USE OF MEDIA IN RECEIVING INFORMATION BY THE MANGO GROWERS

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CERTIFICATE

This is to certify that the thesis entitled, **"Use of Media in Receiving Information by the Mango Growers"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **Master of Science (MS) in Agricultural Extension,** embodies the result of a piece of bona fide research work carried out by **Jaynab Khatun**, Registration No. 15-07004, under my supervision and guidance. No part of this thesis has been submitted for any other degree or diploma.

I further certify that any help or sources of information, as has been availed of during the course of investigation have been duly acknowledged.

Dated: December, 2016
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DEDICATION

DEDICATED

TO

MY PARENTS

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ABBREVIATIONS AND GLOSSARY

Abbreviation	Full word
DAE	Department of Agricultural Extension
et al.	All Others
ICTA	Information and Communication Technology Agency
MoYS	Ministry of Youth and Sports
SAAO	Sub Assistant Agriculture Officer
SPSS	Statistical Package for Social Science
UAO	Upazila Agriculture Officer
UNDP	United Nations Development Program

USE OF MEDIA IN RECEIVING INFORMATION BY THE MANGO GROWERS

ABSTRACT

The purpose of the study was to assess the extent of use of media in receiving information by the mango growers and to explore the relationship of the selected characteristics of the mango growers with their use of media in receiving information. The study has been conducted based on data collection in the selected villages of Chapainawabganj municipality of Chapainawabganj Sadar upazila. Data were collected from 93 mango growers from 20 April, 2017 and completed in 15 May, 2017. Descriptive statistics, Pearson's Product Moment Coefficient of Correlation (r) were used for data analysis. The results show that the highest proportion (77.4 %) of the mango growers had medium use of media in receiving information and 12.9 percent of the mango growers had low use of media in receiving information and 9.7 percent felt in high use of media in receiving information. It was found a significant positive relationship of mango farmers' education, size of mango orchard, annual income from mango, knowledge on mango cultivation and cosmopoliteness with their use of media in receiving information. As per Media Used Index (MUI), mobile phone ranked the 1st and internet ranked as last position. It is recommended that the DAE, Horticultural Center, Mango Research Station and NGOs should take necessary steps considering the significant variables with a view to motivating the mango growers towards higher use of media in receiving information.

Key words: Mango cultivation, media, information;

CHAPTER I

INTRODUCTION

1.1 General Background

Bangladesh, basically an agro-based country, is considered one of the world's most densely populated countries (964 persons per square km) with an annual population growth rate of 1.2 percent (BBS, 2016). In such setting, the pressure on the land for agricultural production and the demand for job is increasing day by day. This has led to rapid changes in the country's socio-economic characteristics in the recent years. In agriculture sector, subsistence farming is traditionally practiced by the farmers. But, there is no cost-benefit calculation. Now-a-days, Bangladesh agriculture is in transition from subsistence to commercial agriculture. Many entrepreneurs are investing in agriculture. Farmers are commercially cultivating crops specially horticulture crops like mango, litchi, jackfruit etc. Mango (*Mangifera indica* L.), a tropical and sub-tropical fruit, belongs to the family Anacardiaceae, which was originated in South Asia/Malayan archipelago and has been in cultivation for more than 4000 years (Mukherjee, 1949; Candole, 1984; Bose, 1985). It is an important and popular fruit in the world for its excellent flavors, attractive color, delicious taste, and high nutritive value. According to sources from the Department of Agricultural Extension (DAE, 2016), the beneficiary farmers cultivated mango on around 20,000 ha of land in Rajshahi, Chapainawabganj, Naogaon and Natore districts.

The production of the juicy fruit increases each year. Yet, not a single mango-processing plant has been established in the region for preservation of the fruits till date. As the growers earn large sums of money from mango farming, it encourages many others towards farming mangoes resulting in an escalation of acreage. Chapainawabganj in the region is called the capital of mango, Sapahar and Porsha upazilas have captured the position next to it in producing the summer fruit. Export of mangoes from the two upazilas, apart from other parts

of the region, fetches a substantial amount of foreign currency, after meeting the domestic demand. However, the growers and traders fear of low prices of mangoes due to lack of a proper preservation system, lack of information and communication facilities etc.

Modern agriculture is characterized among other things by the salient role of communication as factor of change and progress. Adams (1982) defined media as any materials, objects, instruments or system which serves to communicate information including leaflets, farming press, other written and printed materials, all types of cinema films, radio and television and video system. Communication has also been defined as a process by which participants create and share information with one another in order to reach mutual understanding. He further defined communication as a process of sending and receiving messages through the channels and devices at a convergence and as established meaning between a source and receiver (Rogers, 1995). Electronic media transmit the agriculture innovation to the farming community. Undoubtedly, there has been a rapid quantitative diffusion of mass media (Abubakar *et. al.*, 2009; Onuekwusi and Gideon, 2007). The primary conveyors of development information in agriculture are also the persuasive agents of change in rural areas. Communication of development information and equally persuasive conveyors of change is the key items for development workers, extension agriculture personnel in agriculture.

Agricultural extension is essentially a message delivery system organized to convey the latest findings of agricultural research. Effective communication is therefore, the prime requirement in extension work. Three classes of extension methods, namely individual contact, group contact and mas contact, accomplish the task of extension communication (Hussain, 1997). There is various Mass contact method are used to promote advanced agricultural information and techniques to the farmers, such as, agri. newsletters, grey literature, hand bills and walls newspaper, posters, radio programs, television programmers (Yahaya, 2001). Mass media are used for mass contact for

impersonal transmission of messages to large audiences. The most generalized and widely accepted classification of mass media which is used in actual practice is print media and electronic media (Nwachukwu, 2003). Print media comprised of those forms of printed material which are distributed on a mass scale. These include newspapers, newsletters, books, grey literature i.e. brochures, bulletins, pamphlets, leaflets, hand bills and posters (Muntaqha, 2007). Electronic media include radio and television. The electronic gadgetry of information technology like transistors, video tape recorders, mobile cinema vans and other audio-visual equipment like sound slide system, slides and film strips and also included electronic media (Akangbe, 2005).

Apart from national and international consideration, the grass root population needs to understand the meaning and concept of use of media in receiving information by the farmers. In a state like Bangladesh, where most people depend on farming for living, they need to have idea being discussed about the use of media in receiving information by the mango growers. Mango is the leading seasonal cash crop of the country's northwestern region and dominates the economy of four districts which one is Chapainawabganj. It is quite pertinent and necessary to know the extent of use of media in receiving information by the mango growers of Chapainawabganj district. But a very limited research work has been done on this aspect. Therefore, the researcher felt necessity to conduct a research entitled ‘Use of Media in Receiving Information by the Mango Growers’.

1.2 Statement of the Problem

Mango is the leading seasonal cash crop of the country's northwestern region and dominates the economy in the four districts: Rajshahi, Chapainawabganj, Naogaon and Natore. The climatic condition of the country's northwestern region is suitable for mango production. However from flowering to fruit maturity stage there is a possibility of pest and disease infestation. They need various chemical and non chemical practices to manage pest and disease as well as growth of fruit. In this context, use of media can help solve their problem easily. Mangos are bulky and highly perishable in nature and preserving them in the cold storage is not always possible because of lack of availability of cold storage and account of high cost. Hence, spoilage of mango during transportation as well as during sales is quite high. In the peak period, there is an excess supply creating a glut in the market and causing a fall in the price and affecting the incomes of the farmers. As a result, the growers are not getting their due returns for their produce and the country is being deprived of potential resources. Hence there is a great scope to use communication media during mango cultivation and marketing. To increase the sustainable mango cultivation and marketing, communication media play vital role in receiving right information in right time for the mango farmers. In the context of the above discussion, the researcher intended to find out the answers to the accompanying queries:

- What is the extent of use of media in receiving information of mango growers?
- What were the characteristics of the mango growers?
- Have there any relationship of selected characteristics of the mango growers with their use of media in receiving information?

In order to get a clear view of the above questions, the investigator undertook a study entitled ‘Use of Media in Receiving Information by the Mango Growers’.

1.3 Objectives of the Study

The objectives of the study are as follows:

i. To describe the following selected characteristics of the farmers:
   - Age
   - Education
   - Experience in mango cultivation
   - Time spent in mango farming
   - Size of mango orchard
   - Annual family income
   - Annual income from mango
   - Knowledge on mango cultivation
   - Organizational participation
   - Cosmopoliteness

ii. To assess the extent of use of media in receiving information by the mango growers

iii. To make a rank order of the media used by the mango growers

iv. To explore the relationship of the mango farmers' selected characteristics with their use of media in receiving information

1.4 Scope of the Study

The present study was designed to have an understanding of use of media in receiving information by the mango growers and to explore the relationship of the mango farmers' selected characteristics with their use of media in receiving information.

i. The findings of the study will, in particular, be applicable to the study area at Chapainawabganj Sadar upazila. The findings may also be applicable to other locale of Bangladesh where socio-cultural, psychological and economic circumstance do not differ much than those of the study areas.

ii. The findings of the study may also be subsidiary to the field worker of extension service to enhance their action strategies on use of media in receiving information by the mango growers.

iii. The findings of the study will be conducive to accelerate the improvement in agriculture, farmers' logistic supports, information needs and the way of dissemination especially tuned to key role players in the society as well as sustainability of agriculture. The outcomes might also be helpful to the planners, policy makers, extension workers and beneficiaries of agriculture.

iv. To the academicians, it may help in the further conceptualization of the systems model for analyzing the use of media in receiving information by the mango growers. In addition, the findings of this study may have other empirical evidence to all aspects of use of media in receiving information by the mango growers which may be used to build theory of use of media in receiving information.

1.5 Justification of the Study

Information can play an important role in the production of agricultural products and can create wealth to a community as well as affect a whole country's future. The information brought to the area contains fresh ideas, and introduces new opportunities and nobody can deny that the right to know and know the truth is a fundamental human right. The importance and potentials of media has been established in every walk of farmers' life and plays very important role in organizations that occupied with agricultural sector and aims to farmers' information.

So, it is logical to investigate about the use of media in receiving information by the mango growers. The finding of the study will be especially applicable to the Namoshankerbati, Tikrampur, Ajaipur villages of Chapainawabganj municipality under Chapainawabganj Sadar upazila. The findings will also have implications and applicability for other areas of the country, having similarities in physical, socio-economic and socio-cultural conditions with the study area. Thus, the findings are expected to be useful to extension workers and planners for their preparation of extension programmers for rapid action on the use of media in receiving information by the mango growers. The findings of the study are also therefore, expected to be conducive to the researchers,

academicians and policy makers who are concerned with use of media in crop cultivation. The present study will be undertaken to assess the extent of use of media in receiving information entitled 'Use of Media in Receiving Information by the Mango Growers'.

1.6 Assumptions of the Study

An assumption is the supposition that an apparent fact or principle is true in the light of available evidence (Goode and Hatt, 1952). The researcher had considered the following assumptions while undertaking the study:

i. The respondents were capable of furnishing proper answers to the questions contained in the interview schedule.
ii. The data collected by the researcher were free from any bias and they were normally distributed.
iii. The responses answered by the respondents were valid, acceptable and reliable.
iv. Information sought by the researcher elicited the real situation was the representative of the whole population of the study area to gratify the objectives of the study.
v. The researcher was well adjusted to herself with the social contiguous of the study area. Hence, the collected data from the respondents were free from favoritism.
vi. The selected characteristics and use of media in receiving information by the mango growers of the study were normally and independently allotted with respective means and standard deviation.

1.7 Limitations of the Study

Considering the time, respondents, communication facilities and other necessary resources available to the researcher and to make the study manageable and meaningful, it became necessary to impose certain limitations as mentioned bellow:

i. Only Chapainawabgan Sadar upazila of Chapainawabganj district was selected for conducting the research which may fail to represent the actual scenario of the whole situation as people develop their strategies according to the concrete situation they face.

ii. It was difficult to get exact information on use of media in receiving information indicator from the mango farmers as many of them are illiterate.

iii. Characteristics of the farmers were many and varied, but only ten characteristics were selected for the research study.

iv. There were embarrassment situations at the time of data collection. So, the researcher had to manage proper rapport with the respondents to collect maximum proper information.

v. Several methods, scales and statistical tests have been utilized in this study over a relatively short period of time.

1.8 Definition of Important Terms

Media: Media (the singular form of which is medium) of collective communication outlets or tools that are used to store and deliver information or data. It is either associated with communication media or the specialized mass media communication businesses such as print media and the press, photography, advertising, cinema, broadcasting (radio and television) and publishing.

Information: Information is that which informs. Information is any propagation of cause and effect within a system. Information is conveyed either as the content of a message or through direct or indirect observation of anything. That which is perceived can be construed as a message in its own right, and in that sense, information is always conveyed as the content of a message.

Mango Orchard: An area of land devoted to the cultivation of mango trees.

Variable: The variable is a characteristic, which can assume varying, or different values in successive individual cases.

Independent variable: An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon.

Dependent variable: A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variable.

Size of mango orchard: It refers to the area of land owned by a mango grower on which mango growing activities are carried out.

Time spent in mango farming: Time spent in mango farming was determined by the total of time involved in mango farming per week.

Knowledge on mango cultivation: Acts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of on mango cultivation.

Organizational participation: Organizational participation of a respondent refers to the participation in different organizations at a period of time

Cosmopoliteness: Cosmopoliteness refers the nature of visits to different places at external or own social system.

Hypothesis: A supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation.

Population: Population is the entire pool from which a statistical sample is drawn. The information obtained from the sample allows statisticians to develop hypotheses about the larger population. Researchers gather information from a sample because of the difficulty of studying the entire population.

CHAPTER II

REVIEW OF LITERTURE

In this chapter, review of relevant literatures to the objectives of this study and mainly concerned with 'use of media in receiving information of mango growers' was presented. There was serious dearth of literature with respect to research studies on this aspect. So, the directly related literatures were not readily available for this study. Some researchers addressed various aspects of the use of media in receiving information and its effect on client group and suggesting strategies for their emancipation from socio-economic deprivations. A few of these studies relevant to this research are briefly discussed in this chapter under the following five sections: the first section deals with concept on overall use of media by the farmers in receiving agricultural information, the second section deals with general review on effect of using different media, the third section deals with review on relationship between the selected characteristics of farmers and their use of media, the fourth section deals with research gap of the study and the fifth section deals with conceptual framework of the study

2.1 Concept on Overall Use of Media by the Farmers in Receiving Agricultural Information

Alam (2015) showed that 89.7 percent of the respondents had no use to low use of Cell Phone for receiving agricultural information and 10.3 percent of the respondents had medium use to high use of Cell Phone for receiving agricultural information at Singairupazila of Manikganj district in Bangladesh.

Uddin (2015) revealed that about two third (64.5%) of the respondents had medium use of ICTs in receiving agricultural information compared to 13.6 % and 21.8 % having low and high use of ICTs in receiving agricultural information respectively at Homnaupazilla of comilla district in Bangladesh.

Lucky (2012) stated that Radio and television can get information across to every nook and corner of rural areas where it is difficult to make direct contact.

Lucky (2012) stated that telephone is a quick way of making "contact" with the extension workers or farmers. Whenever we want to, it does not need any traveling up and down. Questions can be asked by farmers and answered by extension worker on the telephone on the spot without wasting too much time especially very urgent questions.

According to the World Bank (2011)**,** market data feeds directly to farmers via electronic display boards in 31centers spread across Ethiopia as well as on the exchange's website.

Fafchamps and Minten **(**2011**)** studied the benefits that Indian farmers derive from SMS asked markets weather and crop advisory information. Using a controlled randomized experiment in several villages of Maharashtra, they did not find statistically significant effect of treatment on the price received by farmers, on crop losses resulting from rainstorms, or on the likelihood of changing crop varieties and cultivation practices.

Gakuru *et al*. (2009**)** noted that in Tanzania, building on the utility of mobile phones as recording tools, listening devices, money-makers, and catalysts for dialogue, community radio stations are incorporating mobile technology into programming and it is being used for advisory services in agriculture.

Kaini (2007) in a study found that ICTs was very important for developing agricultural sector. He found ICTs were very efficient in terms of time, cost and distance, developing agricultural programs through assisting access to new technologies, production inputs and market information.

Tanvir (2007) stated that ICTs for poverty alleviation through agricultural development was increasing rapidly electronic media which were far more effective in view of its high speed, vast range of coverage and particularly because it offers visual contents except in case of Radio.

Kaini (2007) observed that Radio plays the most significant rote of any communication technology in the transfer of information in African countries since spoken word on broadcast radio is the principal means of information transfer where literacy rates are low.

Pandian (2002) conducted a study on the Effect of Video Education on Knowledge Retention and found direct positive effect with age, education, farming experience, economic motivation, mass media exposure, extension agency contact, involvement in decision making, innovativeness and direct negative effect with respondents' annual income, farm size, social participation.

Egbule and Njoku (2001) in their study on communication technologies for adult education in Nigeria found that ICTs has performed poorly in disseminating requisite agricultural information to farmers, although there is a positive correlation between communication technologies usage and farm yield.

According to McKinlay (2001) certain socio - economic characteristic of the farmers would affect his request for and utilization of agricultural information.

Kabir and Bhattachargee (1994) conducted a study on the Effect of Radio and Television on rural people and found that the responses regarding the Effect of TV programs were similar to responses regarding the Effect of Radio broadcasts. All of the telecasts were of average benefit to most of the audience.

Diaz-knauf *et al*. (1993) stated in a study on consumer attitude towards food safety of product in Costa Rica that information sources on which consumers rely are television (92%), radio (73%) and newspaper (63%).

Laharia and Joshi (1992) found in a study on farm telecast viewing behavior of farmers in India that about two thirds of the respondents (total 100) reported the KrishiDarshan Program (KDP) of Delhi Doordarshan Kenda was very

useful. The study implied that the perception of usefulness increased with the increase in one's penodicity of viewing the program.

Sianturi (1992) found in a study that Radio was the highest rated source of agricultural information, followed by Television.

Papa (1991) conducted a study on intensity of extension contact and innovativeness of multiple cropping farmers in Philippines and the study showed that fifty four percent of the farmers had high intensity of extension contact while only forty seven percent had extent of innovativeness. The extension contact of teaching methodologies frequently preferred by the multiple cropping farmers were farm and home visit, leaflet, television, general meeting and seminar.

2.2 General Review on Effect of Using Different Media

2.2.1 Effect of using TV and radio

Glendenning *et al.* (2010) who reported that despite farmers' greater use of TV and radio than KVKs and extension workers, the empirical Effect of these services on farm household income was not known.

Djankov*et al.* (2001) reported that independent radio broadcasting services were found to be positively and significantly correlated with a range of development outcomes which included improved lives and better functioning markets.

Shepherd (2000) reported that the vegetable farmers could fix their price according to the rate of vegetable price being broadcast by their local radios and at lower prices than that of the farmers who did not accept the broadcast in Indonesia. The broadcast prices were the starting point in negotiating with traders the following day. It was also observed from the study that price differences were also reduced across markets due to availability of information to different markets in Albania.

Dodds (1999) revealed that more than 50% of the 21,000 farmers experienced increase in crop yields by radio program in Zambia.

UNESCO (1996) revealed in a study that agricultural productivity was increased because of radio program in the Philippines.

2.2.2 Effect of using mobile phone/telephone/telecommunication

Kirui *et al.* (2013) conducted a study on the effect of mobile phone-based money transfer, especially in agriculture to examine the effect of MMT services on household agricultural input use, agricultural commercialization and farm incomes among farm households in Kenya. It was observed in the study that mobile phone-based money transfer services significantly increased level of annual household input use by $42, household agricultural commercialization by 37% and household annual income by $224.

Qiang *et al.* (2012) revealed that farmers' income and access to finance were increased and they were more benefitted than the other players through supply chain efficiencies because of use of several m-ARD apps.

Kumar (2011) also revealed that the farmers were able to reduce their use of pesticides by 50 percent - lowering expenses and improving crop productivity by receiving information about when pests are likely to be prevalent via their cell phones from the agricultural department in Turkey. Five weather sites were established by the agricultural department to monitor the need for pest control and frost prevention by placing pest traps and observing temperature levels and the information was provided to the farmers through their cell phones. It was also observed that the tracking of temperatures enabled the farmers to prevent losses from frost by monitoring temperatures hourly and sending text messages to the farmers who were able to adopt crisis management measures.

Martin and Abbott (2011) reported that nearly half of the respondents (49%) indicated effects of use of mobile phone on effectiveness, or increased productivity in rural Uganda. Access to agricultural advice, as well as access to

agricultural inputs, such as labor, seeds, plant cuttings, livestock, loans from VEDCO or NAADS; consultation with veterinarians; and increased access to market information resulted in increased production. Moreover, nearly 22% of respondents indicated the effect of mobile phones during agriculture emergencies. The overall health and productivity of the livestock and crops of the respondents was increased due to continual consultation with veterinarians and agricultural experts through mobile phones. Besides, about 53% respondents reported about their increase in income.

Parker and Weber (2011) reported that the efficiency of mandis was improved and farmers were empowered to sell crops more profitably due to the SMS service Reuters Market Light (RML) in India.

Fafchamps and Minten (2011) in another study which was conducted to find out whether there was any difference in prices received by the farmers in Maharashtra who had used RML and those who had not using randomized control trials, it was also revealed that farmers were influenced by RML to change their crops to improve profitability by 14-20 percent.

Mittal *et al.* (2010) found that income effect of 5-25 percent of income was observed among the farmers in India due to the SMS service Reuters Market Light (RML) which provided personalized information to subscribed farmers on daily spot market prices, localized weather forecasts, and agro advisories tailored for one crop and the stage in the crop cycle.

Xiaolan and Akhter (2009) conducted a study to examine the Effect of a mobile phone technology enhanced service delivery system on agricultural extension service delivery in India. They carried out the Effect analysis on the basis of randomized survey data taking potential systematic selection bias through double difference techniques and reflexive comparisons in consideration. It was observed that there was indirect benefit of the ICT enhanced service delivery system in the dimensions of greater awareness and knowledge in agriculture

technology and information of the farmers. Farmers' attitudes towards trying new technologies in future was also improved.

Mittal and Tripathi (2009) on the use and Effect of mobile phones and mobile-enabled services on agricultural productivity it was found that some of the farmers who used mobile phones for at least some agricultural activities reported about significant productivity gains.

Karamagi and Nalumansi (2009) revealed that the dairy farmers could connect to FoodNet, a service that supplies up-to-date price information for agricultural commodities, as well as contact details for interested buyers via SMS through mobile phones and thus became able to sell their milk without spoilage in the Bugerere District in central Uganda.

De Silva (2008) revealed that a project in Maharashtra, India named "Warana Unwired" where the small but relevant information was sent to the sugarcane farmers via text messages on mobile phones had created a significant change in the incomes of the sugarcane farmers in the area.

Soysa (2008) carried out another study on traceability in the agriculture value chains. In this study, it was observed that incomes of the gherkin farmers in Sri Lanka were improved because of using a simple mobile phone application to reduce waste through a simple feedback system.

Mangstl (2008) also reported that information regarding weather forecasts, where to get the best catch, local market information was communicated through mobile phone among the fishermen in Tanzania. It was also revealed that mobile phones were also used by them to coordinate pick-up of catches.

Aker (2008) reported that significant reductions in grain-price dispersion net of transport costs across markets was observed because of use of mobile phones among the grain sellers in Niger. However, there are different results also.

Alenea *et al.* (2008) carried out a study on the maize market in Kenya and observed that access to communication assets had positive but insignificant effects on market participation. It was found in the study that access to a mobile phone is less useful in accessing market information and in facilitating transactions if there is no viable market information service.

Jensen (2007), Abraham (2007) revealed from a study that price dispersion and wastage was dramatically decreased due to introduction of mobile phones to Kerala fishermen by facilitating the spread of information which led to more efficient market through risk and uncertainty reduction.

Aloyce (2005) revealed that the farmers who used prepaid credit system through mobile phone were able to change their life better by minimizing distance.

Campbell (2005) observed in another study that farmers got access to valuable market data through the use of mobile phones and messaging technology.

Souter *et al.* (2005) found that significant correlations were found between telecommunications and indicators of socio-economic development in three countries (India, Tanzania and Mozambique).

Forestier *et al.* (2002) showed that the farmers received better prices for their crops with the help of rural telephony which led to increase in their earnings.

Bayes (2001) observed that there was a perceptible influence of mobile phone services on production, marketing, and other important economic decisions confronting rural households in Bangladesh. It was also observed in the study that farm output prices were increased and farm input prices were decreased through the mechanism of information diffusion with help of mobile phones.

ITU (1999) found that the farm income of the farmers was doubled as they were able to check prices regularly by telephones in rural Thailand and Columbia.

Bayes *et al.* (1999) reported that in case of Village Pay Phones in Bangladesh livestock mortality rates were reduced due to the farmers' better access to extension officers through the use of mobile phones. Again, in another study it was revealed that the rural women were provided with mobile information to support goat rearing as part of a microfinance loan in Tamil Nadu which had more positive result (Balasubramanian *et al.*, 2010).

2.2.3 Effect of using Internet

Goyal (2010) found that regional market price fluctuations were reduced and average yields were increased due to information providing on market prices and cropping techniques through the internet kiosks established by the public sector in India.

ICTA (2009) reported that dairy farmers were helped to achieve self-sufficiency in milk production by introducing web and mobile technologies in Sri Lanka. It was found out by the government that the milk production was low due to low pregnancy rates of the milking cows.

Smith *et al.* (2004) conducted a research to explore adoption, usage patterns, and perceived benefits of computers and the Internet among the Great Plains farmers. The study revealed that about half of those farmers who used the Internet for farm-related business had reported zero economic benefits from it.

UNDP (2001) carried out a study and found that farmers' incomes were dramatically increased by receiving information about crop status, weather, global market prices and training through an internet network among the farmer organizations in Chile.

2.2.4 Effect of using call center/telecentre

BanglarKrishi (2015) reported that the farmers are benefited by the instant solutions to their different problems regarding diseases and insects of crop, cultivation practices, fertilizer management, different agricultural aspects, livestock and fisheries from the experts and field level specialists over phone

from Krishi Call Centre operated by Agriculture Information Service (AIS) under the Ministry of Agriculture (MoA).

McGuire (2015) reported that the farmers are benefited by e-krishok created by BIID in Bangladesh where the services based agriculture information are transferred to the farmers over mobile phones through the government infrastructures which are already in existence. Farmers are also benefited by the agricultural information provided by Miaki, a private entity in Bangladesh.

Ramasubbian *et al.* (2015) found in their study that Uttar Pradesh (3005915), Madhya Pradesh (1353410), Maharashtra (1351699), Rajasthan (1339232), West Bengal (1037440) were in the first five places benefited by the Kishan Call Centre (KCC) among 32 states on the basis of call received by the KCC related to agricultural information in India. On the contrary, Andhra Pradesh (4042), Goa, Diu & Daman (3840), Nagaland (2160), Lakshadweep (1212) and Dadra & Nagar Haveli (593) were the states in the least five places those who were making use of KCC service.

Ashraf *et al.* (2015) conducted a research to find out the Effect of ICT on indigenous peoples' quality of life at Ruma village of Bandarban district in Bangladesh. They found that positive contribution was made by ICTs as perceived by the participants of Grameen phone Community Information Centres (GPCIC), a shared ICT access facility where participants can access a wide range of ICT services, e.g. Internet, voice communication, video conferencing, and customized information services on topics such as agriculture, education, health, legal, environment and politics. It was mentioned by the participants that enhancement of about a wide range of issues pertaining to their quality of lives took place through the programs set by the GPCIC.

AIS (2013) reported that the farmers are provided with the instant solutions to their problems related to agriculture, fisheries and livestock by the specialists in the relevant fields in Krishi Call Centre over phone in Bangladesh.

Arfan *et al.* (2013) conducted another study to investigate the comparative effectiveness of Punjab Agriculture Helpline (PAH) and other information sources for meeting information needs of farming community. It was observed that all respondents (100%) were getting information regarding agricultural technology from Punjab Agriculture Helpline. Electronic media especially Punjab Agriculture Helpline had significant importance in providing agricultural information to the farmers.

Katalyst (2012) reported that the farmers were able to access the timely and accurate information and become more knowledgeable about opportunities to improve agricultural practices, production, and farm investment decisions with the help of Grameenphone Community Information Centre (CIC) and the helpline services in Bangladesh. It was observed that the vast majority (90%) of the beneficiaries were benefitted by preventing near-certain losses through the access to information which assisted them to counter and remedy the identified pest, disease, and animal health concerns. It was also revealed that farmers achieved benefits ranging from BDT 1,000 (approximatelyUSD 12) to upwards of BDT 20,000 (USD 240).

Glendenning and Ficarelli (2012) observed that Lifeline (a mobile- and Internet-based ICT project in agriculture which provides answers to farmer queries based on their demand) had Effect on their productivity estimated to be around 20 percent as perceived by the farmers in India.

Dey *et al.* (2008) conducted a research in two telecentres: one of them was PalliTathya Kendra at Joyag, Noakhali initiated by D-Net and another one was Grameen Phone Community Information Centre (CIC) located at ShaturiaUpazila, Manikganj in Bangladesh. It was observed in the study that the farmers' information needs could be made through the use of mobile phones and telecentres by them. Use of mobile phone by some of the farmers enabled them to get cheaper fertilizers.

Fawole (2006) reported that agriculture helpline was very beneficial for farmers but if the solution is not implemented accordingly the information needs of the farmers would not be fulfilled.

2.2.5 Effect of using ICT media

Ogutu *et al.* (2014) to evaluate the effect of an ICT-based market information services (MIS) project on farm input use and productivity in Kenya using Propensity Score Matching (PSM) technique. It was revealed from the study that there was a positive and significant effect of the intervention on the use of seeds, fertilizers, land, and labor productivity.

Ozaki *et al.* (2013) revealed that the farmers of Kapasia and Ekhlaspur in Bangladesh could become sure about the important issues for semi-organic cultivation and apply that knowledge into their cultivation watching the video contents in the Income Generation Project for Farmers using ICT.

Kiiza *et al.* (2011) found in the study that there was a negative and significant effect on the use of hired, family, and total labor per acre. In another research, it was observed that the intensity of adoption of improved maize seed by the farmers was improved through their access to ICT-based MIS.

Islam and Gronlund (2010) found that the need for market information of the farmers of Natore district in Bangladesh was fulfilled by the contents of Pallinet (an agricultural market information service) and they were in general satisfied with the service. It was observed in the research that the farmers were empowered as the Pallinet service enabled them to know the conditions in the surrounding markets more confidently than before.

Lwoga and Ngulube (2008) revealed in a study that the farmers were able to improve their production, linkages to profitable markets, and reduce poverty by accessing agricultural knowledge and information through ICTs (such as, telecenters, cell phones and radio) in Tanzania.

2.3 Review on the Selected Characteristics of Farmers and Use of Media

2.3.1 Age and use of media

Jannat (2015) revealed that age had significant contribution to the impact of using ICT media by the farmers.

Kafura (2015) reported that there was negative significant relationship between the age of the farmers and the level of use of different ICT tools for agricultural purposes by them.

Ogutu *et al.* (2014) who reported that there was significant positive correlation between the age of the farmers and their participation in ICT based market information service projects for accessing to agricultural market information.

Ahmed (2012) it was observed that there was no significant relationship between age of the farmers and ICT utilization in agriculture by them.

Okello *et al.* (2012) noticed that the age of the farmers was a significant factor inversely influencing the use of ICT tools by them. It was observed in the study that the use of ICT tools for agricultural transactions was greater among the younger farmers.

Ali (2011) that age of the farmers had no significant relationship with adoption of mass media based information for decision-making in vegetable cultivation.

Anastasios *et al.* (2010) it was revealed that age of the farmers had no contribution to the adoption of ICT by the farmers.

Mwakaje (2010) observed that at least two types of ICT media were used by most of the respondents aged between 21 to 60 than respondents of other ages.

Ndag *et al.* (2008) reported that the younger farmers had more exposure to ICT usage and courses than the older farmers.

Pandian (2002) found that farmers' age had direct positive effect between age of the farmers and effect of use of video education on knowledge retention.

Reza (2007) reported that there was no significant relationship between the age of the farmers and their perceived effect of ICT use.

Meera *et al.* (2004) reported that there was negative correlation between the age of the farmers and the frequent use of the internet services by them leading to the effect of ICT among them in all three ICT projects.

Nuruzzaman (2003) conducted a study and found that age of the farmers had significant negative relationship with the use of ICTs.

2.3.2 Education and use of media

Alam (2015) found that education showed significant and positive relationship with their use of cell phone.

Uddin (2015) found that education had significant contribution on their use of ICT media.

Jannat (2015) revealed that level of education had significant contribution to the impact of using ICT by the farmers.

Mollah (2006) observed in his study that education of the farmers had significant positive relationship with the rice production technologies.

Anisuzzaman(2003) concluded that the education of the farmers had significant positive relationship with their use of information and communication media.

Nuruzzaman (2003) in his study observed that education of the farmers had significant positive relationship with their use of mass media.

Pandian (2002) found that education of the farmers had direct positive effect on the effect of video education on knowledge retention.

2.3.3 Family size and effect of using ICT

Kafura (2015) observed that there was no significant relationship between the family size of the farmers and the level of use of different ICT tools for agricultural purpose by them.

Ogutu *et al.* (2014) revealed that no significant relationship was observed between household size of farmers and their participation in ICT based market information service projects for accessing to agricultural market information.

Ahmed (2012) observed that family size of the farmers had no significant relationship with ICT utilization in agriculture by them. However, there was different result also.

Okello *et al.* (2012) found in a study that the household size of the farmers was a factor negatively influencing the use of the mobile phone for agricultural transaction purposes by them.

2.3.4 Experience and use of media

Kafura (2015) noted that there was negative significant relationship between the farming experience of the farmers and the level of use of different ICT tools in agriculture by them.

Ogutu *et al.* (2014) revealed that no significant relationship was observed between the farming experience of the farmers and their participation in ICT based market information service projects for accessing to agricultural market information.

Reza (2007) revealed that no significant relationship was observed between farming experience of the farmers and the impact of use of ICT media.

Pandian (2002) reported that there was direct positive effect of the farm size on the impact of video education on the knowledge retention by the farmers.

Shin and Evans (1991) observed that there was positive significant relationship between farming experience and impact of communication technology use.

2.3.5 Land size and use of media

Alam (2015) found that land possession and effective farm size showed significant and positive relationship with their use of cell phone.

Uddin (2015) found that farm size had significant contribution on their use of ICT media.

Jannat (2015) revealed that effective farm size had significant contribution to the impact of using ICT by the farmers.

Khatun (2006) in her study concluded that farm size of the respondents had significant positive relationship with their homestead gardening.

Anisuzzaman (2003) found that the farm size of the respondents had no significant relationship with their use of communication technologies.

Nuruzzaman (2003) in his study conducted that farm size of the farmers had no significant relationship with the use of communication technologies.

Pandian (2002) found negative insignificant relationship and direct negative effect of respondent's farm size with the effect of video education on knowledge retention.

2.3.6 Annual Income and Effect of Using ICT

Alam (2015) found that annual family income showed significant and positive relationship with their use of cell phone.

Kafura (2015) revealed that there was positive significant relationship between the annual income of the farmers and the level of use of different ICT tools for agricultural purposes by them.

Uddin (2015) found that annual family income had significant contribution on their use of ICT media.

Ahmed (2012) observed that there was no significant relationship between the annual income of the farmers and utilization of ICT in agriculture by them.

Ali (2011) that income levels of the farmers are more likely to affect the adoption of mass media based information for decision-making in vegetable cultivation.

Ali and Kumar (2011) observed that income levels of the farmers had significant role in effecting decision-making aptitudes of the farmers on various agricultural practices across the agricultural supply chain due to use of e-Choupal.

Anastasios *et al.* (2010) that the annual income was the most influential factor predicting the adoption of ICT by the farmers.

Mwakaje (2010) reported that significant difference was observed between ICT use and the level of income of the respondents. It was noticed that more than one type of ICT was used by the farmers with high incomes and thereby remaining in better position for accessing market information than the farmers with less income using only one type of ICT.

Reza (2007) noticed that annual income of the farmers had a positive significant relationship with their perceived effect of ICT use.

Lio and Liu (2006) revealed that the farmers in richer countries began to utilize new ICT (especially the internet) much more effectively to get enhanced agricultural productivity.

Pandian (2002) that there was positive significant effect of the annual income of farmers on the effect of video education on knowledge retention by the farmers.

2.3.7 Knowledge and use of media

Jannat (2015) revealed that agricultural knowledge had significant contribution to the impact of using ICT by the farmers.

Ahmed (2012) observed that agricultural knowledge of the farmers had no significant relationship with the utilization of ICT in agriculture by them.

Qiang *et al.* (2012) that farmers' access to knowledge and information had contribution to the expansion of their capacity through the use of ICT media.

Reza (2007) found that positive significant relationship between agricultural knowledge of the farmers and the effect of use of ICT as perceived by them.

Karim (2005) observed that knowledge of the farmers had a significant positive relationship with the use of communication sources by them in improving cultural practices.

2.3.8 Organization participation and use of media

Alam (2015) found that organizational participation showed significant and positive relationship with their use of cell phone.

Nuruzzaman (2003) found that organizational participation of farmers had positive and significant relationship with their use of communication media.

Pandian (2002) found negative insignificant relationship and direct negative effect of respondent's organization participation with the effect of video education on knowledge retention.

Sarker *(1995)* in his study revealed that the use of communication media by the small farmers had significant positive correlation with their organizational participation.

Bhuiyan (1988) observed that the regression coefficient of organizational participation towards use of communication media was statistically not significant and was concluded that organizational participation was not related to comprehensive use of communication media by the farmers.

2.3.9 Cosmopoliteness and use of media

Alam (2015) found that cosmopoliteness showed significant and positive relationship with their use of cell phone.

Uddin (2015) found that cosmopoliteness had significant contribution on their use of ICT media.

Nuruzzaman (2003) in his study found that cosmopoliteness of the farmers had positive and highly significant relationship with their use of communication technologies in receiving agricultural information.

Annisuzzaman (2003) concluded that the cosmopoliteness of the respondents had significant positive relationship with their use of communication media.

Hossain and Crouch (1992) reported that cosmpoliteness had positive relationship with the information sources.

Ullah (1996) in a study observed that cosmopohteness of farmers had significant and positive relationship with their extent of use of information sources.

Rahman (1996) concluded that cosmopoliteness of the winter vegetable had moderate association with their use of different information sources.

2.3.10 Some other selected characteristics of mango growers and use of media

There was found no review on time spent in mango farming, annual income from mango of the mango growers with their use of media.

2.4 Research Gap of the Study

Several researches were done related to the use of media in receiving agricultural information by the farmers. But the present study was conducted to solely assess the extent of use of media in receiving agricultural information. Besides, among the limited studies, no studies were conducted at the Chapainawabgang Sadar upazila. Moreover, the present study was conducted on the mango growers whereas other studies focused on the field crop growers.

Apart from above, the present study was carried out with some new variables such as time spent in mango farming, size of mango orchard, income from mango etc. into consideration.

2.5 Conceptual Framework of the Study

In scientific research, selection and measurement of variables constitute an important task. Studies on individual, group and society revealed that acceptance of modem technologies is conditional upon many factors. Some of these are social, personal, economical and situational factors and the behavior of mango cultivators are influenced by these characteristics. The hypothesis of a research while constructed properly consist at least two important elements i.e.: a dependent variable and an independent variable. A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variables (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. Variables together are the causes and the phenomenon is effect and thus, there is cause effect relationship everywhere in the universe for a specific events or issues.

This study is concerned with the 'use of media in receiving information of mango growers'. Thus, use of media in receiving information were the dependent variable and 10 selected characteristics of the mango cultivators were considered as the independent variables under the study. Use of media in receiving information of mango growers may be affected through interacting forces of many independent variables. It is not possible to deal with all of the independent variables in a single study. It was therefore, necessary to limit the independent variables, which age, education, experience in mango cultivation, size of mango orchard, time spent in mango farming, annual family income, annual income from mango, knowledge on mango cultivation, organizational participation and cosmopoliteness for this study.

Considering the above-mentioned situation and discussion, a conceptual framework has been developed for this study, which is diagrammatically presented in the following Figure 2.1.

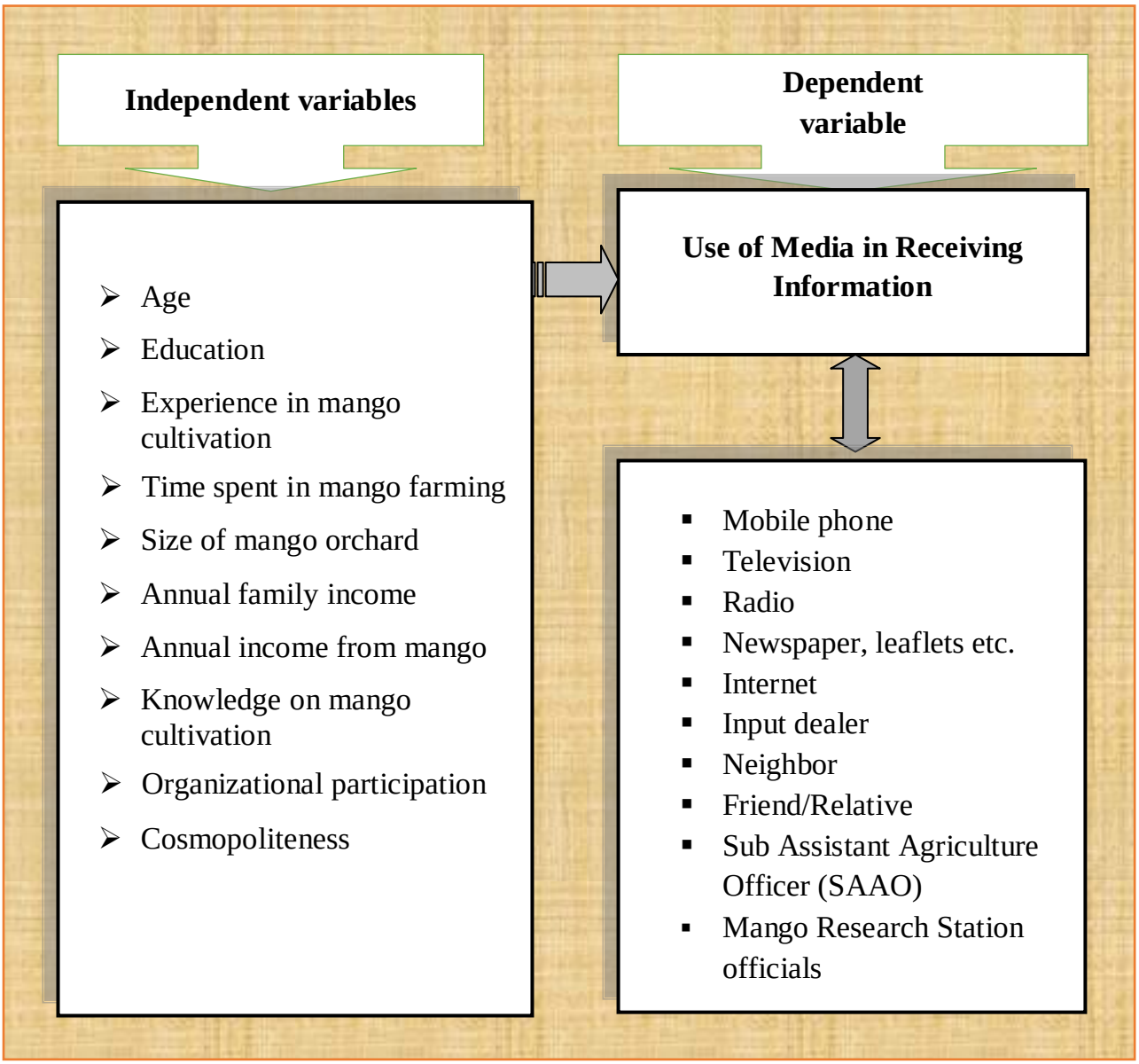

Figure 2.1 The conceptual framework of the study

CHAPTER III

METHODOLOGY

This chapter of the thesis illustrates the research methods and procedures used to collect and analyze the data for answering the research questions and attaining the purposes. The methods and operational procedures followed in conducting the study e.g. selection of study area, sampling procedures, instrumentation, categorization of variables, collection of data, measurement of the variables and statistical measurements. A description of the methods followed in conducting this research work has been presented in this chapter.

3.1 Locale of the Study

The study was conducted in the Chapainawabganj sadar under Chapainawabganj district. The area of Chapainawabganj sadar upazila (Chapainawabganj district) is 451.80 sq km, located in between 24°25' and 24°43' north latitudes and in between 88°05' and 88°26' east longitudes. It is bounded by Nachole and Shibganj (Chapainawabganj) upazilas on the north, west bengal state of India on south, Tanore and Godagariupazilas on the east, Shibganjupazila on the west (Figure 3.2). The features of the mango growers and agriculture at Chapainawabganj sadar are like- ownership of agricultural land: landowner 40.38%, landless 59.62%; agricultural landowner: urban 35.28% and rural 43.10%; main crops: paddy, black gram, wheat, sugarcane, betel leaf, onion, garlic, vegetables; extinct or nearly extinct crops: koda, china, shama, kaun: main fruits: mango, jackfruit, litchi, papaya. main sources of income: agriculture 44.97% (Banglapedia, 2015). Chapainawabganj sadar has several villages in which Namoshankerbati, Tikrampur, Ajaipur villages were selected purposively as the study area.

The map of the Chapainawabganj district has been presented in Figure 3.1. and specific study location namely Chapainawabganj Sadar have also been shown in Figure 3.2.

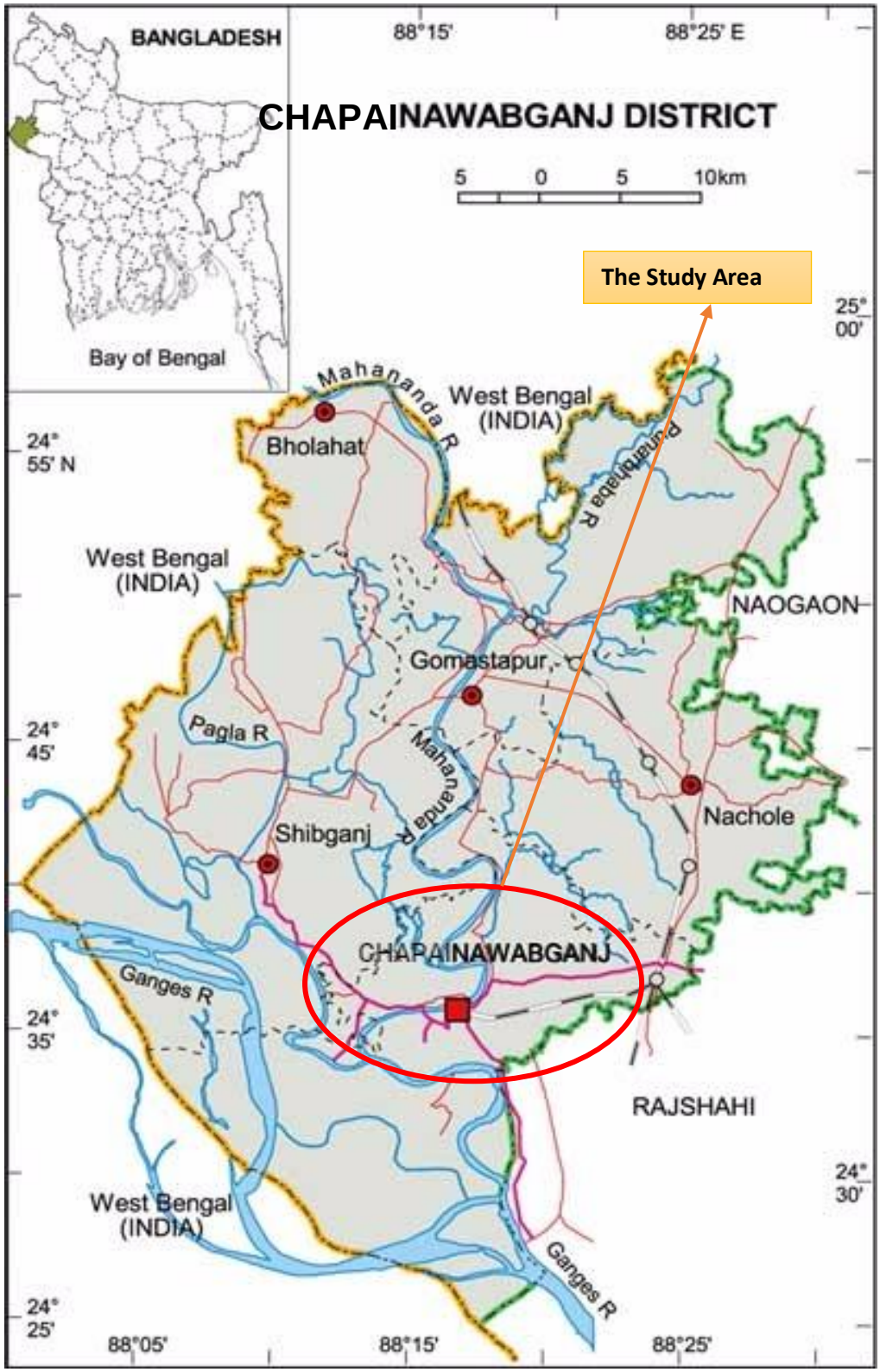

Figure 3.1 Map of Chapainawabganj district showing the study area

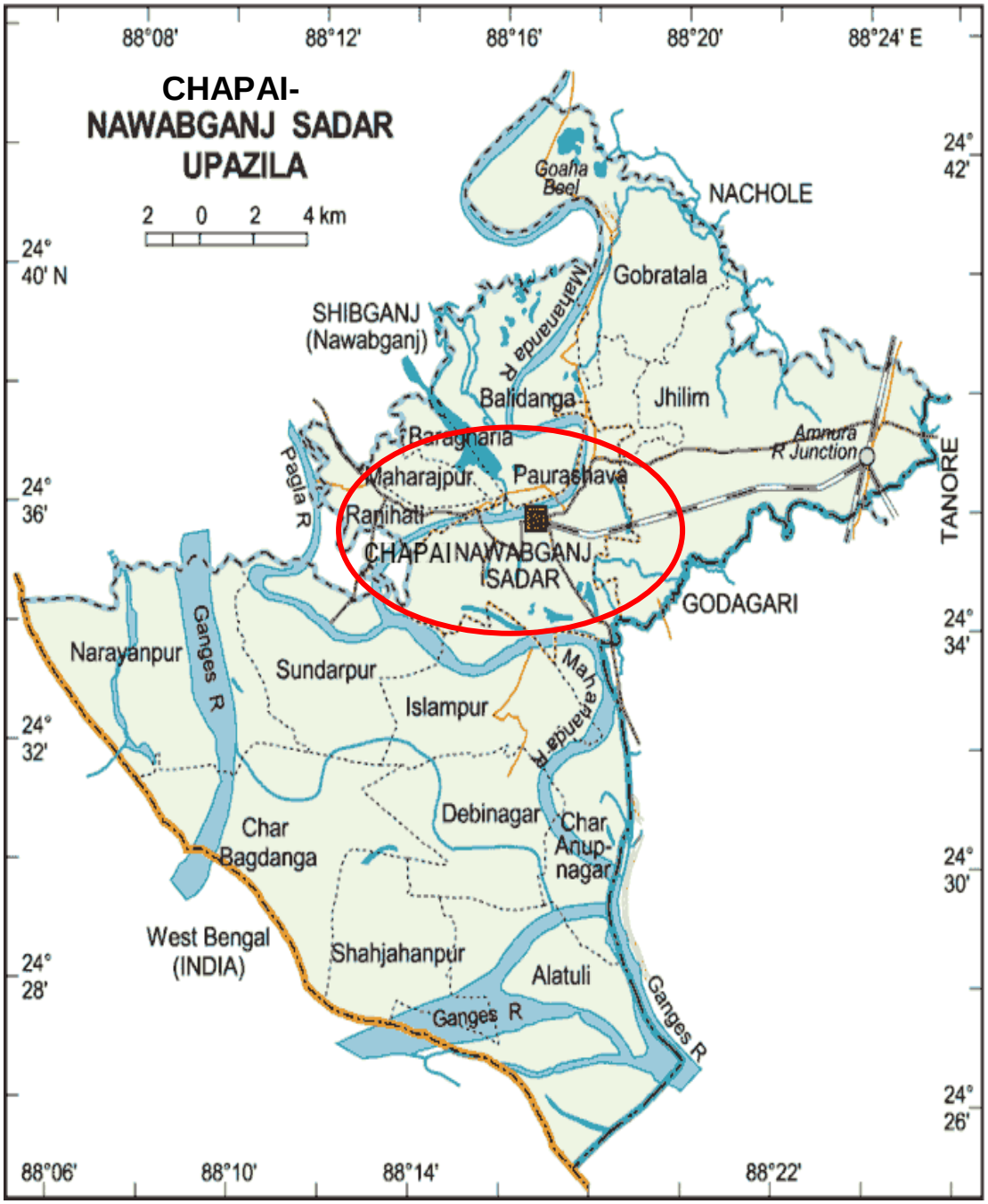

Figure 3.2 Map of Chapainawabganj Sadar showing the study area-municipality

3.2 Population of the Study

People who permanently reside in the selected villages of Chapainawabganj municipality and engage with mango cultivation constituted the active population of this study. As all population of the study area could not possible to measure, head of the farm families of mango cultivators of Namoshankerbati, Tikrampur and Ajaipur villages of Chapainawabganj municipality under Chapainawabganj Sadar upazila were the population of the study. However, representative sample from the population were taken for collection of data following percentage method. One mango grower (who mainly operated the mango cultivation) from each of the families was considered as the respondent. Updated lists of all mango growers of the selected villages were prepared with the help of SAAO, ideal farmer and local leader. A purposive sampling procedure was followed to select one district from the whole of Bangladesh, and the same method was used to select the area of the district as well as the villages as the study group. The total number of mango growers in selected villages was 310; where 158 farm family heads from Namoshankerbati village, 102 farm family heads from Tikrampur village and 50 farm family heads Ajaipur village under the Chapainawabganj municipality union which constituted the population of the study. Thus, 310 mango growers constituted population of the study which is shown in the following table 3.1.

Table 3.1 Population of the study area

Name of the district	Name of the Upazila	Name of the villages	Number of the respondents
Chapainawabganj Sadar	Chapai-Nawabganj municipality	Namoshankerbati	158
		Tikrampur	102
		Ajaipur	50
		Total	310

3.2.1. Determination of sample size

The population size was 310. As the size was small, so to determine the sample size, it is better to follow a representative percentage rather than standard statistical formula. Considering time and other resources, thirty percent (30%) of population was considered as sample of the study. Thus the sample size is 93.

3.2.2 Distribution of the population, sample size and reserve list

The respondents comprised of 93 mango growers. A reserve list of 10 mango cultivators (about ten percent of the sample size) were also prepared so that the mango growers of this list could be used for interview if the mango growers included in the original sample were not available at the time of conduction of interview. The mango growers of the villages were selected for data collection by following proportionate sampling technique. The distribution of the population, the number of sample size and number of respondents along with the reserve list are given in the following Table 3.2.

Table 3.2 Distribution of the mango cultivators according to population and reserve list

Selected upazila	Selected area	Selected villages	Population	Sample size	Reserve list
Chapainawa-bganj Sadar	Chapaina-wabganj Municipa-ality	Namoshan kerbati	158	47	5
		Tikrampur	102	31	3
		Ajaipur	50	15	2
Total			310	93	10

3.3 Data Collection Tool and Procedure

3.3.1 Data collection tool

In order to collect reliable and valid information from the respondents, an interview schedule was prepared for collection of data from respondents keeping the objectives of the study in mind. The schedule was prepared

containing both open and closed questions. The questions in this schedule were formulated in a simple and unambiguous way and arranged in a logical order to make it more attractive and comprehensive. The instruments were first developed in English and then translated into Bengali. The survey tools were initially constructed based on an extensive literature reviews and pre-tested. The interview schedule was pre-tested with 12 respondents of the mango farmers in the study area during 10 to 17 April, 2017.

The draft interview schedule was pretested in actual field situation before finalizing it for collection of data. The pre-test was helpful to identify inappropriate questions and statements in the draft schedule. Necessary addition, alternation and adjustments were made in the schedule on the basis of the experience of the pretest. The interview schedule was then cyclostyled in its final form for the collection of data. The interview schedule was then printed in its final form. An English version of the interview schedule has been shown in Appendix-1.

3.3.1 Data collection procedure

The researcher collected data through personal interview schedule from the sampled farm families of the selected villages. The researcher met the respective Upazila Agriculture Officer (UAO), Agriculture Extension Officer (AEO) and the concerned SAAOs before starting collection of data. The researcher also discussed the objectives of the present study with the respondents and above mentioned officers and requested them to provide actual information. A rapport was established with the farmers so that they feel easy to answer the questions. The researcher took all possible care to establish rapport with the respondents so that they would not feel any indecision while starting the interview. Very good cooperation was obtained from the field extension workers and the local leaders. No serious difficulty was faced by the researcher during the collection of data. The interviews were made individually in the houses of respondents. Questions were asked in different ways so that the respondents could easily understand the questions. Whenever a respondent

faced difficulty in understanding any questions, care was taken to explain the same clearly with a view to enabling him to answer it properly.

Before going to the respondent's home for interviewing they were informed verbally to ensure their availability at home as per schedule date and time. In case of failure to collect information from the respondents due to their other business, revisit was made with prior to appointments. If any respondent failed to understand any question, the researcher took great care to explain the issue. If the respondents could not clear about what was wanted to know then supplementary questions were asked for further clarification. The researcher received full cooperation from the respondents during the time of interview. Data were collected from 20 April, 2017 to 30 May, 2017.

3.4 Variables and Their Measurement Techniques

The variable is a characteristic, which can assume varying, or different values in successive individual cases. A research work usually contains at least two important variables viz. independent and dependent variables. An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variable (Townsend, 1953). In the scientific research, the selection and measurement of variable constitute a significant task. Following this conception, the researcher reviewed literature to widen this understanding about the natures and scopes of the variables relevant to this research. At last the researcher had selected 10 independent variables and one dependent variable. The independent variables were: age, education, experience in mango cultivation, size of mango orchard, time spent in mango farming, annual family income, annual income from mango, knowledge on mango cultivation, organizational participation and cosmopoliteness. The dependent variable of this study was the 'use of media in receiving information by the mango growers'.

The methods and procedures in measuring the variables of this study are presented below:

3.4.1 Measurement of independent variables

The 10 characteristics of the mango growers mentioned above constitute the independent variables of this study. The following procedures were followed for measuring the independent variables.

3.4.1.1 Age

Age of the mango growers was measured in terms of actual years from their birth to the time of the interview, which was found on the basis of the verbal response of the rural people (Rashid, 2014). A score of one (1) was assigned for each year of one's age. This variable appears in item number 1 in the interview schedule as presented in Appendix-I.

3.4.1.2 Education

Education was measured by assigning score against successful years of schooling by a mango grower. One score was given for passing each level in an educational institution. For example, if a mango grower passed the final examination of class five or equivalent examination, his/her education score has given five (5). Each mango grower of can't read & write has given a score of zero (0). A person not knowing reading or writing but being able to sign only has given a score of 0.5. If a mango grower did not go to school but took non-formal education, his educational status was determined as the equivalent to a formal school student. This variable appears in item number 2 in the interview schedule as presented in Appendix-I.

3.4.1.3 Experience in mango cultivation

Experience in mango cultivation of the mango grower was determined by the total number of year involved in mango cultivation. A score of one (1) was assigned for each year mango cultivation. This variable appears in item number 3 in the interview schedule as presented in Appendix-I.

3.4.1.4 Size of mango orchard

It refers to the area of land owned by a mango grower on which mango growing activities are carried out. However, it was estimated in terms of hectare. Data obtained in response to questions under item number 4 in the interview schedule (Appendix-I) formed the basis for determining mango cultivation area of the respondent.

3.4.1.5 Time spent in mango farming

Time spent in mango farming was determined by the total time (hrs) involved in mango farming per week during the mango season. A score of one (1) was assigned for each hour mango farming activities. This variable appears in item number 5 in the interview schedule as presented in Appendix-I.

3.4.1.6 Annual family income

The term annual family income refers to the annual gross income of mango grower and the members of his family from different sources. It was expressed in taka. In measuring this variable, total earning taka of an individual mango grower was converted into score. A score of one was given for every one thousand taka. The method of ascertaining income involved three types. Firstly, the income from agricultural crops in the preceding year was noted and converted into taka. Secondly, income from animals and fish resources. Thirdly, other source income included earning form small business, service, other family members' income, day laborer, fishing and others if any. This variable appears in item number 6 in the interview schedule as presented in Appendix-I.

3.4.1.7 Annual income from mango

Annual income from mango refers to the total financial return from mango in one year. It was expressed in Taka. One score was given for 1000 taka. A score of 1 was assigned for Tk. 1000. For an amount, less than Tk.1000, a fraction score was computed and added with the main score. This variable appears in item number 7 in the interview schedule as presented in Appendix-I.

3.4.1.8 Knowledge on mango cultivation

Mango cultivation knowledge of a mango grower was measured by asking 10 questions related to different components of mango cultivation. It was measured assigning weightage two marks for each question. So, the total assigned scores for all the questions became twenty. The score was given according to response at the time of interview. Answering a question correctly an individual could obtain full score. While for wrong answer or no answer he obtained zero (0) score. Partial score was assigned for partially correct answer. Thus, the mango cultivation knowledge score of a mango grower could range from zero (0) to twenty (20), where zero indicates no knowledge and twenty indicates highest knowledge on mango cultivation. This variable appears in item number eight (8) in the interview schedule as presented in Appendix-I.

3.4.1.9 Organizational participation

Organizational participation of a respondent was computed on the basis of his/her participation in different organizations. This variable appears in item number nine (9) in the interview schedule as presented in Appendix-I. Scoring of the organizational participation was done using the following formula and in the following way-

$$OP = P_{om \times ny} + P_{em \times ny} + P_{eo \times ny}$$

Where, OP = Organizational participation score

P_{om}= Participation as ordinary committee member for 1 year

P_{em} = Participation as executive committee member for 1 year and

P_{eo} = Participation as executive committee officer (president/secretary) for 1 year.

Nature of participation	Score assigned
No participation	0
Participation as ordinary member	1
Participation as executive member	2
Participation as secretary/ president	3

For example, if a respondent participated as an executive committee member of school committee for three years, an ordinary member at NGO organized society for 1 year and no participation in other organizations, that respondent would have a total score 7.

3.4.1.10 Cosmopoliteness

Cosmopoliteness of a respondent was measured in terms of his/her nature of visits to six different places external to his/her own social system. The scale used for computing the cosmopoliteness score was presented below:

Extent of visit	Score assigned
Not at all	0
Rarely	1
Occasionally	2
Often	3
Regularly	4

Logical frequencies of visits were considered in each of the alternative responses of each items as shown in question No. 10 of the interview schedule. The cosmopoliteness score of a respondent was determined by adding together the scores obtained from visit to each of the six (6) types of places. The cosmopoliteness score of the respondents could range from 0 to 24, where, 0 indicating no cosmopoliteness and 24 indicating very high cosmopoliteness.

3.4.2 Measurement of dependent variable

The extent of use of media in receiving information by the mango growers

It was defined as one's extent of exposure to different communication media related to mango production. The extent of use of media of a mango growers was measured by computing media contact score on the basis of their nature of use of media with selected ten media. Each mango grower was asked to indicate his nature of use of media with five alternative responses, like regularly, frequently, sometimes, rarely and not at all basis to each of the ten-selected media and score of 4, 3, 2, 1 and 0 were assigned for those alternative

responses, respectively. Logical frequencies were assigned for each of the five alternative nature of use of media. The extent of use of media of the mango growers was measured by adding the scores of ten selected media. Thus, the extent of use of media score of a mango grower could range from 0 to 40, where zero indicated no use of media and forty indicated highest level of media use. This variable appears in item number 11 in the interview schedule as presented in Appendix-I.

3.5 Measurement of rank order of use of media in receiving information

To ascertain the use of media in receiving information by the mango growers, Media Used Index (MUI) was computed for each media. Media Used Index (MUI) was computed by using the formula:

$$MUI = u_{rg}\times 4 + u_f\times 3 + u_s\times 2 + u_r\times 1 + u_n\times 0$$

Where, MUI = Media Used Index

u_{rg} = No. of respondents used media regularly

u_f = No. of respondents used media frequently

u_s = No. of respondents used media sometimes

u_r = No. of respondents used media rarely

u_n = No. of respondents used media not at all

Media Used Index (MUI) for each media use could range from 0 to 372, where 0 indicating no media use and 372 indicating highest media use by the mango growers.

3.6 Hypothesis of the Study

According to Kerlinger (1973) a hypothesis is a conjectural statement of the relation between two or more variables. Hypothesis are always in declarative sentence form and they are related, either generally or specifically from variables to variables. In broad sense hypotheses are divided into two categories: (a) Research hypothesis and (b) Null hypothesis.

3.6.1 Research hypothesis

Based on review of literature and development of conceptual framework, the following research hypothesis was formulated:

"Each of the 10 selected characteristics (age, education, experience in mango cultivation, size of mango orchard, time spent in mango farming, annual family income, annual income from mango, knowledge on mango cultivation, organizational participation and cosmopoliteness) of the mango growers has significant relationship with their use of media in receiving information."

3.6.2 Null hypothesis

A null hypothesis states that there is no relationship between the concerned variables. The following null hypothesis was formulated to explore the relationship of the selected characteristics with their use of media in receiving information. Hence, in order to conduct tests, the earlier research hypothesis was converted into null form as follows:

"There is no relationship of the selected characteristics (age, education, experience in mango cultivation, size of mango orchard, time spent in mango farming, annual family income, annual income from mango, knowledge on mango cultivation, organizational participation and cosmopoliteness) of mango growers with their use of media in receiving information."

3.7 Compilation of Data

After completion of field survey data recorded in the interview schedules were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded values. All the collected data were checked and cross checked before transplanting to the Microsoft Excel. All collected data were carefully entered in Microsoft Excel. After exporting, errors were detected and necessary corrections were made accordingly. At last, data were exported from the program Microsoft Excel to SPSS version 20.0, which offered statistical tools applied to social sciences.

3.8 Statistical Analysis

As outlined before, there are wide ranges of structures and methods that can be utilized to analyze both quantitative and qualitative data as per the objectives of the study. Both descriptive and analytical methods were utilized in order to analyze the data. Descriptive techniques have been used to illustrate current circumstances, depict wide range of variables separately and construct tables presented in results. These included: frequency distribution, percentage, range, mean and standard deviation.

Analytical techniques have been utilized to investigate the relationship of the selected characteristics of the mango growers with their use of media in receiving information. Pearson's Product Moment Coefficient of Correlation (r) was used in order to explore the relationships between each of the selected characteristics of the mango growers and their use of media in receiving information. Five percent (0.05) level of probability was the basis for rejecting any null hypothesis throughout the study. The SPSS computer package version 20.0 was used to perform all these process.

CHAPTER IV

RESULTS AND DISCUSSION

In this chapter, the findings of the study and their interpretation have been presented in this chapter. These are illustrated in three sections according to the objective of the study. The first section deals with the selected characteristics of the mango growers, while the second section deals with the extent of use of media in receiving information by the mango growers. The third section deals in the rank order of the selected media in receiving information by the mango growers. The third section deals in the relationship of the mango growers' selected characteristics with their use of media in receiving information.

4.1 Characteristics of the Mango Growers

Behavior of an individual is determined to a large extent by one's personal characteristics. There were various characteristics of the mango growers that might have consequence to mango production. But in this study, ten characteristics of them were selected as independent variables, which included their age, education, experience in mango cultivation, size of mango orchard, time spent in mango farming, annual family income, annual income from mango, knowledge on mango cultivation, organizational participation and cosmopoliteness that might be greatly influenced the use of media in receiving information in mango production are presented below-

4.1.1 Age

The age of the mango growers has been varied from 25 to 66 years with a mean and standard deviation of 39.94 and 9.05 respectively. Considering the recorded age mango growers were classified into three categories namely 'young', 'middle' and 'old' aged following MoYS (2012). The distribution of the mango growers in accordance of their age are presented in Table 4.1.

Table 4.1 Distribution of the mango growers according to their age

Categories	Observed range	Number	Percent	Mean	SD
Young aged (≤ 35)	25-66	31	33.3	39.94	9.05
Middle aged (36-50)		53	57.0		
Old aged (> 50)		9	9.7		
Total		93	100.0		

Table 4.1 reveals that the middle-aged mango growers comprised the highest proportion (57.0 %) followed by young aged category (33.3 %) and the lowest proportion were made by the old aged category (9.7 %). Data also indicates that the middle and young aged category constitute 90.3 percent of total mango growers. The young and middle aged mango growers were generally more involved in farm activities than the older that might be due to the energetic, enthusiastic nature of young and middle aged mango growers.

4.1.2 Education

The educational scores of the mango growers ranged from 0 to 16 with a mean and standard deviation of 6.49 and 4.87 respectively. Based on the educational scores, the mango growers were classified into five categories. The distributions of mango growers according to their level of education are presented in Table 4.2.

Table 4.2 Distribution of the mango growers according to their education

Categories	Observed range	Number	Percent	Mean	SD
Can't read and sign (0)	0-16	4	4.3	6.49	4.87
Can sign only (0.5)		22	21.5		
Primary education (1-5)		20	23.7		
Secondary education (6-10)		30	32.3		
Above secondary (>10)		17	18.3		
Total		93	100.0		

Table 4.2 shows that mango growers under secondary education category constitute the highest proportion (32.3 %) followed by primary education (23.7

%). On the other hand, the lowest percent (4.3 %) in can't read and sign category, can sign only category (21.5 %) and 18.3 percent respondents were above secondary category.

4.1.3 Experience in mango cultivation

Score of experience in mango cultivation of mango cultivators could range from 6 to 25 with mean and standard deviation of 14.51 and 5.81 respectively. On the basis of experience scores, the mango cultivators were classified into three categories (Mean ± Standard Deviation) namely 'low, 'medium' and 'high' experience in mango cultivation. The distribution of mango cultivators according to their experience in mango cultivation is given in Table 4.3.

Table 4.3 Distribution of the mango growers according to their experience in mango cultivation

Categories	Observed range	Number	Percent	Mean	SD
Low experience (≤ 8)	6-25	12	12.9	14.51	5.81
Medium experience (9-20)		55	59.1		
High experience (>20)		26	28.0		
Total		93	100.0		

Table 4.3 reveals that the majority (59.1 %) of the mango cultivator fell in medium experience in mango cultivation category, whereas only 12.9 percent in low experience category followed by 28.0 percent in high experience in mango cultivation category. The findings of the present study reveal that around 87.1 percent of the mango cultivators in the study area had medium to high experience in mango cultivation.

4.1.4 Size of mango orchard

Size of mango orchard score of the mango growers ranged from 0.17 to 3.60 ha with a mean and standard deviation of 1.41 and 0.90 respectively. Based on the size of mango orchard score, the mango growers were classified into three categories (Mean ± Standard Deviation) namely 'small', 'medium' and 'large' size of mango orchard. The distribution of the mango growers according to their size of mango orchard is presented in Table 4.4.

Table 4.4 Distribution of the mango growers according to their size of mango orchard

Categories	Observed range	Number	Percent	Mean	SD
Small size (≤ 0.50)	0.17-3.60	16	17.2	1.41	0.90
Medium size (0.51-2.31)		63	67.7		
Large size (> 2.31)		14	15.1		
Total			100.0		

Table 4.4 indicates that the highest proportion (67.7 %) of the mango growers had medium size of mango orchard compared to 17.2 percent in small size and 15.1 percent in large size of mango orchard category, respectively.

4.1.5 Time spent in mango farming

Time spent in mango farming of the mango growers ranged from 6 to 25 with a mean and standard deviation of 12.23 and 3.37 respectively. Based on the time spent in mango farming score, the mango growers were classified into three categories namely minimum, average and maximum time spent in mango farming. The distribution of the mango growers according to their time spent in mango farming is presented in Table 4.5.

Table 4.5 Distribution of the mango growers according to their time spent in mango farming

Categories	Observed range	Number	Percent	Mean	SD
Minimum time spent (≤ 8)	6-25	16	17.2	12.23	3.37
Average time spent (9-16)		63	67.7		
Maximum time spent (17-25)		14	15.1		
Total		93	100.0		

Table 4.5 indicates that the highest proportion (67.7 %) of the mango growers had average time spent compared to 17.2 percent in minimum time spent and 15.1 percent mango growers in maximum time spent category, respectively. The researcher thinks that this result might have due to positive attitude towards mango cultivation and mango cultivation climatic condition.

4.1.6 Annual family income

The score of annual family income of the mango cultivators ranged from 95 to 996 thousand (BDT) with a mean and standard deviation of 428.31 and 235.27 respectively. On the basis of annual family income, the mango cultivators were classified into three categories (Mean ± Standard Deviation) namely 'low', 'medium' and 'high' annual family income. The distribution of the mango cultivators according to their annual family income is presented in Table 4.6.

Table 4.6 Distribution of the mango growers according to their annual family income

Categories	Observed range	Number	Percent	Mean	SD
Low income (≤ 193)	95-996	17	18.3	428.31	235.27
Medium income (194-664)		61	65.6		
High income (> 664)		15	16.1		
Total		93	100.00		

Data reveals that the mango cultivators having medium annual family income constitute the highest proportion (65.6 %), while the lowest proportion in high income (16.1 %) followed by low income (18.3 %). Overwhelming majority (83.90 %) mango cultivators have low to medium level annual family income. The researcher thinks that this might have due to the involvement of the mango growers in the family small business along with their mango farming activities at the study area.

4.1.7 Annual income from mango

The score of annual income from mango of the mango cultivators ranged from 60 to 966 thousand (BDT) with a mean and standard deviation of 392.92 and 236.74, respectively. On the basis of annual income from mango, the mango cultivators were classified into three categories (Mean ± Standard Deviation) namely 'low', 'medium' and 'high' annual income from mango. The distribution of the mango cultivators according to their annual income from mango is presented in Table 4.7.

Table 4.7 Distribution of the mango growers according to their annual income from mango

Categories	Observed range	Number	Percent	Mean	SD
Low income (≤ 156)	65-630	11	11.8	392.92	236.74
Medium income (157-315)		65	69.8		
High income (> 315)		17	18.2		
Total		93	100.00		

Data reveals that the mango cultivators having medium annual income from mango constitute the highest proportion (69.8 %), while the lowest proportion in low income (11.8 %) followed by high income (18.3 %). Overwhelming majority (81.8 %) mango cultivators have medium to high level annual income from mango. The researcher thinks that this might have due to the maximum mango production at the study area.

4.1.8 Knowledge on mango production

Knowledge on mango production scores of the mango growers ranged from 6 to 17 against possible score of 0 to 20. The average score and standard deviation were 11.78 and 1.88 respectively. Based on the knowledge on mango production scores, the mango growers were classified into three categories namely low, medium and high knowledge on mango production. Table 4.8 reveals that 79.6 percent of the mango growers had medium knowledge on mango production, 14.0 percent had low knowledge and 6.5 percent had high knowledge on mango production.

Table 4.8 Distribution of the mango growers according to their knowledge on mango production

Categories	Observed range	Number	Percent	Mean	SD
Low knowledge (≤ 6)	6-17	13	14.0	11.78	1.88
Medium knowledge (7-12)		74	79.6		
High knowledge (≥ 12)		6	6.5		
Total		93	100.0		

Thus, an overwhelming majority (79.6 %) of the mango growers had medium knowledge on mango production. The researcher found that this might be logical because the education facilities at the study area were available as well as the training provided by the different GO and NGO were also satisfactory.

4.1.9 Organizational participation

Organizational participation score of the mango cultivators ranged from 0 to 9 with a mean and standard deviation of 3.77 and 2.28 respectively. Based on organizational participation score, the mango cultivators were classified into three categories namely low, medium and high participation. The distribution of the mango cultivators as per their organizational participation is presented in Table 4.9.

Table 4.9 Distribution of the mango growers according to their organizational participation

Categories	Observed range	Number	Percent	Mean	SD
Low participation (≤ 3)	0-9	21	22.6	3.77	2.28
Medium participation (4-6)		59	63.4		
High participation (> 6)		13	14.0		
Total		93	100.0		

Data reveals that the highest proportion (63.4 %) of the mango cultivators had medium organizational participation, while 22.6 percent had low organizational participation and the lowest 14.0 percent had high organizational participation. The researcher thinks that it might be logical because the respondents of the study area were busier in their income generating activities. Hence, the high organizational participation in the study area was low.

4.1.10 Cosmopoliteness

Cosmopoliteness score of the mango cultivators ranged from 14 to 20 with a mean and standard deviation of 17.07 and 1.66 respectively. Based on the cosmopoliteness score, the mango cultivators were classified into three categories (Mean ± Standard Deviation) namely low, medium and high

cosmopoliteness. The distribution of the mango cultivators as per their cosmopoliteness is presented in Table 4.10.

Table 4.10 Distribution of the mango growers according to their cosmopoliteness

Categories	Observed range	Number	Percent	Mean	SD
Low cosmopoliteness (≤ 15)	14-20	14	15.1	17.07	1.66
Medium cosmopoliteness (16-18)		56	60.2		
High cosmopoliteness (> 18)		23	24.7		
Total		93	100.0		

Data reveals that the highest proportion (60.2 %) of the mango cultivators had medium cosmopoliteness, while 24.7 percent had high cosmopoliteness and the lowest 15.1 percent had low cosmopoliteness. The researcher thinks that it might be logical because the respondents of the study area were sincere in their income generating activities. Hence, the cosmopoliteness of the mango growers in the study area was medium to high (84.9 %).

4.2 Use of Media in Receiving Information by the Mango Growers

The observed score of use of media in receiving information by the mango growers ranged from 17 to 35 against a possible range of 0 to 40. The average score of the mango growers' use of media in receiving information was 31.36 with a standard deviation 1.67 (Table 4.11). The mango growers were classified into three categories on the basis of their use of media in receiving information scores and distribution of the three categories (Mean ± Standard Deviation) namely 'low', 'medium' and 'high' use of media.

Data shows that the highest proportion (77.4 %) of the mango growers had medium use of media in receiving information and 12.9 percent of the mango growers had low use of media in receiving information and 9.7 percent fell in high use of media in receiving information (Table 4.11).

Table 4.11 Distribution of the mango growers according to their use of media in receiving information

Categories	Observed range	Number	Percent	Mean	SD
Low use (≤ 19)	17-35	12	12.9	21.36	1.67
Medium use (20-23)		72	77.4		
High use (> 23)		9	9.7		
Total		93	100.0		

Apart from the assessment of media use level, the researcher make a rank order of the media used by the farmer which is described below:

4.3 Rank order of the use of media in receiving information

Rank order of the selected ten media in receiving information by the mango growers is presented in Table 4.12. As per descending order of the Media Used Index (MUI), mobile phone ranked the 1st and internet ranked as last position.

The use of media in receiving information by the mango growers according to descending order of MUI mobile phone ranked first followed by television, neighbor, Sub Assistant Agriculture Officer (SAAO), friend/relative, input dealer, radio, mango research station, newspaper, leaflets etc. and internet (Table 4.12).

Table 4.12 Rank order of use of media in receiving information

Sl. No.	Name of media	MUI score	Rank
1.	Mobile phone	280	1st
2.	Television	257	2nd
3.	Neighbor	245	3rd
4.	Sub Assistant Agriculture Officer (SAAO)	232	4th
5.	Friend/Relative	215	5th
6.	Input dealer	193	6th
7.	Radio	180	7th
8.	Mango Research Station	155	8th
9.	Newspaper, leaflets etc.	143	9th
10.	Internet	87	10th

The highest use of media in receiving information by the mango growers was mobile. Mobile phone helps the mango growers to be in touch with their family and maintain a smooth relation with their business associates. That might be caused for highest use in receiving information.

The lowest use of media in receiving information by the mango growers was internet. This might be happened because the mango growers of the study area were less aware in using internet.

4.4 Relationship between Selected Characteristics of the Mango growers and Their Use of Media in Receiving Information

This section deals with exploring the relationships between the independent and dependent variables of the study. The independent variables were age, education, experience in mango cultivation, size of mango orchard, time spent in mango farming, annual family income, annual income from mango, knowledge on mango cultivation, organizational participation and cosmopoliteness. Use of media in receiving information by the mango growers was dependent variable.

Pearson's Product Moment Co-efficient of Correlation (r) was used to test the null hypothesis concerning the relationships between each of the selected characteristics of the mango growers with their use of media in receiving information. Five percent (0.05) level of probability was used as the basis for acceptance or rejecting the null hypothesis at (93-2) =91 degrees of freedom. The results of correlation of coefficient (r) between the independent and dependent variables have been shown in Table 4.13. The details of inter correlation among all the variables have been shown in Appendix-II.

Table 4.13 Co-efficient of correlation between each of the selected characteristics of the mango growers and their use of media in receiving information (n = 93)

Dependent variable	Independent variables	Correlation co-efficient values (r)	Tabulated value of 'r' with 91 df	
			0.05	0.01
Use of media in receiving information by the mango growers	Age	-0.169 NS	0.196	0.261
	Education	0.670**		
	Experience in mango cultivation	-0.189 NS		
	Size of mango orchard	0.296**		
	Time spent in mango farming	0.163 NS		
	Annual family income	0.128 NS		
	Annual income from mango	0.289**		
	Knowledge on mango cultivation	0.711**		
	Organizational participation	0.123 NS		
	Cosmopoliteness	0.799**		

NS Not Significant

** Significant at 0.01 level (1 percent)

The table showed that out of ten independent variables five named education, size of mango orchard, annual income from mango, knowledge on mango cultivation and cosmopoliteness had significant relationship with their use of media. A description of the result is given below:

4.4.1 Relationship between education of mango growers and their use of media in receiving information

The following observations were recorded regarding relationship between education of the mango growers and their use of media in receiving information on basis of correlation coefficient:

i. The computed value of ‘r’ (0.670) was found to be higher than the tabulated value (0.261) with 91 degrees of freedom at 0.01 level of probability as shown in Table 4.13.

ii. The relationship between the concerned variables was significant at 0.01 level of probability and showed a positive trend.

iii. The null hypothesis was rejected.

Based on the above findings, it can be said that education of the mango growers was an important factor for use of media in receiving information. This means that education of the mango growers and their use of media in receiving information was not independent to each other. It means that use of media in receiving information were found more among those mango growers who had more education than the mango growers with lower education.

4.4.2 Relationship between size of mango orchard of mango growers and their use of media in receiving information

The following observations were recorded regarding relationship between size of mango orchard of the mango growers and their use of media in receiving information on basis of correlation coefficient:

i. The computed value of ‘r’ (0.296) was found to be higher than the tabulated value (0.261) with 91 degrees of freedom at 0.01 level of probability as shown in Table 4.13.

ii. The relationship between the concerned variables was significant at 0.01 level of probability and showed a positive trend.

iii. The null hypothesis was rejected.

Based on the above findings, it can be said that size of mango orchard of the mango growers was an important factor for use of media in receiving information. This means that size of mango orchard of the mango growers and their use of media in receiving information was not independent to each other. It means that use of media in receiving information were found more among

those mango growers who had more size of mango orchard than the mango growers with less size of mango orchard.

4.4.3 Relationship between annual income from mango of mango growers and their use of media in receiving information

The following observations were recorded regarding relationship between annual income from mango of the mango growers and their use of media in receiving information on basis of correlation coefficient:

i. The computed value of 'r' (0.289) was found to be higher than the tabulated value (0.261) with 91 degrees of freedom at 0.01 level of probability as shown in Table 4.13.

ii. The relationship between the concerned variables was significant at 0.01 level of probability and showed a positive trend.

iii. The null hypothesis was rejected.

Based on the above findings, it can be said that annual income from mango of the mango growers was an important factor for use of media in receiving information. This means that annual income from mango of the mango growers and their use of media in receiving information was not independent to each other. It also can be said that the person who had more income from mango have more possibility to use media in receiving information.

4.4.4 Relationship between knowledge on mango cultivation of mango growers and their use of media in receiving information

The following observations were recorded regarding relationship between knowledge on mango cultivation of the mango growers and their use of media in receiving information on basis of correlation coefficient:

i. The computed value of 'r' (0.711) was found to be higher than the tabulated value (0.261) with 91 degrees of freedom at 0.01 level of probability as shown in Table 4.13.

ii. The relationship between the concerned variables was significant at 0.01 level of probability and showed a positive trend.

iii. The null hypothesis was rejected.

Based on the above findings, it can be said that knowledge on mango cultivation of the mango growers was an important factor for use of media in receiving information. This means that knowledge on mango cultivation of the mango growers and their use of media in receiving information was not independent to each other. It means that use of media in receiving information were found more among those mango growers who had more knowledge on mango cultivation than the mango growers with less knowledge on mango cultivation.

4.4.5 Relationship between cosmopoliteness of mango growers and their use of media in receiving information

The following observations were recorded regarding relationship between cosmopoliteness of the mango growers and their use of media in receiving information on basis of correlation coefficient:

i. The computed value of 'r' (0.799) was found to be higher than the tabulated value (0.261) with 91 degrees of freedom at 0.01 level of probability as shown in Table 4.13.

ii. The relationship between the concerned variables was significant at 0.01 level of probability and showed a positive trend.

iii. The null hypothesis was rejected.

Based on the above findings, it can be said that cosmopoliteness of the mango growers was an important factor for use of media in receiving information. This means that cosmopoliteness of the mango growers and their use of media in receiving information was not independent to each other. From the result, it can be said that higher the cosmopoliteness higher the use of media by the mango growers.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The study was conducted in the selected villages of Chapainawabganj municipality of Chapainawabganj Sadar upazila to find out the use of media in receiving information by the mango growers. Total 310 mango cultivators were selected from the study area as the population and according to representative percentage, the respondents comprised of 93 mango cultivators constituted the sample of the study. A well-structured interview schedule was developed based on objectives of the study for collecting information. The independent variables were: age, education, experience in mango cultivation, size of mango orchard, time spent in mango farming, annual family income, annual income from mango, knowledge on mango cultivation, organizational participation and cosmopoliteness. Data collection was started in 20 April, 2017 and completed in 15 May, 2017. Various statistical measures such as frequency counts, percentage distribution, average, and standard deviation were used in describing data. In order to explore the relationship of the selected characteristics of mango cultivators with their use of media in receiving information in mango production, Pearson's Product Moment Coefficient of Correlation (r) was used. The major findings of the study are summarized below:

5.1 Major Findings

5.1.1 Selected characteristics of the mango cultivators

Age: The middle-aged mango cultivators comprised the highest proportion (57.0 %) and the lowest proportion by the old aged category (9.7 %).

Level of education: Secondary education constituted the highest proportion (32.3 %) and the lowest 4.3 percent in can't read and sign category.

Experience in mango cultivation: The experience in mango cultivation constituted the highest proportion (59.1 %), whereas the lowest 12.9 percent in low experience category.

Size of mango orchard: The highest proportion (67.7 %) of the mango growers had medium size of mango orchard and the lowest 15.1 percent in large size of mango orchard category

Time spent in mango farming: The highest proportion (67.7 %) of the mango growers had average time and the lowest 15.1 percent mango growers in maximum time spent category.

Annual family income: The medium annual family income constituted the highest proportion (65.6 %), while the lowest proportion in high annual family income production (16.1 %) category.

Annual income from mango: The medium annual income from mango constituted the highest proportion (69.8 %), while the lowest proportion in high annual income from mango production (11.8 %) category.

Knowledge on mango production: The 79.6 percent of the mango growers had medium knowledge on mango production, 14.0 percent had low knowledge and 6.5 percent had high knowledge on mango production.

Organizational participation: The highest proportion (63.4 %) of the mango growers had medium organizational participation and the lowest 14.0 percent fell in high organizational participation.

Cosmopoliteness: The highest proportion (60.2 %) had medium cosmopoliteness category and the lowest proportion 15.1 percent had low cosmopoliteness category in mango cultivation.

5.1.2 Use of media in receiving information by the mango growers

The highest proportion (77.4 %) of the mango growers had medium use of media in receiving information and 12.9 percent of the mango growers had low use of media in receiving information and 9.7 percent felt in high use of media in receiving information.

5.1.3 Rank order of the use of media in receiving information

As per Media Used Index (MUI), mobile phone ranked the 1st and internet ranked as last position.

5.1.4 Relationship between the selected characteristics of the mango growers and their problems in betel leaf cultivation

There is a significant positive relationship of mango farmers' education, size of mango orchard, annual income from mango, knowledge on mango cultivation and cosmopoliteness with their use of media in receiving information. Therefore, there is no significant relationship of mango farmers age, experience in mango cultivation, annual family income, time spent in mango farming and organizational participation with their use of media in receiving information.

5.2 Conclusions

The findings and relevant facts of research work prompted the researcher to draw following conclusions.

i. The findings revealed that maximum 90.3 percent of the respondent had low to medium use of media in receiving information. It is concluded that the composite use of media in receiving information needs to maximize and sustain to sustainable mango production.

ii. Education of the mango growers shows the significant relationship with their use of media in receiving information. This means that high literacy and educational level among the mango growers might have influenced to enhance the use of media in receiving information in mango production. DAE, Mango Research Station, NGOs can combine arrange adult education program for the mango growers literacy level.

iii. Size of mango orchard of the mango growers shows the significant relationship with their use of media in receiving information. This means that having more size of mango orchard among the mango growers might have influenced to enhance the use of media in receiving information in mango production. It is concluded that these mango growers could be more

motivated to use of media in receiving information if DAE and NGOs take more project to motivate the farmers to enhance their mango orchard size.

iv. Maximum 81.8 percent of the mango cultivators had medium to high annual income from mango production category and correlation reveals that annual income from mango production of mango growers had significant relationship with their use of media in receiving information. Therefore, it may be concluded that high annual income from mango production encourages the mango growers to practice more usages of media.

v. Knowledge on mango production of the mango had significant relationship with their use of media in receiving information. Through mango cultivation knowledge an individual mango grower became aware of the information on the various aspect of selected mango production practices. Consequently, they became motivated to use of media in receiving information.

vi. Maximum 67.0 percent of the mango cultivators had medium cosmopoliteness on mango cultivation category and correlation reveals that cosmopoliteness of mango growers had significant relationship with their use of media in receiving information. Therefore, it is concluded that cosmopoliteness of the mango growers had influenced to promote the use of media in receiving information.

vii. Mobile phone ranked the 1st and internet ranked as last position as per Media Used Index (MUI). It is concluded that the use of mobile phone in receiving information needs to sustain for sustainable mango production and simultaneously training program should conduct for the mango growers to increase the usage level of Internet.

5.3 Recommendations

5.3.1 Recommendations for policy

On the basis of observation and conclusions drawn from the findings of the study following recommendations are made:

i. It is revealed that 77.4 percent of the respondent had medium use of media in receiving information. This extent of use of media in receiving information by the mango growers in mango production should be increased at all along. It is, therefore, recommended that step should be taken by the Department of Agricultural Extension (DAE), Mango Research Station and Non-Government Organizations (NGOs) to increase the use of media in receiving information to a higher degree.

ii. Education of the mango growers had significant relationship with their use of media in receiving information. It indicates the importance of education for increasing the use of media in receiving information. It is recommended that some steps like establishment of night school, adult education and other extension methods can play important role in this regard.

iii. The DAE and NGOs should take necessary steps to motivate the farmers to increase their mango orchard size.

iv. Annual income from mango cultivation had significant relationship with their use of media in receiving information. Therefore, it is recommended that the extension workers should work more with the mango growers and motivate them to enhance the annual income from mango cultivation which would help them to maximize the use of media in receiving information.

v. Majority (79.6 percent) mango growers having medium knowledge on mango production technologies. It should be selected on priority basis for any motivational training by Department of Agricultural Extension (DAE) and NGOs for gaining sustainable mango production as well as to enhance the use of media in receiving information.

vi. Cosmopoliteness of the farmers had significant relationship with their use of media in receiving information. However, majority (60.2 percent) of the farmers were medium in cosmopoliteness. Therefore, it is recommended that extension workers should mobilize farmers for increasing their cosmopolite behavior in order to facilitate their use of media in receiving information.

vii. The DAE, NGOs should take necessary steps like conduct training program, motivational session to increase the use of internet (ranked last position as per Media Used Index) and sustaining the use of mobile phone (ranked first position as per Media Used Index) .

5.3.2 Recommendations for further study

On the basis of scope and limitations of the present study and observation made by the researcher, the following recommendations are made for future study.

i. Only Chapainawabganj Sadar upazila was selected to conduct the present study. It is recommended that similar studies should be conducted in other areas of Bangladesh.

ii. This study investigated the relationship of ten characteristics of the mango growers with their use of media in receiving information as dependent variables. Therefore, it is recommended that further study should be conducted with other characteristics of the mango growers with their use of media in receiving information in mango production.

iii. The present study was concerned only with the extent of use of media in receiving information. It is therefore suggested that more reliable measurement of concerned variable is necessary for further study.

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APPENDIX-I

ENGLISH VERSION OF THE INTERVIEW SCHEDULE

Department of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Dhaka-1207

An Interview Schedule for the Study Entitled

USE OF MEDIA IN RECEIVING INFORMATION BY THE MANGO GROWERS

Name of the respondent: …… Serial No: ……

Union: …….

Village: ……..……..…

(Please provide following information. Your information will be kept confidential and will be used for research purpose only)

1. Age

How old are you? _____ years.

2. Level of education

Please mention your level of education.

a) I can't read and write ☐

b) I can sign only ☐

c) I have passed…….class.

d) I took _____ years non-formal education.

3. Experience in mango cultivation

How long have you been cultivating mango as commercial? ..... years

4. Size of mango orchard

What is your total farm size according to use in mango cultivation? ..... ha

5. Time spent in mango farming

How much time do you spend in mango farming? .....hours/week

6. Annual family income

Please mention the amount of annual from income from the following sources during last year:

SL. No.	Name of income items	Production (Kg or Maund)	Income/Unit (Tk)	Total Income (Tk)
1.	Rice			
2.	Wheat			
3.	Pulse crop			
4.	Vegetables			
5.	Fruits			
6.	Livestock			
7.	Poultry			
8.	Fish resources			
9.	Service			
10.	Business			
Total				

7. Annual income from mango

What is your annual income from mango during last year? …… Tk.

8. Knowledge on mango cultivation

Please answer the following questions:

Sl. No.	Questions	Total Marks	Marks Obtained
1.	Mention the name of two high yielding mango variety	2	
2.	What measures do you take for field sanitation at your mango orchard?	2	
3.	Mention the plant to plant and row to row distance for langda variety	2	
4.	Mention the rate of urea fertilizer at 100 decimals for Gopalbogh variety	2	
5.	How do you control fruit fly at your mango orchard?	2	
6.	How do you control mango hopper at your mango orchard?	2	
7.	How do you control leaf eating weevil at your mango orchard?	2	
8.	Where does the mealybug attack at mango tree?	2	
9.	Mention the procedure of fertilization and manuring at your mango orchard?	2	
10.	Mention any two diseases and their control measures of mango	2	

9. Organizational participation

Please mention the nature of your participation:

Sl. No.	Name of organizations	Not involved (0)	Nature of participation		
			Ordinary Member (1)	Executive Member (2)	President/ Secretary (3)
1.	GO organized co-operative				
2.	Youth club				
3.	NGO co-operative				
4.	Farmers' co-operative organized by themselves				
5.	IPM club				
6.	FFS				
7.	Religious committee				

10. Cosmopoliteness

How frequently do you visit in the following selected places? Give (√) tick mark against appropriate place

Sl. No.	Place of visit	Nature of visit				
		Regularly (4)	Often (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1.	Mango information center (Govt.)	> 6 times/ year	5-6 times/ year	3-4 times/ year	1-2 times/ year	0 time/ year
2.	Mango information center (NGOs / Private)	> 4 times/ year	3-4 times/ year	2 times/year	1 time /year	0 time/ year
3.	Upazilla Agricultural Fair (Own upazilla sadar)	> 4 times/ year	3-4 times/ year	2 times/year	1 time/ year	0 time/ year
4.	Upazilla Agricultural Fair (Other upazilla)	> 3 times/ year	3 times/ year	2 times/year	1 time/ year	0 time/ year
5.	District Agricultural Fair (Other district)	> 3 times/ year	3 times/ year	2 times/year	1 time/ year	0 time/ year
6.	National Agricultural Fair (Capital city)	> 3 times/ life	3 times/ life	2 times/life	1 time/ life	0 time/ year
Total						

11. Extent of use of media in receiving information

Please state the extent of your usage with the following media in receiving agricultural information:

Sl. No.	Name of media	Extent of use				
		Regularly (4)	**Frequently (3)**	**Sometimes (2)**	**Rarely (1)**	**Not at all (0)**
1.	Mobile phone	Daily	1 time/ 3 days	1 time/ 7 days	1 time/ 14 days	0 time/ month
2.	Television	Daily	Weekly	Fortnightly	Once/ month	0 time/2 months
3.	Radio	Daily	Weekly	Fortnightly	Once/ month	0 time/2 months
4.	Newspaper and leaflets	Daily	Weekly	Fortnightly	Once/ month	0 time/2 months
5.	Internet	1 time/ 2 days	Weekly	Fortnightly	Once/ month	0 time/3 months
6.	Input dealer	> 9 times/ season	7-9 times/ season	4-6 times/ season	1-3 times/ season	0 time / season
7.	Neighbor	>12 times/ season	8-11 times/ season	4-7 times/ season	1-3 times/ season	0 time / season
8.	Friends and Relatives	>12 times/ season	8-11 times/ season	4-7 times/ season	1-3 times/ season	0 time / season
9.	Sub Assistant Agriculture Officer (SAAO)	>10 times/ season	5-9 times/ season	3-4 times/ season	1-2 times/ season	0 time/ season
10.	Mango Research Station	> 6 times/ season	5-6 times/ season	3-4 times/ season	1-2 times/ season	0 time/ season
Total						

Thanks for your kind co-operation.

Dated: ----------.

(Signature of interviewer)

Appendix-II

Correlations matrix among the selected characteristics of the mango growers and their use of media in receiving information

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	Y
X_1	-										
X_2	-.186	-									
X_3	.886**	-.190	-								
X_4	-.021	.328**	-.045	-							
X_5	-.018	.185	-.017	.807**	-						
X_6	-.026	.319**	-.047	.995**	.811**	-					
X_7	-.019	.319**	-.041	.996**	.818**	.998**	-				
X_8	-.145	.834**	-.189	.247*	.155	.233*	.237*	-			
X_9	-.127	.453**	-.061	.172	.077	.166	.162	.400**	-		
X_{10}	-.210*	.798**	-.221*	.214*	.117	.198	.205*	.881**	.351	-	
Y	-.169	.670**	-.189	.296**	.163	.128	.289**	.711**	.123	.799**	-

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

X_1 = Age, X_2= Education, X_3= Experience in mango cultivation, X_4= Size of mango orchard, X_5= Time spent in mango farming, X_6= Annual family income, X_7= Annual income from mango, X_8= Knowledge on mango cultivation, X_9= Organizational participation, X_{10}= Cosmopoliteness;

Y= Use of media in receiving information by the mango growers;