3

Methodology

The methodology represents the systematic and theoretical examination of the applied methods within a particular field of study. The methodology utilized in the current research entitled **—Agricultural Marketing Behaviour and Practices of Rural Farmers in Dibrugarh District, Assam"** is discussed under the following heads:

3.1 PHASE I - PRELIMINARY PHASE

3.1.1 Research Title

3.1.2 Research Design

3.1.3 Selection of the Study Area

3.1.4 Selection of the Sample and Size

3.1.5 Developing Rapport Building

3.1.6 Selection of the Methods and Tools.

3.1.7 Selection of Variables.

3.1.8 Conduct of the Pilot Study

3.1.9 Obtaining Ethical Clearance for the Study

3.2 PHASE II - IMPLEMENTATION PHASE

3.2.1 Collection of data

3.2.2 Duration of the study

3.2.3 Educational Awareness of Agricultural Marketing.

3.3 PHASE III- IMPACT ASSESSMENT PHASE

3.3.1 Analysis and Interpretation of Data

PHASE I

PRELIMINARY PHASE -

3.1.1 RESEARCH TITLE

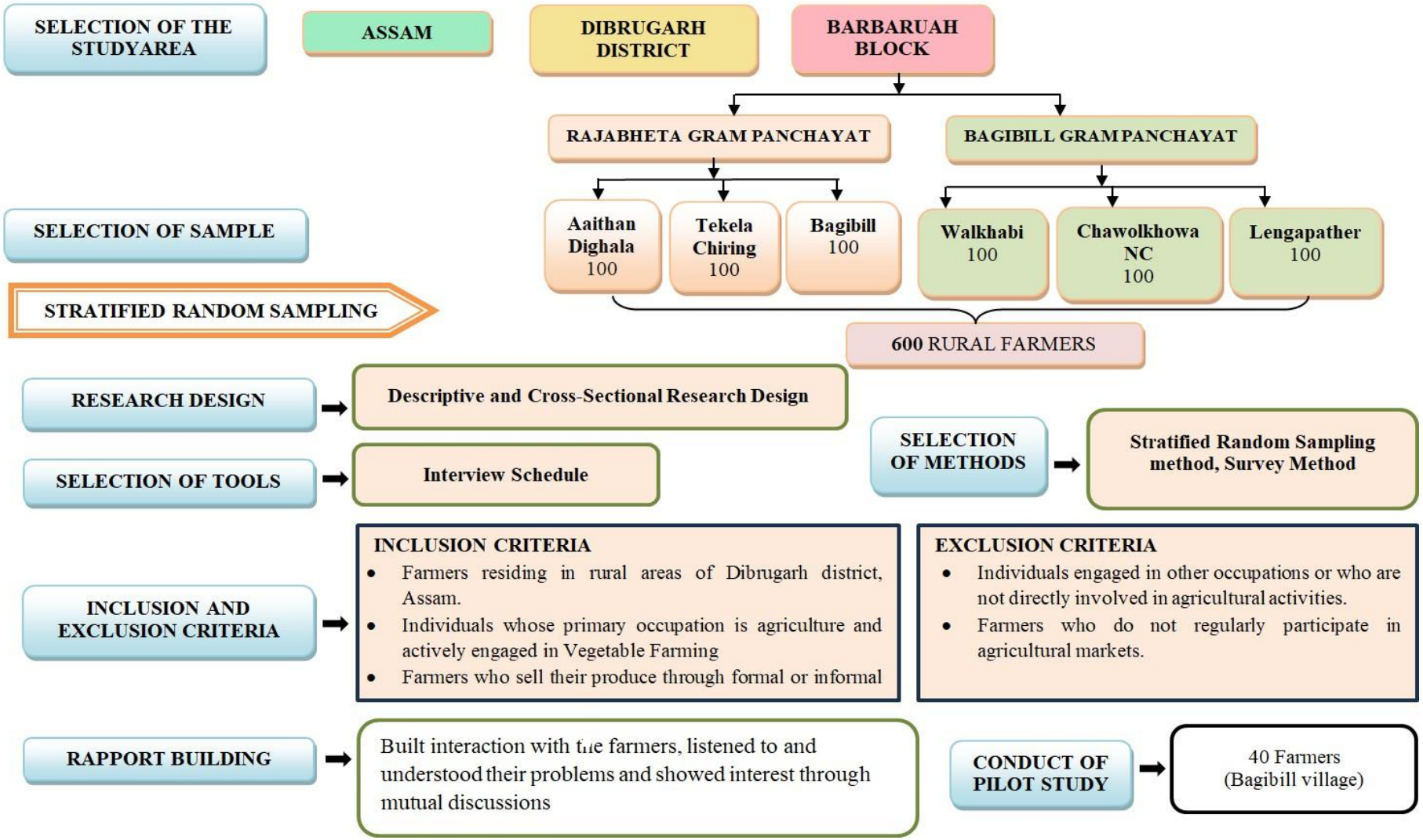
The research title selected for the study has been named as ―Agricultural Marketing Behaviour and Practices of Rural Farmers in Dibrugarh district, Assam‖ .

3.1.2 RESEARCH DESIGN

"A research design is a plan outlining the steps to be followed in a research project. It serves as the framework for the research, providing a blueprint for collecting, measuring and analyzing data. It specifies the methods and procedures to gather the information necessary to solve the research problem" (Mohan & Elangovan, 2007)

In the present study, the researcher followed a Descriptive research design, which involves collecting data from individuals, groups, or phenomena at a single point in time, often referred to as a cross-sectional study. According to (Last, 2024), a field survey, or study, is an investigation, typically a descriptive study, conducted "in the field," involving participants selected from the general population of a community. Hence, the researcher used the field survey method for primary data collection, enabling the monitoring and evaluation of field experiment impacts. A diagram labelled Figure V visually represents the study's research design, clarifying and summarizing the research approach for better understanding.

PHASE I- PRELIMINARY PHASE



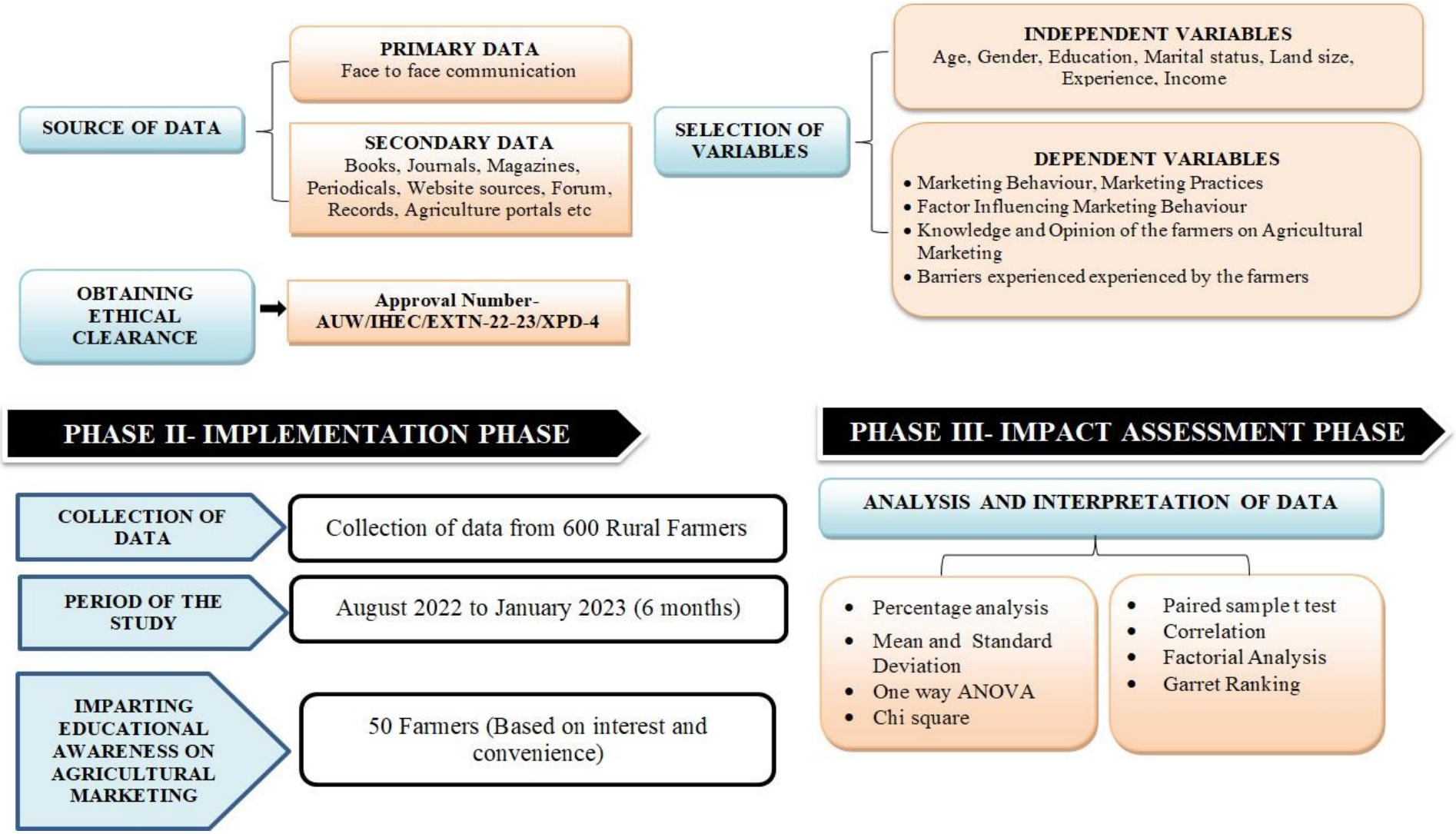


FIGURE V: RESEARCH DESIGN OF THE STUDY

3.1.2 SELECTION OF THE STUDY AREA

The study area chosen was the Barbaruah Development Block, located within the Dibrugarh district of Assam. Two Panchayats, namely Bagibill Gram Panchayat and Rajabheta Gram Panchayat, were selected within this block. Further narrowing down, three villages, namely Walkhabi, Chawolkhowa NC and Lengapather were chosen from Bagibill Gram Panchayat. The villages selected for the study from Rajabheta Gram Panchayat included Bagibill, Tekela Chiring and Aaithan Dighala.

TABLE IV

SELECTION OF THE STUDY AREA IN DIBRUGARH DISTRICT, ASSAM

District	Block	Panchayat	Villages
Dibrugarh	Barbaruah Development Block	Bagibill Gram Panchayat	Walkhabi
			Chawolkhowa NC
			Lengapather
		Rajabheta Gram Panchayat	Bagibill
			Tekela Chiring
			Aaithan Dighala

3.1.3.1 Selection of the State:

Assam, the largest state in north-eastern India, lies at the foothills of the eastern Himalayas. It lies along the middle part of the Brahmaputra and Barak rivers. It covers approximately 2.4% of India ‘s total geographical area. The Brahmaputra basin extends 580,000 square kilometres, with 70,634 square kilometres within Assam. The state features a diverse landscape, including hills, plains and rivers. Assam shares its borders with Arunachal Pradesh to the east; West Bengal, Meghalaya and Bangladesh to the west; Arunachal Pradesh and Bhutan to the north; and Nagaland, Manipur, Mizoram, Meghalaya and Tripura to the south. Geographically, it lies between 88.25°E and 96.00°E longitude and 24.50°N to 28.00°N latitude. Assam ‘s varied topography and warm, humid climate create ideal conditions for plant growth and vegetation (Assam State Biodiversity Board, 2020).

Assam also shares international borders with Bangladesh and Bhutan. While many other states in India are gradually transitioning from traditional agriculture-based economies to industrial or service-oriented ones, Assam remains dependent mainly on

agriculture. The state ‘s economy is primarily agricultural. Assam consists of three central physiographic regions: the plains, the plateau and the hills. The Brahmaputra and Barak valley plains serve as key areas for agricultural development. The soils of Assam are typically acidic, with a pH range of 4.2 to 5.8. High humidity, seasonal rainfall patterns and temperature characterize Assam‘s climate, with rainfall being the most critical climate determinant. Over 70% of the state‘s population depends on agriculture for their livelihood, either as farmers, agricultural labourers, or both. (US-India Strategic Partnership Forum (USISPF), 2020).

3.1.3.2 Selection of the District :

The District of Dibrugarh, nestling in the easternmost part of Assam, with its headquarters in Dibrugarh town, is an administrative district of Assam. It has a single sub-division and is divided into seven revenue circles: Dibrugarh East, Dibrugarh West, Chabua, Tengakhat, Naharkatia, Tingkhong and Moran. The district comprises nine towns, including three statutory towns and six census towns. It is also divided into seven Community Development Blocks, which cover 1,348 villages within the revenue circles. The total area of Dibrugarh district is 3,381 square kilometers, with 3,335.52 square kilometers being rural and 45.48 square kilometers (Directorate of Census Operations Assam, 2011).

The district's net cropped area spans 1,27,313 hectares, accounting for 68% of its total geographical area, while the gross cropped area totals 1,88,692 hectares (NABCONS, 2020). The district is administratively divided into two agricultural subdivisions, with their headquarters located in Dibrugarh and Joypur. Major vegetable crops cultivated in the district are Cole crops: Cabbage, Tomato, Brinjal, Cucumber, Ridge gourd, Bitter gourd, Bottle gourd, Pumpkin, Chilli and French Bean (KVK, Dibrugarh, 2010).

3.1.3.3 Selection of the Block:

Barbaruah Development Block is located in the Dibrugarh district, Assam and forms one of the seven blocks in the district. The Brahmaputra River flows from northeast to southwest along the northernmost part of the block, while the Sessa River follows a northeast-to-southwest path through the central region. Likewise, the Burhi Dihing River flows from northeast to southwest along the southern boundary of the block. The geographical features, including the rivers, contribute to fertile soil and the availability of water resources from the rivers for irrigation is essential for successful vegetable

cultivation. Therefore, the researcher selected this block for the study. As per the government register, the block code for Barbaruah is 98. The block covers a total area of 306.30 sq km. The block has a total population of 166,835 with 34,434 households. The block consists of 13 Gram Panchayats, 130 no. of wards and 183 revenue villages. It has two daily markets and three weekly markets.

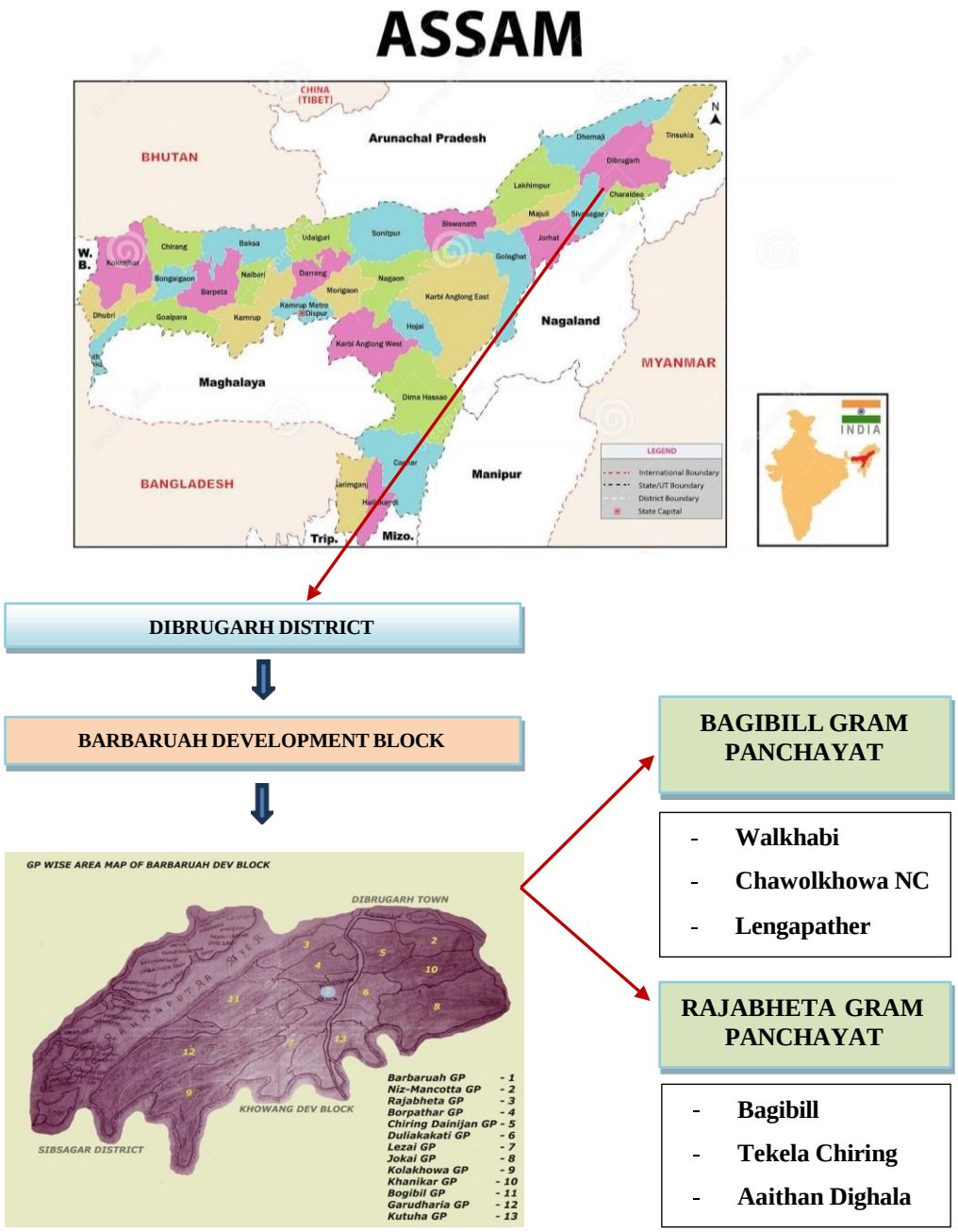


FIGURE VI: LOCATION OF THE STUDY AREA

3.1.3.4 Selection of the Gram Panchayat:

Among the 13 Gram Panchayats, Rajabheta Gram Panchayat and Bagibill Gram Panchayat were selected as they serve as Rural Local Bodies in the Barbaruah Development Block of Dibrugarh district. Rajabheta Gram Panchayat consists of 10 wards, while Bagibill Gram Panchayat consists of 11 wards.

3.1.3.5 Selection of the Village:

The villages namely Walkhabi, Chawolkhowa NC and Lengapather from Bagibill Gram Panchayat and Bagibill, Tekela Chiring and Aaithan Dighala from Rajabheta Gram Panchayat, were chosen for the study. The researcher purposively selected these villages due to their favourable soil and climatic conditions for vegetable cultivation. The agricultural potential of the land supports the growth of various vegetables.

3.1.4 Selection of the Sample and Size

A total of 600 rural farmers were selected for the study using the stratified random sampling method. The researcher randomly selected 100 farmers from each of the six villages, namely Walkhabi, Chawolkhowa NC, Lengapather, Bagibill, Tekela Chiring and Aaithan Dighala, under Rajabheta and Bagibill Gram Panchayats within the Barbaruah Developmental Block.

TABLE V

SELECTION OF SAMPLE FROM THE SELECTED AREA

Name of the Panchayat	Name of the Village	Total Population	Total Number of farmers	No. of Samples	% of selected sample
Bagibill Gram Panchayat	Walkhabi	1230	160	100	8%
	Chawolkhowa NC	1456	171	100	7%
	Lengapather	1295	148	100	7%
Rajabheta Gram Panchaya	Bagibill	1064	128	100	9%
	Tekela Chiring	1220	212	100	8%
	Aaithan Dighala	670	138	100	14%
Total Sample				**600**	

3.1.5 Developing Rapport Building

Rapport is a fundamental foundation for effective communication. Once individuals develop rapport, they build trust and mutual respect, leading to more efficient communication (Youell & Youell, 2011). Establishing a strong relationship between the researcher and the farmer is crucial for both qualitative and quantitative studies. When mutual understanding and trust exist, communication becomes more open and in-depth, resulting in more prosperous and meaningful data. Hence, the researcher established a good rapport with the selected farmers to facilitate information gathering.

3.1.6 Selection of the Methods and Tools.

According to Mukherjee (2016), a survey method refers to a brief interview or discussion with an individual regarding specific aspects. The term 'survey' is commonly used for gathering information and involves exploring the experiences of a particular group of people to achieve the study's primary objectives. Employing appropriate methods and tools is crucial for obtaining reliable information from respondents. Hence, the researcher adopted the survey method, conducting face-to-face interviews in the Barbaruah Development Block of Dibrugarh District, Assam.

Research tools comprise a collection of questions used for data collection. When a researcher employs a structured questionnaire for interviews, it is called a schedule. "According to W.J. Goode & P.K. Hatt, Schedule is the name usually applied to a set of questions, which are asked and filled by an interviewer in a face-to-face situation with another" (Pandey & Pandey, 2015).

The investigator utilized an Interview Schedule as the research tool for the study. A well-structured interview schedule was designed in English to align with the study's objectives. Careful measures were taken to ensure the questions were clear, concise and comprehensive. To ensure content validity, the interview schedule underwent expert review. A panel of experts with backgrounds in the field evaluated the questionnaire based on relevance, clarity and coverage. Based on their feedback, necessary revisions were made to refine the instrument and ensure its alignment with the study's objectives.

The heading covered in the interview schedule included: General Profile of the Farmers, Farming resources utilized by the faermers, Details on Marketing of Vegetables, Knowledge and Opinion of Farmers on Agricultural, Barriers Experienced by the Farmers in Marketing Vegetables, Suggestions offered by Farmers to overcome Barriers

in Vegetables Marketing and Impact of Educational Awareness on Agricultural Marketing (enclosed in Annexure I).

3.1.7 Selection of variables

According to Hassan (2024), variables are characteristics or attributes that can be measured, manipulated, or controlled. They represent the factors that researchers observe or modify to examine their relationship with the outcomes of interest.

TABLE VI

VARIABLES AND MEASUREMENT

Types of Variable	Measurements
Independent variables	
Age	Scoring procedure followed by Maratha & Badodiya (2017)
Gender	Gender Binary Scale
Educational qualification	Scoring procedure followed by Sharma (2019)
Marital status	Office of the Registrar General & Census Commissioner, India. (2018)
Land size	District Administration Dibrugarh, Govt. of Assam
Experience in Farming	Scoring procedure followed by Krishnakumar (2002)
Annual income	Scoring procedure followed by Varghese (1998)
Dependent Variables	
Marketing Practices adopted	Developed for the study
Marketing Behaviour	Developed for the study with the help of the Likerts Scale
Factors influencing Marketing Behaviour	Developed for the study
Knowledge of the farmers on Agricultural Marketing	Developed for the study
Opinion of the farmers on Agricultural Marketing	Developed for the study, with the help of the Likerts Scale
Barriers experienced by farmers in marketing of vegetables	Developed for the study, with the help of Garrett Ranking

Variables play a crucial role in research, as they form the fundamental units of information analyzed in research studies. When one variable depends on or is influenced by another, it is referred to as the dependent variable, serving as the basis for assessing the effectiveness of the experimental variable. The variable that precedes and influences the dependent variable is known as independent variable (Pandey & Pandey, 2015). The scoring procedure for the variables is provided in Annexure II.

Considering the scope and objectives of the study, the researcher identified independent variables through a review of relevant literature. These variables were selected to understand farmers' characteristics, their relationships and their degree of influence on the dependent variables. Table VI presents the variables and their measurements.

3.1.8 Conduct of Pilot study

The researcher conducted a pilot study involving 40 farmers engaged in vegetable marketing. The research was carried out in Bagibill village, located within Rajabheta Gram Panchayat, under the Barbaruah Development block in Dibrugarh District, Assam. The objectives of the pilot study was to analyze farmers' practices, behaviour, knowledge, opinions and the challenges farmers face in vegetable marketing. The findings of the pilot study helped the researcher refine research objectives, focus on relevant aspects of farmers' engagement in vegetable marketing and gain a deeper understanding of community-specific dynamics. The challenges identified during the study required attention for smoother data collection and analysis in the main study. Also, it helped establish rapport and trust with farmers, leading to increased cooperation and participation in the main study.

TABLE VII
RELIABILITY FOR PILOT STUDY

RELIABILITY STATISTICS	
Cronbach's Alpha	N of Items
.792	162

Cronbach's Alpha was used to evaluate the reliability of the questionnaire in the pilot study. Table VII presents a Cronbach's Alpha value of 0.792, which exceeds the acceptable threshold of 0.7, indicating strong internal consistency for the constructs. This confirms that the instrument used demonstrated high reliability.

3.1.9 Obtaining Ethical Clearance for the study

The researcher submitted an application form outlining the study's design and protocols to the Institutional Human Ethics Committee of Avinashilingam Institute for Home Science and Higher Education for Women for review. The researcher submitted the research proposal, titled "Agricultural Marketing Behaviour and Practices of Rural Farmers in Dibrugarh District, Assam," for clearance and approved under Proposal No. IHEC/22-23/EXTN-4 and Approval number AUW/IHEC/EXTN-22-23/XPD-4, as enclosed in Annexure III.

3.2 PHASE- II- IMPLEMENTATION PHASE

3.2.1 Collection of data

The researcher gathered data from both primary and secondary sources. Primary data were collected using an interview schedule through face-to-face interviews with farmers. The researcher personally interviewed all 600 farmers at their farms and homes. The duration of each interview varied from from person to person, typically lasting between 20 minutes and 30 minutes.

Secondary data were obtained from books, journals, newspapers, magazines, periodicals, websites, forums, official records, agriculture portals, doctoral dissertations and encyclopedia. The researcher also developed an interview schedule for data collection and outlined the survey coverage details in Table VIII.

TABLE VIII

SURVEY COVERAGE DETAILS IN BARBARUAAH DEVELOPMENTAL BLOCK

State: Assam				**N=600**
District: Dibrugarh		**Block: Barbaruah Development Block**		
Name of the Gram Panchayat	**Name of the Village**	**Date Covered**	**No. of Farmers**	**Days covered**
Bagibill Gram Panchayat	Walkhabi	6/08/2022 to 22/08/2022	100	16 days
	Chawolkhowa NC	23/08/2022 to 08/09/2022	100	17 days
	Lengapather	09/09/2022 to 25/09/2022	100	15 days
Rajabheta Gram Panchayat	Bagibill	26/09/2022 to 12/10/2022	100	18 days
	Tekela Chiring	14/10/2022 to 30/10/2022	100	16 days
	Aaithan Dighala	6/11/2022 to 28/11/2022	100	20 days

3.2.2 Period of the study

The data collection for the present study was carried out by the researcher from August 2022 to January 2023.

PLATE : I

GLIMPSES OF DATA COLLECTION WITH VEGETABLE FARMERS

Farmer packing produce after harvesting in Tekela Chiring village

Farmer on the way to sell vegetables by bicycle in Bagibill village

Farmer in a vegetable growing area in Chowolkhowa NC village

Farmers operating a hectare wheel hoe on a vegetables farm in Lengapather village

Woman farmer showcasing Bitter gourd cultivation in Lengapather village

Women labourer working on a vegetable farm in Aaithan village

PLATE: II

GLIMPSES OF VEGETABLE FARMERS IN THE FIELD

3.2.3 Educational Awareness on Agricultural Marketing

The researcher organized an Educational Awareness Programme focused on 'Agricultural Marketing.' After consulting with the resource person at the Agricultural Development Office in Dibrugarh, Assam, it was decided to conduct a seven-day awareness programme. The programme was conducted with 50 farmers based on their interests. It was carefully designed, covered a comprehensive range of topics related to agricultural marketing and handouts were provided in the regional language to enhance their understanding.

TABLE IX

SESSIONS ON AGRICULTURAL MARKETING FOR FARMERS IN DIBRUGARH DISTRICT, ASSAM

Date and Time	Resource Person	Topic	Tools used	Place
12/12/2022 11: 00 AM - 3:00 PM	Researcher	Marketing Channels	Lecture Method, PPT, Handouts	Aaithan Dighala
14/12/2022 10: 30 AM - 3:00 PM	Researcher	Post-Harvest Management Practices	Lecture Method, PPT, Handouts	Aaithan Dighala
18/12/2022 11: 00 AM - 3:00 PM	Researcher	Market Demand and Government Schemes and Programme in Agriculture	Lecture Method, Handouts	Aaithan Dighala
20/12/2022 10:30 AM - 1:00 PM	Researcher	Interactive sessions on Real-Life Success Stories and feedback sessions.	PPT	Aaithan Dighala
04/01/2022 10:30 AM - 12:30 AM	Phiroj Moran, Agricultural Development Officer of Dibrugarh Ditrict, Assam	Benefits on Marketing of Horticultural Crops, Storage Facilities, Overview of Digital Agricultural Marketing	Lecture Method, PPT	Aaithan Dighala
09/01/2023 10:30 AM - 12:30 AM	Churanta Sonowal, Agricultural Expert and Programme coordinator, ATMA Manager	5 P‘s of Marketing, Agricultural Marketing Information Network and supply Chain Management,	Lecture Method, PPT	Bagibill Village, Rajabheta Panchayat, Dibrugarh
12/01/2023 10:30 AM - 12:30 AM	Churanta Sonowal, Agricultural Expert and Programme coordinator, ATMA Manager	Benefits of Digital Marketing. Schemes and Programme on Agriculture Digital Marketing apps and portals	Lecture Method, Handouts	Bagibill Village, Rajabheta Panchayat, Dibrugarh

The reason for organizing the Educational Awareness Programme focused on agricultural marketing was to enhance farmers' understanding of market dynamics, including knowledge, opinion and marketing behaviour. By providing knowledge and information through this programme, the aim was to empower farmers to navigate the agricultural market more effectively and make informed choices that could positively impact their livelihoods. Detailed information and the session details for the awareness programme are presented in Table IX.

Resource person Churanta Sonowal delivering information during the programme

Resource person Churanta Sonowal delivering information during the programme

Resource person Mr. Phiroj Moran delivering lecture at the programme

Interactive session with farmers during the programme

PLATE: III

OVERVIEW OF THE EDUCATIONAL AWARENESS PROGRAMME

3.3 PHASE III- IMPACT ASSESSMENT PHASE

3.3.1 Analysis and Interpretation of Data

Analysis and interpretation of data transform raw information into meaningful knowledge. After data collection and the Educational Awareness Programme, it is essential to organize the information systematically to obtain the desired result. The collected data were consolidated, tabulated and analyzed using descriptive and analytical statistical methods in SPSS software. Considering the objectives and hypotheses of the study, the researcher applied selected statistical tests, including Percentage Analysis, Mean and Standard Deviation, Chi-Square, Correlation, Factorial Analysis, Garrett Ranking, One-Way ANOVA and Paired Sample t-test.

3.3.1.1 Percentage analysis

A simple percentage analysis was employed to make simple comparisons in general profile of the farmers, existing status of the farmers, details on marketing of vegetables and suggestions offered by farmers to overcome marketing problems.

3.3.1.2 Mean and standard deviation

The mean and standard deviation are utilized to identify the information sources on agricultural marketing, assess the overall marketing behaviour of farmers and determine the factors influencing marketing behaviour. These statistical measures describe the distribution of data, indicate how closely the sample mean approximates the true mean of the overall population.

The mean provides a measure of central tendency, offering a single value and the standard deviation measures the variability of data points around the mean, indicating how consistent it is within the group

3.3.1.3 Chi square

The Chi-Square test was used to evaluate the significant association between socioeconomic characteristics such as age, gender, educational qualification, marital status, income, land size and farming experience with the level of marketing practices and behaviour among farmers. The hypothesis tested were (H1: There is a significant association between socioeconomic characteristics and Marketing Practices on Vegetables) and (H2: There is an association between socioeconomic characteristics and level of marketing behaviour).

3.3.1.6 Correlation

Correlation analysis was conducted to determine the functional relationship between independent variables (such as socioeconomic characteristics, including age, gender, educational qualification, marital status, income, land size and farming experience) and the dependent variable (factors influencing farmers' marketing behaviour). The hypothesis tested was (H3: There is a relationship between socioeconomic characteristics and factors influencing marketing behaviour).

3.3.1.7 Factorial Analysis

The Factorial analysis test was employed to assess farmers' opinions on vegetable marketing by examining multiple factors that influence their behaviour. It helped identify the most significant factors through Cronbach's reliability test and KMO and Bartlett's test, ensuring adequacy and reliability.

3.3.1.8 Garret Ranking

The study utilized Garrett ranking technique to analyze the barriers farmers encountered in agriculture, including production, economic, communication, storage, transportation and marketing barriers. Farmers ranked these barriers based on their perceptions. Their rankings were converted into numerical scores using Garrett and Woodworth's (1973) scale conversion table. Each rank was assigned a percentage position, indicating the proportion of farmers who rated a particular barrier at that rank or higher. This process helped quantify the rankings and determine the most significant barriers.

3.3.1.4 One Way Analysis of Variance (ANOVA):

A one-way ANOVA test was conducted to determine the significant difference in socioeconomic characteristics (such as age, gender, educational qualification, marital status, income, land size and farming experience) before and after the educational awareness in relation to knowledge, opinion and marketing behaviour among farmers. The hypothesis tested was (H5: There will be a significant difference before and after educational awareness based on socioeconomic characteristics with knowledge, opinion and marketing behaviour level among the Farmers).

3.3.1.5 Paired sample T Test

The Paired sample t-Test was applied to determine significant differences in Knowledge, Opinion and Marketing Behaviour before and after the Educational Awareness Programme on Agricultural Marketing. The hypothesis tested was (H4: There will be an impact of knowledge, opinion and marketing behaviour among the farmers on agricultural marketing before and after educational awareness)

The analyzed data were interpreted and presented in chapter IV.