages and information regarding health issues.

3.3.2 Population

The population considered are the healthcare providers employed in the Primary Health Centres (PHC), Block Primary Health Centres (BPHC), and Sub-Centres (SC) from June to August 2019 in the 33 districts of Assam. Assam has 4621 sub-centres, and 1014 PHCs and

BPHCs combined (Government of Assam, 2019). Doctors, Auxiliary Nurse Midwife (ANM), General Nurse Mid-Wife (GNM), and Social Workers are included in the study.

3.3.3 Data Sources

The data source is primary, collected from 09 SCs, and 14 PHCs/BPHCs located close to the India Bangladesh border. The health centres are located in 24 villages surveyed in the three districts: Dhubri, South Salmara, and Karimganj of Assam.

3.3.4 Sampling Technique

To complete the sample for the healthcare workforce, a comparable sampling procedure is employed. Because the cross-sectional survey was performed in Assam's three worst-performing bordering districts, only the PHCs/BPHCs and SCs in those three districts were taken into account. In addition, it is also pertinent to understand the rural public healthcare system catering to the need of the studied population. Therefore, the SCs and PHCs that comes under the village or Developmental Blocks are considered for the study. Another essential criterion for the inclusion of SCs and PHCs/BPHCs is the distance from the border fencing, where health centres within the range of 0 to 15 kilometres are taken into consideration for the study. The total number of staff in the selected 23 health centres is 162. Therefore, using the similar Cochran formula as above, 109 respondents were found to be the representative sample with Confidence Interval (z) 95%, error (e) 5%, and population proportion (p) at 30 %. Of the 23 health centres, 64 were Doctors, 23 were Community Health Workers, and 22 were nursing staff selected through the simple random method. The table below presents the education qualification wise distribution of healthcare workforce gender.

Table 2 Education qualification-wise distribution of healthcare workforce gender

	Gender	Total

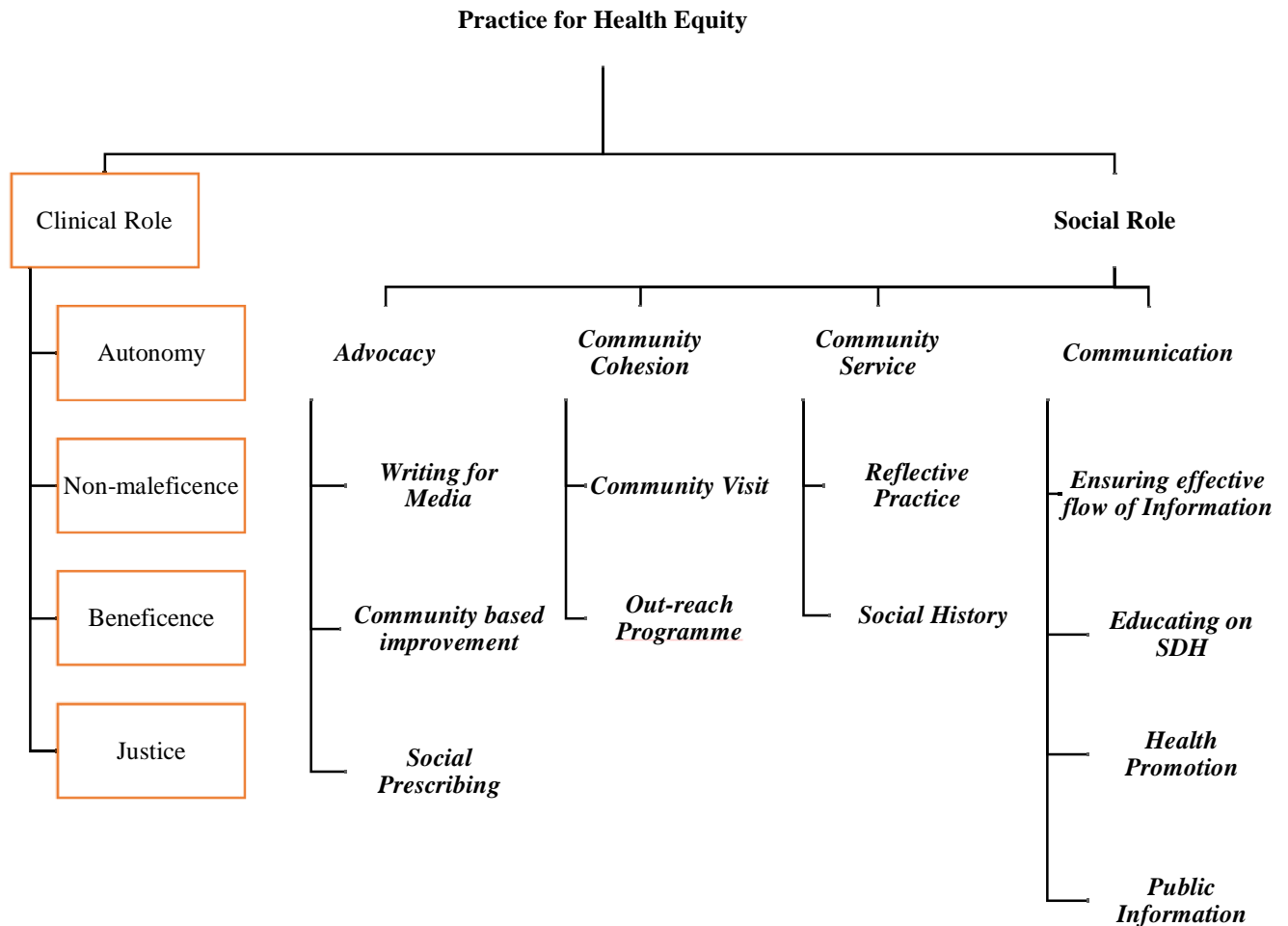|		Female	Male	
Education	MBBS	25	21	46
	MD/MS	12	6	18
	MSW	19	4	23
	Nursing	12	10	22
Total		68	41	109

3.3.5 Tools Used

The tool used to gather information from the healthcare workforce was constructed rigorously. The researcher used a self-constructed tool for identifying dimensions of practice for the healthcare workforce for health equity, Healthcare workforce Practice scale. The researcher did not used any other scale to measure the factors that affect the functioning of the healthcare workforce. The factors that influence the functioning of the healthcare workforce towards action on health equity are extensively discussed in the literature. The literature highlighted broad dimensions of the factors that can contribute to the healthcare workforce's functioning for advancing health equity.

A structured questionnaire based on the extensive literature review on the functioning of the healthcare workforce was used. Evidence from existing literature on the functioning highlighted the clinical and non-clinical (social) role of the healthcare workforce. Secondary sources include books, reports, working papers, and journal articles on healthcare workforce functioning that were selected using relevant keywords. Keywords such as *ethical functioning, doctors for health equity, healthcare professionals as a health advocate, healthcare workforce writing for media, healthcare workforce as community health workers, and community cohesion* were used to map previous research studies. The comprehensive review of literature induced identification of dimensions for measuring the factors affecting the healthcare

workforce that contribute the functioning towards advancing health equity. The dimensions considered for construction of scale *Advocacy, Community Cohesion, Community Service,* and *Communication* are, highlighted in the figure below.

Figure 8: Effective dimensions for the functioning of the healthcare workforce

Practice for Health Equity

Clinical Role

Social Role

Autonomy

Non-maleficence

Beneficence

Justice

Advocacy

- *Writing for Media*
- *Community based improvement*
- *Social Prescribing*

Community Cohesion

- *Community Visit*
- *Out-reach Programme*

Community Service

- *Reflective Practice*
- *Social History*

Communication

- *Ensuring effective flow of Information*
- *Educating on SDH*
- *Health Promotion*
- *Public Information*

A 33-item questionnaire was used, which consisted of a five-point Likert-type scale, ranging from *Strongly Disagree* to Agree *Strongly*. This set of questionnaires included three demographic variables: Gender, Educational qualification, and Rural Service.

3.3.6 Data Collection Process

The survey was concurrently carried out with a community survey that started in June and was concluded in August. The researcher visited 9 Sub-centres and 14 Primary Health Centre. Prior permission was obtained from Directorate of Health Services, Guwahati. Similarly, permission was taken from every Chief Medical Officer (CMO) heading the Primary Health Centre. The questionnaire was administered to the healthcare workforce: doctors, social workers, and nursing staff. The interview schedule was prepared in the booklet format with the consent form. The questionnaire was prepared in the English language, and the healthcare workforce filled all the questionnaires.

3.3.7 Data Analysis

Data analysis for this section was done using IBM SPSS 22.0. The statistics used for the study include descriptive statistics (mean score, standard deviation, and frequency) and inferential statistics (Pearson Correlation, Multiple regression, and One-way analysis of variance).

Factor analysis and Reliability test

Cronbach's alpha value was used to check the reliability of the questionnaire. However, studies questioned the sufficiency of Cronbach's alpha value for reliability test and emphasized on item-total correlation for checking the homogeneity of a scale made up of several items (Stockemer, 2019). In addition to Cronbach's alpha, the corrected item-total correlation was analysed. If the item-total correlation value less than 0.2 or 0.3, the item should be deleted. Similarly, if any item correlates negatively with the total, it is recommended to be discarded *(ibid)*.

Likewise, the validity of the questionnaire also needs to be checked. Construct validity is a central issue when inferences must be made concerning unobservable or latent variables, and factor analysis is an essential tool for questions of validity (Hayton et al., 2004a). Before

conducting factor analysis, the factorability of the variables needs to be checked. Usually, the number of samples required for factor analysis should be above 300 cases, and Kaiser's measure of sample adequacy should be above 0.7 to be considered as excellent (Wirth & Edwards, 2007); however, studies argue any value above 0.5 is considered to adequate to conduct factor analysis (Wright, 2017). Further, Bartlett's test of Sphericity should be significant ($p < 0.5$), where the value of determinant should not be zero, and values in the anti-image correlation matrix should not be small (Wright, 2017). Proceeding to the factor loading, studies highlighted that factor loading above 0.7 is excellent, 0.6 is very good, 0.5 is good, 0.4 is fair, and 0.3 is poor (Hayton et al., 2004a; Wirth & Edwards, 2007), and items with a factor loading above 0.3 should only be retained (Maskey et al., 2018). Item-wise factor load, correlational matrix, scree plot is presented in detail in the result section.

The data in this section are interpreted using Pearson's correlation to understand the effect of predictor variables on the outcome variable. Moreover, a similar interpretation is based on the results from the multiple regression analysis and one-way analysis of variance.

3.4 News Media

3.4.1 Variables Involved

-*News Media:* In the current study, news media is referred to as delivering news to the general and targeted public through print and television media platforms.

-*News coverage of health topics*: It is referred to as news items and reporting that focuses only on primary and rural healthcare services.

-*News Media Advocacy*: It refers to any form of activity by the media to promote the objective and goals of healthcare for the overall individual's well-being. The activities include creating and motivating the opinion leaders by focusing on and prioritizing primary healthcare.

-News Frame: It is defined as news coverage of health issues to shape mass opinion and create a societal discourse about it.

3.4.2 Population and Sampling

Reporters and Journalists employed in print, television, and online vernacular news media across Assam are respondents. A convenient sampling technique is used to select 16 journalists to participate in in-depth and structured interviews. The participants are from Guwahati, Assam based in various news agencies. The selection was made considering the circumstances journalists face while reporting health-related disparities, the challenges and barriers to cover communities in the peripheral region of India. Corresponding reporters currently engaged in the three studied districts are also considered to be recruited for the interview. Three major categories of respondents considered for the study are Editors and Editor-in-chief, Journalists and Sub-editors, and Corresponding reporters. The respondents are selected from print, television, and online news media to cover a comprehensive media viewpoint on health and health disparities. Although the probability sampling technique is not employed, the researcher ensured equal representation from television, print, and online media platform.

3.4.3 Tools Used

A structured interview guide was used to collect information from the respondents. The interview guide contains five open-ended questions focused on health news and the challenges.

3.4.4 Data Collection Process

After the sample selection, the respondents were contacted over the phone. Appointments were scheduled, and permissions were obtained from the authority to conduct an in-depth interview with the respondents. The respondents were informed of the aims of the research and ensured confidentiality. With the initial contact, three respondents requested to send the interview schedule before-hand to prepare, while others faced the interview impromptu. The in-depth

interview was generally for 25 to 35 minutes and was conducted during October 2019. All the interviews were recorded in the *Assamese* language, later translated, and transcribed for data analysis.

3.4.5 Data Analysis

The crystallization/immersion method is used to analyse the qualitative data from the transcripts of 16 interviews with the media professionals in our sample. The immersion is the first step to the process, where the researcher immerse themselves in the data collected by reading and examining some of the portions of the data in detail (Borkan, 1999). Crystallization is the process of suspending the process of examining the patterns emerging from the immersion process to reflect on the analysis experience and attempt to identify patterns and themes (Borkan, 1999). The process was followed by the formation of themes based on the structure of the study. Atlas Ti 4.0 is used to enhance the data analysis process, which effectively maintains vast amounts of qualitative data.

3.5 Chapter Summary

This chapter discussed the process involved in designing the study based on the research problem and the objectives. The study is mixed-method research, guided by the *Experimental Embedded Design*, where the quantitative data established the context of the study, and the qualitative study supported the context. The chapter was divided into three sections. An overview of the survey was presented in the first and second sections. Meanwhile, the third section focused on the in-depth interview method.