USE OF INDIGENOUS TECHNICAL KNOWLEDGE BY THE FARM WOMEN FOR HOMESTEAD VEGETABLES PRODUCTION

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USE OF INDIGENOUS TECHNICAL KNOWLEDGE BY THE FARM WOMEN FOR HOMESTEAD VEGETABLES PRODUCTION

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CERTIFICATE

This is to certify that the thesis entitled, **"USE OF INDIGENOUS TECHNICAL KNOWLEDGE BY THE FARM WOMEN FOR HOMESTEAD VEGETABLES PRODUCTION"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka in partial fulfilment 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 conducted by **K. M. Thouhid Ahmed Registration No. 18-08263** under my supervision and guidance. To the best of my knowledge, no part of this thesis has been submitted for any other degree or diploma.

I further certify that any help or source of information, received during the course of this study has been duly acknowledged by him.

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ABBREVIATION AND ACRONYMS

ITK	Indigenous Technical Knowledge
IPM	Integrated Pest Management
FFS	Farmer Field School
BRAC	Bangladesh Rural Advancement Committee,
RDP	Rural Development Prograrnme
UAO	Upazila Agriculture Officer
SAAO	Sub-Assistant Agriculture Officer
SPSS	Statistical Package For Social Sciences

Use of Indigenous Technical Knowledge by the Farm Women for Homestead Vegetables Production

K. M. Thouhid Ahmed

Abstract

The objectives of this study were to determine and describe the selected socio-economic characteristics of homestead vegetables growers, determine the use of different practices of ITK by the rural women and explore the contribution of the selected socio-economic characteristics of the farm women to their extent of use of different ITK practices. Data were collected from randomly selected 106 women farmers of four villages namely, Kamarpara, Mussudi purbo para, Nollobazar and Gopalbari of Dhanbari upazila under Tangail district by using structured interview schedule during 15 September to 10 November, 2020. Data indicates that the highest proportion (73.6%) of the homestead growers fell under the medium ITK user's category, while 14.2 percent had high users and 12.3 percent had low ITK users for homestead vegetables production respectfully. Moreover, majority (85.9%) of the homestead vegetables producer farmers had medium to low ITK users. Family size, media exposure and cosmopoliteness of homestead vegetables women farmers had significant relationship with their extent of use of ITK while age, education, annual family income, farm size, experience in homestead vegetables production, income from vegetable cultivation, duration of training and innovativeness had no significant relationship with ITK users for homestead vegetables production. Finally, this study offered some theoretical and practical recommendations about the extent of use of ITK for homestead vegetables production.

CHAPTER I

INTRODUCTION

1.1 General Background

Bangladesh is regarded as one of the Indigenous Technical Knowledge (ITK) richest country, due to a range of ethnic communities, multiplicity of culture, history and values. Like other developing countries in this sub-continent, the country primarily consists of agrarian land with 47.50 percent of the labor force dependent on agriculture, which contributes to 16.33 percent of the GDP of the country's total economy (BER 2014). Many poor and illiterate farmers are unable to cope with modern technologies. In contrast, ITKs are the basis for local-level decision-making in agriculture, healthcare, food, natural resource management and other activities in rural communities.

Bangladesh is one of the most densely populated countries in the world. The density of her population is about around 1015 inhabitants per square kilometer. Due to poverty and unawareness, majority of its population, particularly women and children suffer from severe malnutrition. Women can play a vital role in removing malnutrition by homestead vegetable production. It is also an economic part for her family.

The economy of our country in mainly dependent on agriculture. Women can play a vital role in agricultural crop production. Rice is the main crop while vegetable occupy a very important place in rice-based cropping systems and play a vital role in the crop sub-sector to provide nutrition, increase food security and helps economic condition uplift to the producers. Vegetables are essential in diet, provide fiber, and trace minerals, vitamins, carbohydrates and proteins. Vegetables help to prevent various diseases resulting from malnutrition and unbalanced nutrition. Home stead vegetable production is one kind of art. It adds beauty in the village. The important of ITK is mainly on vegetable production. One of the main reasons of ITKs use is low cost. Farmers mainly women can apply the ITKs by her hearing, seeing, and experience. In Bangladesh a good amount of vegetable is grown throughout the year. In view of increase in income, population and nutritional consideration, there is a great need for vegetable cultivation.

In “modern” agriculture requires high level of external inputs like agrochemical, hybrid seed, fuel based mechanization together with enhanced research and extension activities have contributed to an overall increase in the country food production system but it have created observable dissonance in the agro ecosystem. Over population with our limited natural resources have brought changes in the natural ecosystem, which threaten to natural ecosystem as well as future progress.

ITK refers to knowledge about the local environment that is produced, held, and used by indigenous peoples and communities (Goldman, 2017). Nowadays people are progressively using modern agricultural practices for maximizing production. As a result, the traditional way of cultivation has been decreasing. It is also observed that rural women have been contributing to conserve and use ITKs for a long time. Around forty-six percent of the farming population in Bangladesh is female (FAO, 2011), though Bangladeshi people are not appreciative of women in agricultural production, particularly outside the house. This part is because of cultural norms that value female seclusion and un- devalue female labor (Rahman, 2000). Women participation in agriculture has increased over time from 1999-2000 to 2005-2006 and women participation in agriculture has in- creased by about fifteen percent (Sraboni *et al*. 2014). They are still using ITKs in their farming practice as it is easier to adopt in comparison with modern technology. Modern technologies are particularly based on science and technology. In contrast, ITKs are the basis for local-level decision-making in agriculture, healthcare, food, natural resource management and other activities in rural communities. Such knowledge is passed down from generation to generation in day to day living. Indigenous knowledge has value not only for the culture in which it evolves but also for scientists and planners striving to improve conditions in rural localities.

Recently, masses are becoming conscious enough about the dreadful effect of pesticide use. Moreover, the increasing landlessness and poor socio-economic status of the rural farmers is propelling them to choose the alternative option of low input agriculture. This realization seeks special attention from extension experts, researchers, policymakers as well as international organizations. Therefore, the study on ITKs and its documentation is particularly important for a country because, i) ITKs may have significant utilities if explored, ii) ITKs are alternatives, which can be

widely adaptable, iii) they are easier, secured and inexpensive to adopt than those of modern technology, and v) ITKs are environment friendly and play a vital role in sustainable development.

There are many vegetables are grown in homestead. Homestead is the dwelling place where vegetables are cultivated. Homestead as defined as "the land owned and occupied by the dwelling unit of the household and immediate area surrounding by the dwelling unit including courtyard, pond, road space around homestead, space used for cultivation of trees and vegetable and unutilized space." Day by day cultivable land is a scarce resource in densely populated Bangladesh, which is mostly used for production of rice and other field crops. However, there are many small homesteads of Bangladesh remains unutilized, underutilized or not scientifically managed, which could be brought under round the year vegetable cultivation for reducing the above mentioned problems. There are many vegetable are in homestead such as cabbage, carrot, eggplant, cauliflower, potato, tomato, radish, sweet gourd, wax gourd, bitter gourd, teasel gourd, point gourd etc. not much care is taken for growing these vegetable in Bangladesh. If we give little attention to cultivate these vegetables, though these are very important source of human nutrition. There is a great scope for increasing the production of vegetable throughout the year.

Proper understanding of the technological, sociological and other relevant aspects of ITK, the degree and direction of planned change for the client system could be properly assessed through formal research. Research and conservation on local knowledge is very important because it helps to achieve highest production. These priorities the exigencies of a growing interest in documenting these local technologies and drawing the attention of researchers, development worker and financial agencies to the advantages of preserving and improving them to achieve higher production as well as know the present condition of ITKs use in this locality. This very little research has been done in Bangladesh in this aspect.

Therefore, this study was under taken to investigate the use of indigenous technical knowledge by rural women for vegetables production activities.

1.2 Statement of the Problem

ITK is a dynamic knowledge that continuously changes, adopted and modified with the local situation, culture and religious belief of a given social community (Pushpangadan *et al*., 2002). Indigenous or traditional knowledge has been reinvented as a balance model for the prospective relationship between human and nature (Mazzocchi, 2006). It is realized that ITKs strengthen the knowledge system of the community essential for conservation of biodiversity (Wekesa *et al*., 2016).

With a view to conduct a research on various aspects of homestead vegetable production, the researcher undertook this piece of study entitled:

"Use of indigenous technical knowledge by the farm women for homestead vegetables production."

The purpose of this study was to know the answer of the following questions:

- What is the indigenous technical knowledge (ITKs) that women farmers use in homestead vegetables cultivation?
- What are the personal, socio-economic, socio-cultural and psychological characteristics of the women farmers that affect their use of ITKs?
- What is the contribution of selected characteristics of the women farmers with use of ITK?

Considering to get this of the above questions the researcher selected the following objectives of the study.

1.3 Objectives of the Study:

Objectives help the researchers to get into a right way. Meaningful, definite, and achievable objectives are the right way in all kinds of research. This research work was conducted with the following objectives:

1. To determine and narrate the following selected socio economic characteristics of the rural women:

a) Age

b) Education

c) Family size

d) Annual family income

e) Farm size

f) Experience in homestead vegetable production

g) Income from vegetable cultivation

h) Duration of training

i) Media exposure

j) Cosmopoliteness

k) Innovativeness

2. To determine the use indigenous technical knowledge (ITK) for homestead vegetables production used by the farm women.

3. To explore the contribution of the selected socio economic characteristics of the rural women and their extent of use of ITK for homestead vegetables cultivation.

1.4 Justification of the Study

There is a close relationship between Agriculture and environment. We need improved agricultural production keeping the eco-friendly environment. ITK is an appropriate package of technology in farming activities which is most economical, less hazardous and side effects to the environment. Most of the farmers of our country are poor. Women farmers can be helping hand by producing homestead vegetable production. The women could hardly adopt-modem technology for farming activities. According to the environmental problems of developing countries are largely due to overloaded population, extension of cropping and deforestation. A large amount of irrigated areas are seriously affected by salinity. Increased use of pesticides and artificial fertilizers are also creating environmental problems, which causes the degradation of soil texture including soil fertility and the scarcity of fuel-wood indicate the graveness of the situation.

ITK is traditional. Traditional does not mean that it is stable but a checking door through which innovation comes out (Ghosh and Sahoo, 2011). The use of Neem

(Azadirachta indica) plant as medicines and pesticides is a traditional practice in our country. Modern science has proved the probity of Neem. Neem, now in the commercial industry, are widely used as anticholinergic, analgesic, antihistaminic, antihelminthic, antipyretic, antiprotozoal, bactericidal, antiviral, fungicides, contraceptives, insecticides and insect repellents (Bhat, 2008). ITKs sometimes provide clue for innovation development. Therefore, ITKs are the foundation on which the modern breeding industries have been established. Being traditional ITKs are dynamically providing solutions for many current problems e.g. climate change adaptation (Swiderska *et al*., 2011), disaster risk reduction, agro-ecosystems (Moyo, 2010) and forest conservation, food security and natural resources management (IFAD, 2016).

ITKs are unique in the way which is developed and used by a specific community. When these unique ITKs come in contact with other community for the first time are perceived as innovation. Generally, a certain community does not seek the property rights of those ITKs developed by their ancestor or fellow colleagues (Ndwandwe, 2013).

ITK is highly effective and applicable for farm management. Homestead vegetable production is mainly one kind of art. In our country homestead vegetable production is done by women. So ITK and homestead vegetable productions are related each-others.

Now government and non-government organizations are currently putting effort on production oriented research and also encouraging the rural women to undertake homestead vegetable cultivation. The evaluation of the ITKs of rural women in homestead vegetable cultivation is necessary.

This study will be applicable to Musuddi and Jodunathpur union under Dhanbari upazila of Tangail district, it is desired that the research of the findings may also have applicable to other areas of Bangladesh were the physical, socioeconomic, and other cultural conditions do not differ much from those of the study area. The findings also beneficial to the field worker of agricultural extension service providers to develop strategies of action for conserving friendly farm environment with the rural people. Finally, the researcher believes that the findings and recommendations of this study will be helpful in decreasing risk of production, health, and environment and

economical.

1.5 Assumption of the Study

The following assumptions were in mind while undertaking this study:

- The respondents which were selected for the study were competent to equip proper responses to the queries included in the interview schedule.
- The information delivered by the respondents were believable. They expressed the take information.
- Opinions and views delivered by the rural women added in interview paper were the representative option and views of all the rural women of the study area.
- The researcher should be aware of the social and cultural environment. After all, the data collected by his from the respondents were free from bias.
- All the data concerning the variables of the study were normally and independently distributed.

1.6 Scope of the Study

The main focus of the study was extent of use of ITK for homestead vegetable production by rural women. The findings of the study will be applicable to the respondent of the 4 villages of Musuddi and Jodunathpur union under Dhanbari upazila of Tangail district. After all, the findings may also have synthesis to other areas of Bangladesh where the physical, socio-economic, cultural and geographical condition is similar with the study area.

The investigator believes that the findings of the study will reveal the phenomenon related to extent of use of ITK for vegetable production. These will be of special interest to the policy makers and planners in formulating and redesigning the extension programmers especially for homestead vegetable cultivation. The findings are expected to be helpful to the new researchers and different nation building departments and organizations to develop appropriate extension strategies for effective working with the rural peoples.

1.7 Limitations of the Study

The present study was undertaken with a view to have an understanding of the use of ITKs with homestead vegetable production by the rural women farmers. In order to conduct the research in a meaningful away, it became necessary to install some limitations in certain aspects of the study. Considering the time, money, labor and other important resources available to the researcher, the following limitations have been executed throughout the study:

- The study was confined to the 4 villages of Musuddi and Jodunathpur unions under Dhanbari upazila of Tangail district.
- Characteristics of the farmers were many and varied but only eleven characteristics were selected for investigation in this study.
- There is much indigenous technical knowledge cultivated by the women farmer in farming but only fifteen (15) indigenous technologies were selected for measuring the extent of their use.
- There were various women in the study area, but only the rural who were involved in homestead vegetables production activities were considered for this study.
- The documented ITKs were not based on scientific rationale.
- The researcher relied on the data decorated by the respondent from their memory during interview.

1.8 Definition of Key Terms

Absolute "terms" have been used in this research report that need to be defined properly so that the findings as well as other contents of the study report become well-clarified to its users.

Indigenous

Indigenous means innate, inborn. Indigenous refers to produced, growing, living, or occurring natively or naturally in a particular region or environment.

Technology

Technology refers to a design for instrumental action that reduces the uncertainty in the cause-effect relationship involved in achieving a desired outcome.

Knowledge

Straightly knowledge means knowing or what one knows about a subject, fact, person etc. Knowledge refers to the amount of facts or information about an idea, object or person which a person knows.

Rural Women

In this study, rural women were housewives living in village and engaged in homestead vegetable cultivation activities directly or indirectly.

Age

The Age of rural women was defined as the span of her life and was operationally measured by the number of years from her birth to the time of interview.

Education

Level of education referred as the numbers of years spent by the rural women in receiving formal education.

Family Size

Family size referred as the number of individuals in the family including herself, her husband, children and other dependent members who live and eat together.

Family Income

Family income was defined as the total number of members of her family from agriculture and other sources (services, business, labor etc.) during a year.

Farm Size

Farm size referred to the area of land owned by a woman or by her husband on which farming activities are carried out. It included the homestead area, own land under own cultivation , land given to others on borga, land taken from others on borga and land taken from others on lease which the farmers has got ownership upon and have the prospect of engaging in farming and she wishes.

Extension Media Contact

The term extension media contact refers to an individual access to or contact to the communication media and sources or any extension teaching methods being used for dispersion of new technologies among rural women.

Cosmopoliteness

Cosmopoliteness refers to the frequency of movement of a rural woman to a distant place from her own village.

Innovativeness

Innovativeness referred to the frequency to which a respondent was relatively earlier to accept innovations in terms of new ideas, practices and things than other members of her social system.

Agricultural Training

Agricultural training refers to the total number of days attended by the women in her life to the various agriculture related training courses.

Vegetable

The farm vegetable in this study, referred to the edible parts of plants such as root, steam, leaf, fruit etc. which are eaten as cooked food and green salad.

Homestead Area

In this study homestead area was referred as "A land adjacent area including garden, courtyard, and pond and threshing floor. The homestead area for this study was considered as the raised land in which the household had its entire dwelling which includes living rooms, kitchen, cattle shed, goat shed, front yard, court yard and the area under vegetables, fruit trees, backyard bushes, bamboo bunches etc.

Indigenous Technical Knowledge (ITK)

The idea of ITK can be defined by different terms by different researchers. The terms used are 'indigenous knowledge', 'traditional knowledge', 'indigenous technology', 'local knowledge system', 'farmer's ingenuity and wisdom', 'ethno science', 'local science', "traditional science', 'people's science', and 'village science. ITK in the present study refers to the sum total of knowledge and practices which are depend on

people's accrued experiences in dealing with situations and problems in different aspects of life, knowledge and practices are special to a particular culture. ITK may surround uncountable premises such as, agriculture, resource management, food nutrition, education, and so on.

CHAPTER II

REVIEW OF LITERATURE

In this Chapter to review some interconnected literature on this aspect from home and aboard. The interconnected reviews conveniently presented on the major objectives of the study as far as possible. The literatures have been organized into three major sections. First, concept, use and review mainly related to the indigenous technical knowledge used by rural women in homestead vegetable production. Second, past research findings related to the relationship between selected socio economic characteristics of the rural women and their extent of use of ITK in homestead vegetable production. The conceptual framework of the study is presented in the third section of this chapter.

2.1.1 Concept of ITK

The concept of ITK has been exposed by different terms by different researchers. The terms are known as 'indigenous knowledge', 'traditional knowledge', 'indigenous technology', 'local knowledge system', 'farmer's ingenuity and wisdom', 'ethno science', 'local science', "traditional science', 'people's science', and 'village science. However, some reviews relating to the concept of ITK have been presented below:

According to Prakash *et al.* (2009) "Indigenous Technical Knowledge (ITK) refers to the unique traditional local knowledge existing within and developed around the specific conditions by women and men indigenous to a particular geographic area. This indigenous technical knowledge that people in a given community have developed over time and continue to develop it, is based on human experiences on mass scale, dynamic and changing, tested in most cases over centuries of use, endowed with highest possible adaptability to local culture and environment and put greater weightage on minimizing risks rather than maximizing profit. The indigenous technical knowledge (ITK) covers a wide range of subjects, viz. crop production, livestock rearing, natural resource management, food preparation, healthcare, insect pest management and many other."

Sannigrahi, N. (2014) stated that 'When a knowledgeable old person dies, a whole library disappears' - an African proverb goes. The adjectival word 'indigenous' means

that ‘belonging to a place, native’ (Oxford English dictionary). The ITK is an integral part of the culture and history of a local community. It is evolved and refined through many years of regular experiments on the day to day life and the available resources surrounded by the community.

Swangla *et al.* (2021) stated that Indigenous Technical Knowledge (ITK) is the actual knowledge of a given population that reflects the experiences based on tradition and includes more recent experiences with modern technologies. Indigenous agricultural practices (IAPs) are an unwritten body of knowledge.

2.1.2 Use of Indigenous Technical Knowledge

In this section literature review relating to the use of indigenous technical knowledge in crop production. ITK is an important source of information about the local farming system, experiences, institutions, culture, history etc.

Sow and Ranjan (2021) found in their research in India that ITK have efficient effect on water management, soil conservation, nutrient management, disease control, pest management, grain storage, fishers and animal husbandry.

Hasan *et al.* (2014) conducted a study on “Farmer’s knowledge on vegetable pest and disease management.” In their interviews were employed for data collection from July to September 2011 randomly selected 100 farmers. The findings revealed that about one-third of the respondent farmers had good to excellent knowledge on vegetable pest and disease management, but majority of them had poor to fair extent of knowledge. They have been using some ITK like ash, cow dung, cattle urine, light trap, scarecrow etc. for managing vegetable pest and diseases.

Prakash *et al.* (2009) reported in their research title “Role of ITK in Conservation Agriculture: Blending Indigenous and Scientific Knowledge” in Meghalaya.

ITK can aid development efforts.

ITK can facilitate local people’s participation.

ITK is a valuable source of developing appropriate technologies.

Uddin *et al.* (2018) conducted a research on "Farmers' willingness to use innovative indigenous technical knowledge for plant protection in major crop zones of Bangladesh." On these, data were collected from selected 150 farmers from12 villages of Bogra, Jessore, and Comilla districts through a structured interview schedule. It was found that about seventy percent (68.67%) of farmers were willing to use innovative ITKs.

2.1.3 Review of Relevant Literature on Indigenous Technical Knowledge (ITK)

Sheheli (2003) conducted an investigation on indigenous faming technologies by a rural woman in Mymensingh. She stated that applying muddy soil collected from the bottom of the pond to improve the fertility of surface soil.

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Bangladesh. About fifty ITK were selected in his study area in Bagora District. Among the 50 identified indigenous knowledge systems, "setting up bamboo sticks, branches of trees etc., in rice fields to let the birds sit and eat away insects" reached the highest extent of use by the farmers. "soaking boro rice seeds in water for 1-3 days before sowing in the bed for rapid germination", "drying mature bottle gourds (Lagenaria vulgaris) in the sun and storing the seeds inside without rupturing the fruits" and "keeping rice seedlings under shed for 1-2 days before transplanting for the purpose of increasing tolerance" took the 2nd, 3rd and 4th position regarding the extent of use. Considering farmers' practicing category, the highest proportion (47.2%) of the respondents belonged to the low user as compared to 39.2% in the moderate user and 13.6% in the high user.

Kabir *et al*. (2013) studied on sustainable development strategies and challenges for promotion of IPM program in Bangladesh agriculture. The study identified challenges for this divergence are inadequate training, less effective dissemination techniques, few NGOs participation, lack of research, farmers' poor socio-economic profile, unfavorable attitude towards pesticide use and pitiable IPM disseminator and adopter ratio.

Uddin *et al.* (2003) conducted a study on ITK for plant protection in major crop zones of Bangladesh. Among 150 farmers they found that about 68.67% of the farmers willing to use ITK.

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that attitude towards vegetable cultivation and environmental awareness had significant positive relationship of the study.

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Poba upazila under Rajshahi district and Gabtoli upazila under Bogra district in Bangladesh. He found that the highest proportion (60.8%) of the respondents had a moderately favorable attitude towards ITKs practices as compared to 19.2% having slightly favorable and 20.0% highly favorable attitude towards ITKs in agricultural practices.

Kanak *et al.* (2015) studied on rural women's awareness on indigenous technical knowledge: case of northern Bangladesh. The finding reveals that the highest proportion (68.67%) of the respondents was moderately aware about ITKs application, whereas only 12.67 percent and 18.67 percent had low and high awareness, respectively.

2.2 Review of the Literature Concerning Contribution between Socio Economic Characteristics of the Rural Women and ITK

2.2.1 Age and ITK

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that the age of head of the family has no significant relationship with the study.

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Poba upazila under Rajshahi district and Gabtoli upazila under Bogra district in Bangladesh. He found that greater proportion of rural men were middle aged categories.

Kanak *et al.* (2015) studied on rural women's awareness on indigenous technical knowledge: case of northern Bangladesh. They found that level of age of the respondents has positive significant relationship with the study.

Nur-e-Firdouse (2003) studied on awareness of rural women on agricultural extension services in Mymensingh. She found that age of the rural women had no significant relationship with their awareness.

Sheheli (2003) studied on indigenous faming technologies by rural women in Mymensingh. She observed that age of rural women had negatively non-significant relationship with the extent of use of indigenous technologies.

Faruque (2002) conducted a study on use of ITK by the farmers in rice cultivation in Mymensingh. He stated that the use of ITKs increased with the increased age of farmers.

Hanif (2000) conducted an investigation on comparative analysis between FFS and non FFSS farmers regarding environmental awareness in Mymensingh. He found that there was a positive significant relationship between age of the respondents and their awareness on environmental pollution in case of farmer FFS.

Nahar (2000) found in her that there was no relationship between age of rural women and their participation in homestead vegetable cultivation, post-harvest practices, poultry rising and goat rearing, while the activities in vegetable, cultivation are mostly participated by the younger housewives.

Sutradhar (2002) observed that age of the respondents had no significant relationship with their awareness on environmental degradation.

2.2.2 Level of Education and ITK

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Bangladesh. He found that greater proportion of rural men were illiterate.

Kanak *et al.* (2015) studied on rural women's awareness on indigenous technical knowledge: case of northern Bangladesh. They found that level of education has positive significant relationship with the study.

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that level of education of the family has positive significant relationship with the vegetable pest and disease management

Sheheli (2003) reported that the level of education of the rural women had negatively non-significant relationship with their use of extent of ITK while she studying on ITK farming in Mymensingh.

Nur-e-Firdouse (2003) conducted a study on awareness of rural women on agricultural extension services. She found that academic qualification of the rural women had a significant positive relationship with their awareness.

Sutradhar (2002) studied on farmer awareness on modem agricultural technologies. He stated that academic qualification of the respondents had a significant positive relationship with their awareness on environmental degradation.

Faruque (2002) conducted a study on use of ITK by the farmers on rice cultivation in Mymensingh. The negative trend however, implied that high educated farmers used ITKs to a smaller extent.

2.2.3 Family Size and ITK

Sheheli (2003) studied on ITK by rural women in Mymensingh. She found in her study that family size of the rural women had a positive relationship with their extent use of ITK.

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that family size has positive significant relationship with the study.

Nur-e-Firdouse (2003) conducted a study rural woman on agricultural extension services. She found that the rural women with the large family size were less aware on agricultural extension service.

Sutradhar (2002) studied on farmer awareness on environmental degradation caused by the use of modem agricultural technologies. He reported that family size of the respondents had a significant positive relationship with their awareness on environmental degradation.

Faruque (2002) conducted a study on use of extent of ITK by the farmers in rice cultivation in Mymensingh. He stated that there was relationship between the family size and extent of use of extent of ITK.

2.2.4 Annual income and ITK

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that family dependency ratio of the family has positive significant relationship but per capita daily income of the family has no significant with the vegetable pest and disease management.

Kanak *et al.* (2015) studied on rural women's awareness on indigenous technical knowledge: case of northern Bangladesh. The finding reveals that annual family income has positive significant relationship with the study.

Sheheli (2003) studied on indigenous faming technologies by rural women in Mymensingh. She found in her study that annual income of the rural women had a positive relationship with their extent use of ITK.

Sutradhar (2002) studied on farmer awareness on environmental degradation caused by the use of modem agricultural technologies. He stated that annual income of the respondents had a significant positive relationship with their awareness on environmental degradation.

Hanif (2000) studied on between FFS and non FFSs Farmers regarding environmental awareness. He observed that in his study there was a negative insignificant relationship between annual income of the respondents and their awareness on environmental pollution.

2.2.5 Farm size and ITK

Sheheli (2003) studied on indigenous faming technologies by rural women in Mymensingh. She found in her study that farm size of the rural women had a positive relationship with their extent use of ITK.

Sutradhar (2002) studied on farmer awareness on modem agricultural technologies. He reported that farm size of the respondents had a significant positive relationship with

their awareness.

Mannan and Miah (2007) in their study about, "Present status of fruit cultivation and problems confronted by the farmers at Dighullia upazila of Khulna District" showed that the land size has negative trend of relationship with their problem confrontation.

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that farm size of the family has positive significant relationship with the study.

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Bangladesh. The finding reveals that greater proportion of rural men were small farmer category.

Kanak *et al.* (2015) studied on rural women's awareness on indigenous technical knowledge: case of northern Bangladesh. The finding reveals that farm size has positive significant relationship with the study.

2.2.6 Farming Experience and ITK

BARC (2006) conducted an investigation on Rural Development Prograrnme (RDP). It revealed that individual contact of rural women had significant influence of their improvement of Knowledge, attitude and skills through farming experience.

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Poba upazila under Rajshahi district and Gabtoli upazila under Bogra district in Bangladesh. The finding reveals that greater proportion of rural men have high level farming experiences.

2.2.7 Income from vegetables cultivation and ITK

Nurzaman (2000) studied on knowledge, attitude and practice of FFS and Non-FFS. He found that incomes of the rural women farmers had no relationships with their knowledge of the adoption.

Islam (2008) found that income from vegetable had a positive and substantial significant relationship with knowledge on vegetables production activities by woman members in homestead area under world vision project.

Haider (2005) observed that annual income had a positive relationship with knowledge and practice of IPM in vegetable cultivation.

2.2.8 Duration of training and ITK

Rahman (2001) found in study that training received of the farmers had a significant and positive relationship with their adoption regarding Aalok-6201 hybrid rice.

Islam (2002) conducted an investigation on study on agricultural practices under the supervision of Proshika. He reported that that agricultural training exposure of the farmers had no significant relationship with their adoption of ecological agricultural practices.

Haque (2003) observed that training received of the respondent had positive significant relationship with their adoption of modern maize cultivation technologies.

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that training experiences has positive significant relationship with the study.

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Bangladesh. He found that greater proportion of rural men were no organizational participation category.

Kanak *et al.* (2015) studied on rural women's awareness on indigenous technical knowledge: case of northern Bangladesh. The finding reveals that duration of training has positive significant relationship with the study.

2.2.9 Media Exposure and ITK

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Bangladesh. He found that greater proportion of rural men were medium communication exposure.

Khan (2002) studied on farmer's awareness on adverse effects of rice monoculture. He found that extension media contact of the farmers had a highly significant relationship with their awareness on rice monoculture.

Faruque (2002) conducted a study on use of ITK by the farmers in rice cultivation. He found that the extension media contact of the farmers were correlated to their extent of use of ITK in rice cultivation.

Sutradhar (2002) studied on farmer awareness on the use of modem agricultural technologies. He found that communication exposure of the respondents had a significant positive relationship with their awareness on environmental degradation.

Hanif (2000) found that in his study there was a positive significant relationship between extension contact of the respondents and their awareness on environmental pollution in case of farm field school farmers.

2.2.10 Cosmopoliteness and ITK

Nahar (2000) observed in her study that cosmopolitanism of the rural women had no significant relationship with their participation in homestead agriculture.

Khan (2002) found no relationship between cosmopoliteness of the farmers and adoption of recommended variety of jute and other vegetables.

Jahan (2014) found that there was a positive relationship between cosmopliteness of the farmers and their awareness of ITK.

Hasan *et al.* (2014) conducted a study on farmer's knowledge on vegetable pest and disease management. They found that social cooperation has no significant relationship with the vegetable pest and disease management.

Rahman (2012) conducted a study on practice of indigenous knowledge system by the farmers in maintaining ecosystem in Bangladesh. He found that greater proportion of rural men were medium cosmopoliteness category.

Kanak *et al.* (2015) studied on rural women's awareness on indigenous technical knowledge: case of northern Bangladesh. They found that cosmopoliteness has positive significant relationship with the study.

2.2.11 Innovativeness and ITK

Das *et al*. (2016) conducted an investigation on use of IPM practices of Kalia upazila in Narail. They revealed that IPM practices displayed a significant negative relationship with their use of IPM practices.

Uddin *et al.* (2003) conducted a study on use innovative ITK for plant protection in major crop zones of Bangladesh. They found that about seventy percent (68.67%) of farmers are willing to use innovative ITKs.

Islam (2002) conducted an investigation on a research study on adoption of modern agricultural technologies by the farmers of Sandwip. He found that innovativeness of the farmers had significant and positive relationship with their adoption of modern agricultural technologies.

Rahman (2005) observed that the innovativeness of the farmers had no significant relationship with their adoption of modern rice varieties

2.3 The Conceptual Framework of the Study

In this section tried to focus two concepts: first use of extent of ITK for homestead vegetable production by the farm women and the second their selected socioeconomic characteristics. A dependent variable may be affected and influenced through interacting forces of many characteristics in his surroundings area. It is mostly impossible to deal with all characteristics in a single study.

This study women farmers ‘use of extent of ITK for homestead vegetable production as dependent variable, which was influenced by selected socio economic characteristics of the women farmers as independent variables viz. age, education, family size, annual family income, farm size, experience in homestead vegetable production, income from vegetable cultivation, duration of training, media exposure, cosmopoliteness and innovativeness in vegetable cultivation.

Now the conceptual model of the study has been presented in figure 2.1

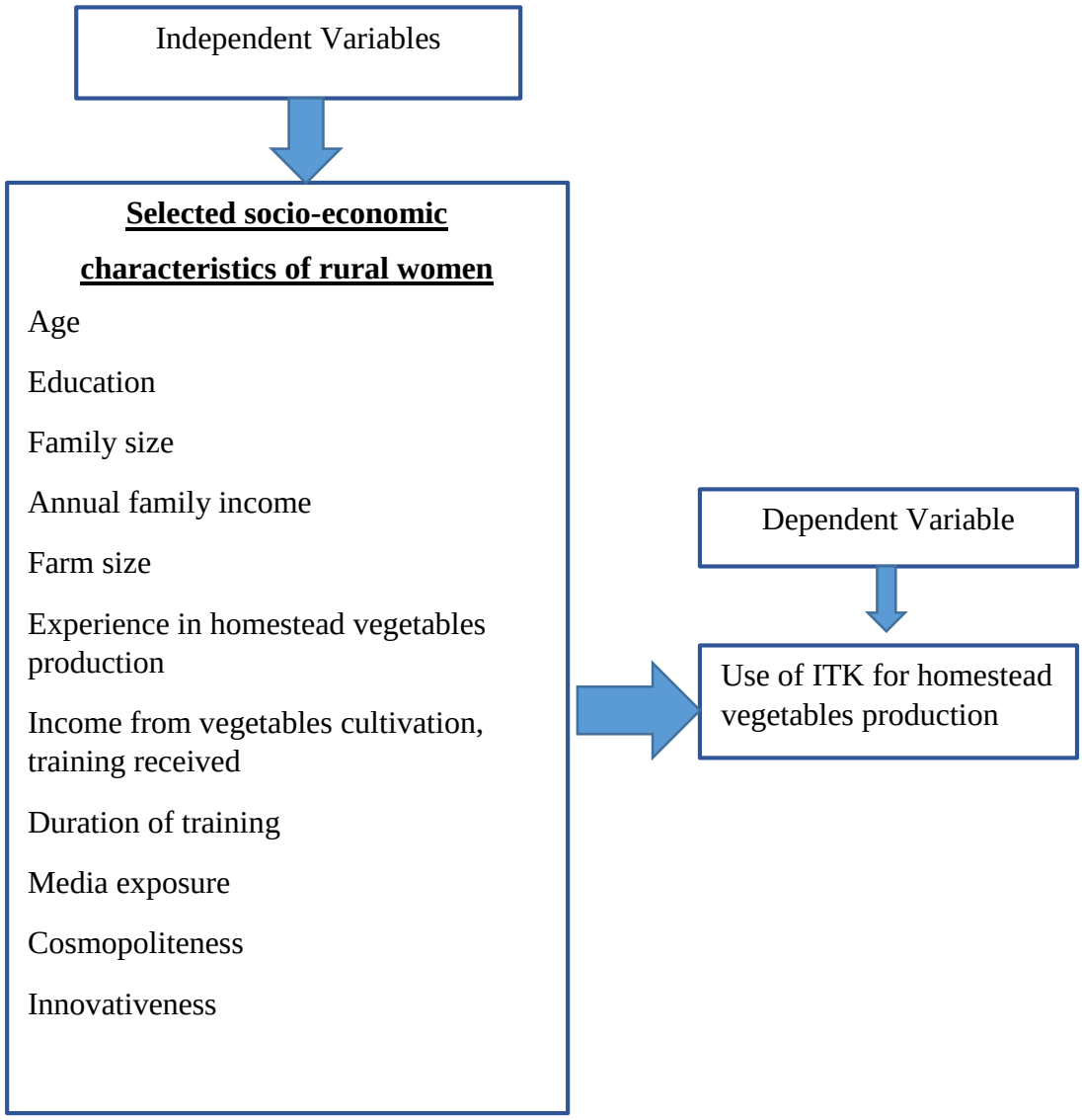

Figure 2.1 The conceptual framework of the study

CHAPTER III

METHODOLOGY

This Chapter deals with the procedures for the collection of valid information, procedure of data coding and data analysis. This part is separated into three sections. The first section impresses the diagram of research outline. The second section depictures the measurement of variables. At last, the third area depicts the strategies applied in data analysis. Now the sequential description of the methodologies that was followed in conducting this research work has been presented in this chapter under the following headings-

3.1 Research Design

3.1.1 Locale of the study

Dhanbari upazila under Tangail district has been selected purposively. Dhanbari upazila has seven (7) unions. Out of seven (7) unions, two (2) unions Mussiddi and Jodunathpur were selected purposively because of adequate number of women farmers. Musuddi and Jodunathpur unions have twelve (12) and fourteen (14) villages respectfully. Out of twelve (12) villages of Mussuddi union kamarpara and musuddi purbopara were selected randomly. And out of fourteen (14) villages of Jodunathpur union nollabazar and gopalbari were selected randomly. The population and sample size of four villages under two unions of Dhanbari upazila is mentioned in Table 3.1. A map of Bangladesh showing Tangail district and a map of Tangail district showing seven (7) unions considered as study area have been presented in Figure 3.1 and 3.2 respectfully.

Table 3.1 Population and sample size of the study

Union Name	Village Name	Population size	Sample size	Reserve list of farmers
Musuddi	Kamarpara	350	38	4
	Musuddi purbopara	250	28	3
Jodunathpur	Nollabazar	150	16	2
	Gopalbari	220	24	2
Total		**970**	**106**	**11**

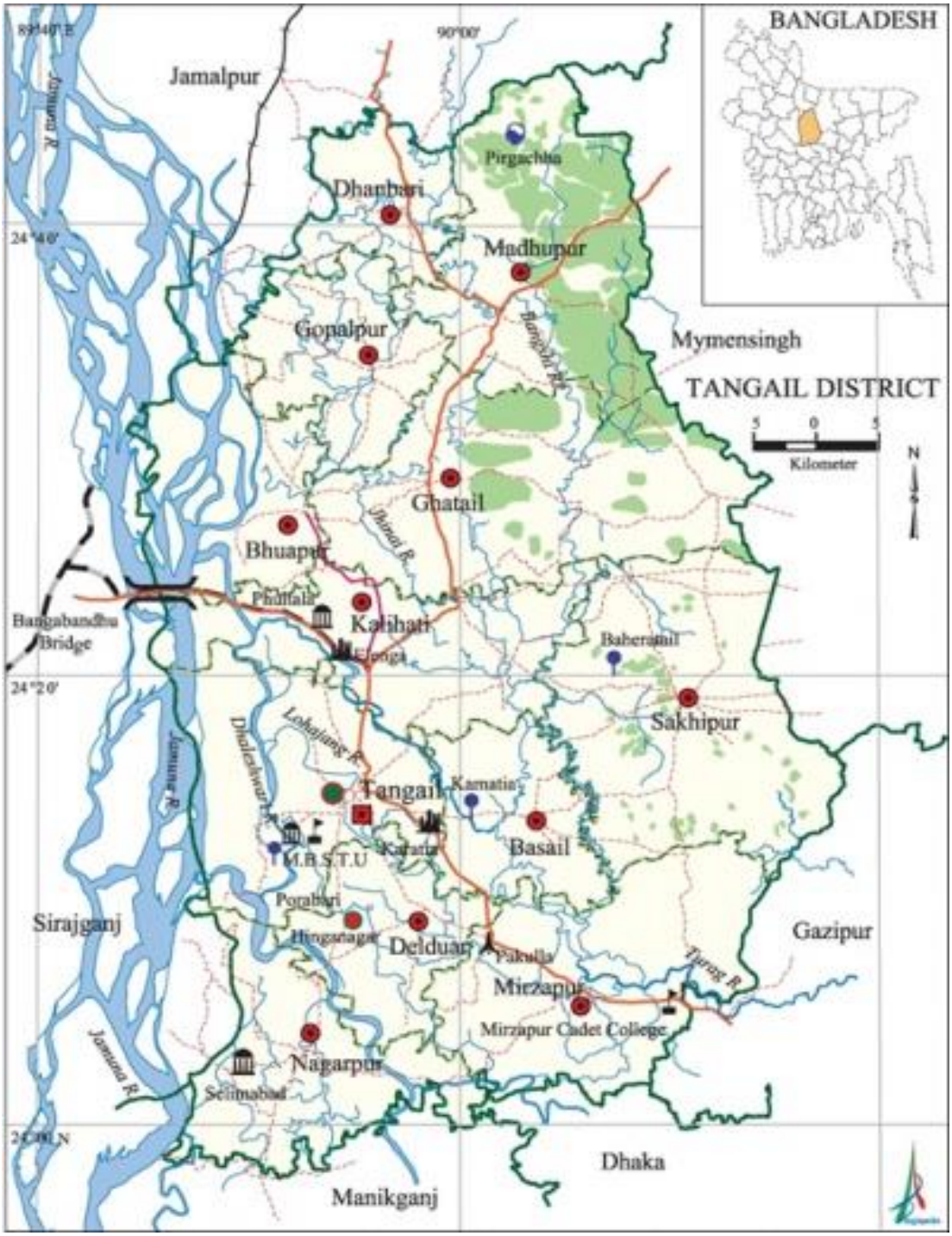

Figure 3.1 A map of Tangail district showing Dhanbari upazila

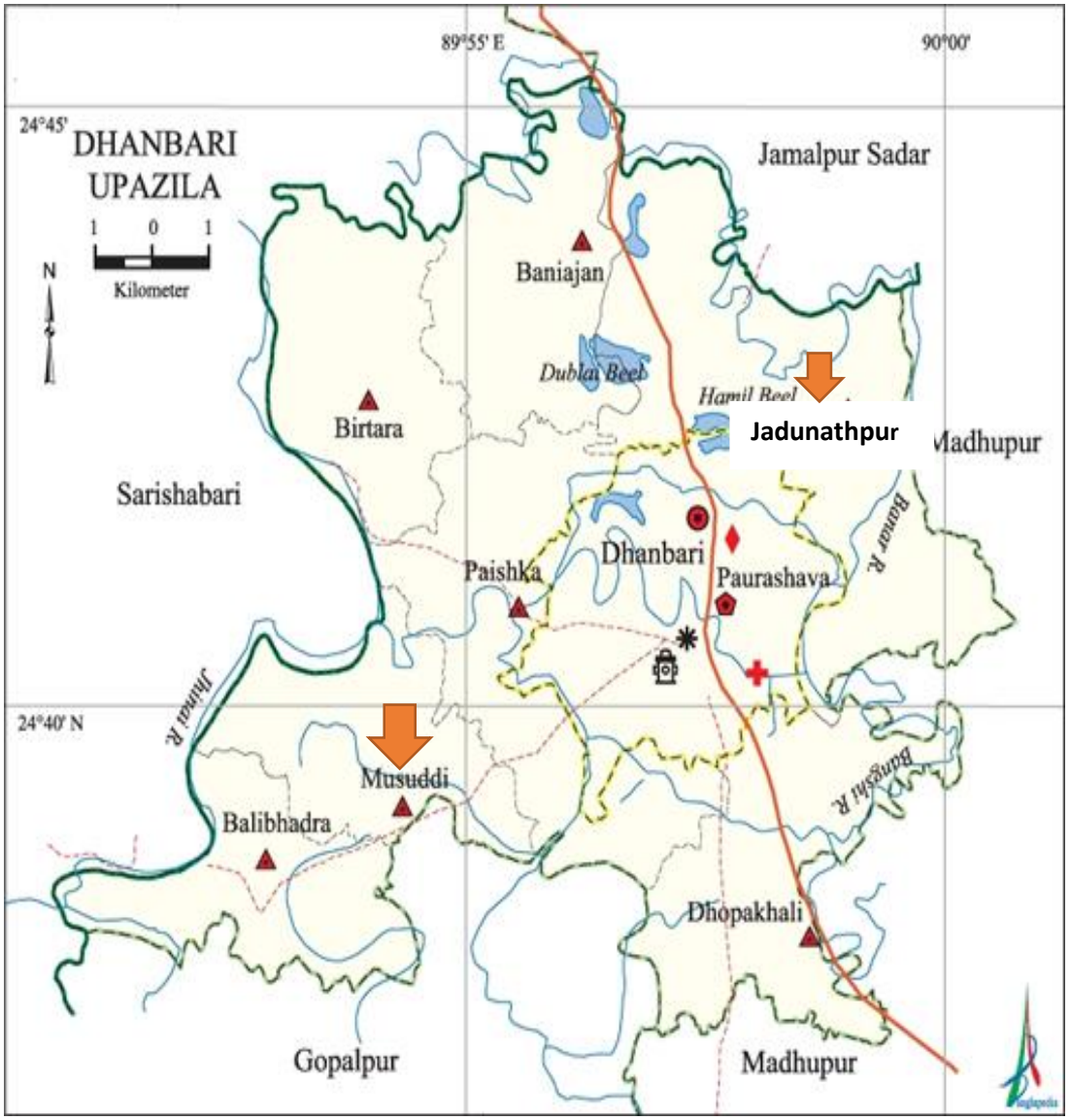

Figure 3.2 A map of Tangail district showing two unions under Dhanbari upazila

3.1.2 Population and sampling frame

An update list of vegetable cultivation women farmers of the selected area was collected from the local extension office. The total numbers of women farmers in four villages were 970. Out of which 106 farmers randomly selected using online sample size calculator considering 95% confidence interval of the total population. This is illustrated as follows (Table 3.1). All the respondents were informed beforehand to collect the data and data were collected in a face-to-face situation during a period from 15 September to 10 November, 2020.

3.1.3 Data collection instrument

Since the reasons for study were to test the hypotheses and measure the variances, a cross-sectional survey strategy was operationalized for this study. Henceforth, data was gathered utilizing an organized meeting plan. Remembering the targets, the study adjusted approved estimation things from earlier investigations, at whatever point conceivable. The beforehand prepared interview schedule was pre-tried and vital adjustments were completed. In most instances, closed form questions were used. Approved estimation things of each construct with their literature sources were exhibited in an English version of the interview schedule as joined in the Appendix-A.

3.1.4 Variables of the study

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. 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.

Two types of variables were used for this study:

i. **Dependent variable**: It is a variable that is the outcome or result or impact of different factors. This variable is frequently known as a criterion or reliant variable. The estimation of the reliant variable relies upon the estimation of alternate factors, that is, autonomous factors. In this study, “Use of Indigenous Technical Knowledge (ITK)” was considered as the reliant variable.

ii. **Independent variables**: These variables are regularly called as indicator variables or predictor variables. In a trial setting, a researcher needs to control the variable or acquaint another variable with see its impact on the criterion variable. In this study, selected ten (11) independent variables were selected. The independent variables were: age, education, family size, annual income, farm size, and experience in homestead production, Income from vegetable

cultivation, training received, media exposure, cosmopoliteness and innovativeness.

3.2 Measurement of Variables

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

3.2.1 Measurement of independent variables

The 11 characteristics of the women farmers mentioned above constitute the independent variables of this study. The following procedures were followed for measuring the independent variables

3.2.1.1 Age

Age of respondent homestead women farmers was measured by the period of time from their birth to the time of conducting interview and it was measured in terms of complete years on the basis of their response. A score of one (1) was assigned for each year age. This variable appears in item number one (1) in the interview schedule as presented in Appendix.

3.2.1.2 Education

Education was measured by assigning score against each successful year of schooling by a respondent. One score was given for passing each level in an educational institution. For example, if a respondent passed the final examination of class five or equivalent examination, his/her education score has given five (5). Each respondent 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 farmer 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 two (2) in the interview schedule as presented in Appendix.

3.2.1.3 Family size

Family size of an advise was determined by the total number of members in his/her family who live under same roof and share same kitchen including himself/herself, his/her wife/husband, sons, daughters and others fully or partially dependent on him/her. Total number of family members was considered as the family size score of a respondent. For example, if a respondent has four (4) members in his/her family,

his/her family size score was 4 (four). This variable appears in item number three (3) in the interview schedule as presented in Appendix.

3.2.1.4 Annual family income

Family income of a respondent was measured on the basis of total yearly earning from sum of agricultural source income (crop, livestock, poultry, fishers) and non-agricultural source of income (business, service, labor etc.) by the respondent herself and other family members. For calculation of income score, one (1) score was assigned for each one thousand taka (question no. 4 of the interview schedule). For example, if a respondent mentioned that her annual family income is Tk. 1, 75,000 then her annual family income score would be 175.

3.2.1.5 Farm size

Farm size of a respondent referred to the total area of land on which his family carried out the farming operation, the area being in terms of full benefit to the family. The term refers to the cultivated area either owned by the respondent or cultivated on share-cropping, lease or taking from other including homestead area. It was measured in hectares for each respondent using the following formula:

$$FS = A + B + \frac{1}{2}(C + D) + E$$

Where, FS = Farm size,

A = Homestead area,

B = Own land under own cultivation,

C = Land given from others as borga

D = Land taken to other as borga,

E = Land taken from others on lease,

The data was first recorded in terms of local measurement unit i.e. decimal and then converted into hectare. The total area, thus, obtained is considered as his farm size score (assigning a score of one for each hectare of land). This variable appears in item number three (5) in the interview schedule as presented in Appendix.

3.2.1.6 Experience in homestead vegetables production

Experience on the home stead vegetable production of the respondent was measured by the number of years a respondent engaged in homestead vegetable cultivation. The measurement included from the year of starting of first vegetables cultivation till the year of data collection. A score of one (1) was assigned for each year of experience. This variable appears in item number five (6) in the interview schedule as presented in Appendix-A.

3.2.1.7 Income from vegetables production

Profitability from vegetables production refers to the total financial return from sunflower production 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 six (7) in the interview schedule as presented in Appendix.

3.2.1.8 Training in homestead vegetable production

Training of a respondent was measured by the total number of days for which a respondent attended in different training programs on agriculture. If a respondent takes training for 7 days, he will get 7 scores. This variable appears in item number six (8) in the interview schedule as presented in Appendix.

3.2.1.9 Media exposure for ITK on homestead vegetable practices

Media exposure was measured as ones extent of contact to different information sources. Each respondent was asked to indicate his nature of contact for each of 7 selected media with five alternative responses was prepared for the respondents.

Following scores were assigned for each of 7 media.

Extent of exposure	Assigned Score
Not at all	0
Rarely	1
Occasionally	2
Often	3
Regularly	4

Thus, the media exposure contact scores of women farmers could range from 0 to 28. This variable appears in item number three (7) in the interview schedule as presented in Appendix.

3.2.1.10 Cosmopoliteness

Cosmopoliteness of a respondent was measured by computing a cosmopoliteness score. The cosmopoliteness score was assigned on the basis of places and frequency of her visit external to her own social system. The seven places including outside other village, other union, own upazila, other upazila, own district town and other district town and capital city. Cosmopoliteness score was computed in the following manner

Extent of Cosmopoliteness	Assigned Score
Not at all	0
Rarely	1
Occasionally	2
Frequently	3
Regularly	4

The cosmopoliteness score could range from 0 to 28. This variable appears in item number ten (07) in the interview schedule as presented in Appendix

3.2.1.11 Innovativeness

Innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in a social system. In this study, innovativeness of a respondent was measured on the basis of the earlier or later adoption of 7 improved agricultural practices. The scores were assigned on the basis of time required by an individual to adopt each of the practices in the following manner:

Level of Innovativeness	Assigned score
Do not use	0
Used within 5-6 years after hearing	1
Used within 3-4 years after hearing	2
Used within 1-2 years after hearing	3

The innovativeness score could range from 0 to 21. This variable appears in item number eleven (07) in the interview schedule as presented in Appendix.

3.2.2 Measurement of dependent variable

Use of indigenous technical knowledge (ITK) was measured by using fifteen (15) questions in shown in the item no. 12 of the interview schedule. Same score was assigned for each of the question.

Following scores were assigned for each of 15 ITK.

Extent of ITK	Score Assigned
Not at all	0
Rarely	1
Occasionally	2
Frequently	3
Regularly	4

Thus, the media exposure contact scores of women farmers could range from 0 to 60. This variable appears in item number twelve (15) in the interview schedule as presented in Appendix.

3.3 Hypothesis of the Study

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.

3.3.1 Research hypothesis

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

"Each of the 11 selected characteristics (age, education, family size, annual income, farm size, experience in homestead production, income from vegetable cultivation, training received, media exposure, cosmopolitanism and innovativeness on homestead vegetable production) on homestead vegetable producer's women farmers had significant influenced to the use on indigenous technical knowledge".

However, when a researcher tries to perform statistical tests, then it becomes necessary to formulate null hypothesis.

3.3.2 Null hypothesis

A null hypothesis states that there is no contribution between the concerned variables. The following null hypothesis was formulated to explore the contribution of the selected socio economic characteristics of rural women through ITK use for homestead vegetable production. Hence, in order to conduct tests, the earlier research hypothesis was converted into null form as follows:

"There is no contribution of the selected characteristics (age, education, family size, annual income, farm size, experience in homestead production, income from

vegetable cultivation, training received, media exposure, cosmopolitanism and innovativeness on homestead vegetable production) on ITK use."

3.4 Data Analysis

3.4.1 Editing

Raw data were appropriately explored for omitting errors. The researcher made a watchful scrutiny when he finished a meeting with the goal that all data were incorporated to encourage coding and tabulation.

3.4.2 Coding and tabulation

The researcher consulted with the research supervisor and co-supervisor, made a detailed coding plan. All responses were given in numerical score. The respondent responses were transferred to a master sheet to facilitate tabulation. In accordance with the objectives of the research, all of the data were tabulated.

3.4.3 Categorization of data

For coding operation, the collected data were classified into various categories. These categories were developed for each of the variables. The percentile function of SPSS v.25 was used to categorize the variables. The procedure and categorization of a particular variable were further discussed in the Chapter 4 in detail.

3.4.4 Method of data analysis

Both descriptive and inferential statistics were used to analyze the data. Descriptive statistics such as frequency distribution, percentage, range, mean, and standard deviation were used to present the general characteristics of the data set while inferential statistics like Multiple Coefficient of Regression (β) was used in order to test the proposed hypotheses. The SPSS v.25.0 was used to perform all these analyses.

Five (5%) percent level of significance was used to test the significance level of each hypothesis. If the computed value of (β) was equal to or greater than the designated level of significance, than the hypothesis was supported and it was concluded that there was a significant contribution of the independent variables to the dependent variable. And if the computed value of (β) is smaller than the designated level of significance than the hypotheses was not supported. Therefore, it assumes that there

was no significant contribution of the independent variables to the dependent variable. The results of the reliability and validity tests were given in chapter Four.

CHAPTER IV

RESULTS AND DISCUSSION

In this Chapter, the findings of the study and interpretation of the results have been presented. Data obtained from respondents through interview were measured, analyzed, tabulated and statistically treated according to the objectives of the study. These are presented in three sections according to the objectives of the study. The first section deals with the selected socio-economic characteristics of rural women the second section deals with the extent use of indigenous technical knowledge for homestead vegetable production by rural women the third section deals with the relationship between each of the selected characteristics of the rural women and their extent of adoption of ITKs in homestead vegetable cultivation

4.1 Selected Characteristics of the Rural Women

This section deals with the classification of the women farmers according to their various characteristics. Behavior of an individual is largely determined by his characteristics. These characteristics of an individual contribute to a great extent in the matter of shaping of his behavior. In this section, findings on the farmers' eleven selected characteristics have been discussed. The selected characteristics were age, education, family size, annual family income, farm size, experience in homestead vegetable, income from vegetable cultivation, training received, media exposure, cosmopoliteness, and innovativeness. Therefore, the major hypothesis of the study was the use of indigenous technical knowledge by women farmers for homestead vegetable production. Range, mean and standard deviations of these characteristics of the women farmers have been described in the following sub-sections. Summary profile of the characteristics of rural women (independent variables) is shown in Table 4.1.

Table 4.1 The salient features of the selected characteristics of the women farmers

Sl. No.	Characteristics	Measuring unit	Range		Mean	SD
			Possible	Observed		
1.	Age	Year	-	28-65	41.81	8.750
2.	Level of education	Year of schooling	-	0-12	5.585	4.3602
3.	Family size	No. of member	-	3-9	5.13	1.250
4.	Annual income	000' taka	-	70-260	146.59	48.480
5.	Farm size	Ha.	-	.12-1.37	.6297	.25944
6.	Experience in homestead vegetable production	No. of year	-	3-35	12.72	7.478
7.	Income from vegetable cultivation	000' taka	-	5-35	15.89	6.535
8.	Training received	No. of days	-	0-7	3.46	1.462
9.	Media exposure	Score	0-28	9-24	15.00	2.326
10.	Cosmopoliteness	Score	0-28	1-19	7.98	3.162
11.	Innovativeness	Score	0-18	6-18	14.66	2.491

4.1.1 Age

Age of the growers was found to range from 28 to 65 years. The average age was 41.81 years with the standard deviation 8.75. On the basis of age, the farmers were classified into three categories as shown in Table 4.2.

Table 4.2 Distribution of the women farmers according to their age

Category	Number of Farmers	Percent	Observed range	Mean	SD
Young age (up to 35)	33	31.1	28-65	41.81	8.75
Middle age (36 to 50)	56	52.8			
Old age (Above 51)	17	16.0			
Total	106	100.0			

Data presented in Table 4.2 indicate that the highest proportion (52.8 percent) of the respondents was in middle aged category compared to 16.0 percent old age and 31.1 percent young aged category. However, data also revealed that 83.9 percent of the growers in the study area were middle to young aged. The middle aged growers are the most productive group in ITK users in homestead vegetable production. The extension medium can make use of these views and opinions in designing their extension activities among young and middle aged growers.

4.1.2 Education

Education scores of growers ranged from 0 to 12. The average score was 5.58 with the standard deviation 4.36. Based on their score, the growers were classified into five categories as shown in Table 4.3.

Table 4.3 Distribution of the women farmers according to their education

Category	Number of Farmers	Percent	Observed range	Mean	SD
Cannot read and write (0)	15	14.2	0-12	5.58	4.36
Can sign only (.5)	22	20.8			
Primary level (1 to 5)	14	13.2			
Secondary level (6 to 10)	47	44.3			
Above secondary (above 10)	8	7.5			
Total	106	100.0			

Data presented in Table 4.3 indicate that a large proportion (44.3 percent) of the respondents fell under category of secondary education compared to 14.2 percent cannot read and write, 20.8 percent can only sign, 13.2 percent primary and only 7.5 percent above secondary education. However, data also revealed that 65.1 percent of the growers in the study area were secondary level to can sign only education. The secondary level growers are the most productive group in ITK users in homestead vegetable production. The extension agents can use the views and opinions when designing their extension activities secondary level growers.

4.1.3 Family size

The family size of the growers ranged from 3 to 9. The average score was5.85 with the standard deviation 4.36. On the basis of their family size, the growers were classified into three categories as shown in Table 4.4.

Table 4.4 Distribution of the farmers according to their family size

Category	Number of Farmers	Percent	Observed range	Mean	Std.
Small family (up to 4)	37	34.9	3-9	5.85	4.36
Medium family (5 to 6)	56	52.8			
large family (above 6)	13	12.3			
Total	106	100.0			

Data presented in Table 4.4 reveal that the highest proportion (52.8 percent) of the growers fell under the small family category compared to 34.9 percent small family and 12.3 percent large family category, respectively. This may be due to the effect of proper adoption of family planning measures and knowledge about family planning among the respondents or the prevalence of joint family planning among area.

4.1.4 Annual family income

The annual family income of the growers ranged from 70 to 260 (Thousand taka). The average score was 146.59 with the standard deviation 48.47. On the basis of their annual family income, the growers were classified into three categories as shown in Table 4.4.

Table 4.5 Distribution of the farmers according to their annual family income

Category	Number of Farmers	Percent	Observed range	Mean	SD.
Low income (up to 100)	28	26.4	70-260	146.59	48.47
Medium income (100 to 200)	63	59.4			
High income (above 200)	15	14.2			
Total	106	100.0			

Data presented in Table 4.6 show that the major portion of the respondents (59.4 percent) fell under medium income while 26.4 percent low income and 14.2 percent

were high income of the annual family income. Data also revealed that majority (88.8 percent) of the growers of the study area low to medium income. Thus, most of the growers were in possession of low and medium income. So, the extension agents can make use of these views and opinions in designing their extension activities medium income growers.

4.1.5 Farm size

The farm size of the growers in the study area ranged from 0.12 to 1.37 hectares (ha). The average farm size was .63 ha with the standard deviation .23. Based on their farm size, the growers were classified into three categories as shown in Table 4.5.

Table 4. 6 Distribution of the farmers according to their farm size

Category	Number of Farmers	Percent	Observed range	Mean	SD
Marginal Farm size (up to .20)	3	2.8	.12 -1.37	.629	.259
Small farm Size (.21 to 1.00)	97	91.5			
Medium farm Size (Above 1.00)	6	5.7			
Total	106	100.0			

Data presented in Table 4.6 show that the major portion of the respondents (91.5 percent) fell under small farm category while 2.8 percent marginal farm and 5.7 percent were medium farm. Data also revealed that majority (97.2 percent) of the growers of the study area small to medium farms. In their most of the farm size less than 1 hectare. Because of data were collected from the women farmers of homestead vegetable growers. On this area there is no landless farmer and small size farm. So, marginal, small and medium size farm were categorized. Thus, most of the growers were in possession of medium and small farms.

4.1.6 Experience in homestead vegetables production

The experience in homestead vegetable production of the growers in the study area ranged from 3 to 35 years. The average experience was12.72 years with the standard deviation 7.48. Based on their farm size, the growers were classified into three categories as shown in Table 4.5.

Table 4.7 Distribution of the farmers according to their experience in homestead vegetables production

Category	Number of Farmers	Percent	Observed range	Mean	SD
Low experiences (up to 6)	20	18.9			
Medium experiences (7 to 19)	60	56.6	3-35	12.72	7.48
High experiences (above 19)	26	24.5			
Total	106	100.0			

Data presented in Table 4.7 show that the major portion of the respondents (56.6 percent) fell under medium experience category while 24.5 percent high experience and 18.9 percent were low experience. Data also revealed that majority (81.1 percent) of the growers of the study area medium to high experience. Thus, most of the growers were in possession of medium to high experience. So, the extension agents can make use of these views and opinions in designing their extension activities medium experience growers.

4.1.7 Income from vegetable cultivation

The Income from vegetable cultivation of the growers ranged from 5 to 35 (Thousand taka). The average score was 15.88 with the standard deviation 6.53. On the basis of their Income from vegetable cultivation, the growers were classified into three categories as shown in Table 4.8.

Table 4.8 Distribution of the women farmers according to their income from vegetables cultivation from homestead vegetable production

Category	Number of Farmers	Percent	Observed range	Mean	SD
Low income (up to 10)	33	31.1	5 -35	15.88	6.53
Medium income (11 to 21)	60	56.6			
High income (up to 21)	13	12.3			
Total	106	100.0			

Data presented in the Table 4.8 show that the major portion of the respondents (56.6 percent) fell under medium income while 31.1 percent low income and 12.3 percent were high income under homestead vegetable production. Data also revealed that majority (87.7 percent) of the growers of the study area low to medium income. The

women farmers who were medium income are the most ITK users. . Thus, most of the growers were in possession of low and medium income. So, the extension agents can make use of these views and opinions in designing their extension activities medium income growers.

4.1.8 Training received in homestead vegetables production

Duration of the training of the respondents varied from 0 to 7 with a mean of 3.46 and a standard deviation of 1.46. The respondents were classified into three categories based on their training experiences scores: low training (0-2), medium training (3-4) and high training (above 4). The categories and the distribution of the farmers according to their training received in sunflower cultivation are shown in Table 4.9.

Table 4.9 Distribution of the women farmers according to their training received in homestead vegetables production

Category	Number of Farmers	Percent	Observed range	Mean	SD
Low training (up to 2)	24	22.6	0-7	3.46	1.46
Medium training (3 to 4)	55	51.9			
High training (above 4)	27	25.5			
Total	106	100.0			

Data presented in Table 4.9 indicate that the highest proportion (51.9 percent) of the respondents received medium training compared to about 22.6 percent of them having low training and 25.5 percent having high training. Data also revealed that majority (77.4 percent) of the growers of the study area medium to high training. Thus, most of the growers were in possession of medium and high training. So, the extension agents can make use of these views and opinions in designing their extension activities medium training growers.

4.1.9 Media exposure

Media exposure of the respondents varied from 9 to 24 with a mean of 15.00 and a standard deviation of 2.33. The respondents were classified into three categories based on their media exposure scores: low media exposure (0-13), medium media exposure (14-17) and high media exposure (above 17). The categories and the distribution of the farmers according to their media exposure in homestead vegetable production are shown in Table 4.10.

Table 4.10 Distribution of the women farmers according to their media exposure in homestead vegetables production

Category	Number of Farmers	Percent	Observed range	Mean	SD
Low media exposure (up to 13)	24	22.6	9-24	15.00	2.33
Medium media exposure (14-17)	69	65.1			
High media Exposure (above 17)	13	12.3			
Total	106	100.0			

Data presented in Table 4.10 indicate that the highest proportion (65.1 percent) of the respondents received medium media exposure compared to about 22.6 percent of them having low media exposure and 12.3 percent having high media exposure. Data also revealed that majority (87.7 percent) of the growers of the study area low to medium media exposure. Thus, most of the growers were in possession of low and medium media exposure.

4.1.10 Cosmopoliteness

Cosmopoliteness of the respondents varied from 1 to 19 with a mean of 7.98 and a standard deviation of 3.16. The respondents were classified into three categories based on their cosmopoliteness scores: low cosmopoliteness (0-5), medium cosmopoliteness (6-11) and high cosmopoliteness (above 11). The categories and the distribution of the farmers according to their cosmopoliteness in homestead vegetable production are shown in Table 4.11.

Table 4.11 Distribution of the women farmers according to their Cosmopoliteness in homestead vegetable production

Category	Number of Farmers	Percent	Observed range	Mean	SD
Low cosmopoliteness (up to 5)	24	22.6	1-19	7.98	3.16
Medium cosmopoliteness (6 to11)	72	67.9			
High cosmopoliteness (above 11)	10	9.4			
Total	106	100.0			

Data presented in Table 4.11 indicate that the highest proportion (67.9 percent) of the respondents received medium cosmopoliteness compared to about 22.6 percent of them having low cosmopoliteness and 9.4 percent having high cosmopoliteness. Data

also revealed that majority (90.5 percent) of the growers of the study area low to medium cosmopoliteness. Thus, most of the growers were in possession of low and medium cosmopoliteness. So, the extension agents can make use of these views and opinions in designing their extension activities medium cosmopoliteness growers.

4.1.11 Innovativeness

The computed innovativeness scores of the respondents ranged from 6 to 18 with an average of 14.66 and standard deviation of 2.49 against the possible range of 0 to 21. On the basis of innovativeness scores, the respondents were classified into three categories: low innovativeness (up to 12), innovativeness (13- 17) and high innovativeness (above 17). The distribution of the respondents according to their innovativeness is shown in Table 4.12.

Table 4.12 Distribution of the women farmers according to their innovativeness in homestead vegetables production

Category	Number of Farmers	Percent	Observed range	Mean	SD
Low innovativeness (up to 12)	19	17.9	6-18	14.66	2.49
Medium innovativeness (13 to 17)	73	68.9			
High innovativeness (Above 17)	14	13.2			
Total	106	100.0			

Data presented in Table 4.12 indicate that the highest proportion (68.9 percent) of the farmers had medium innovativeness while 13.2 percent had high innovativeness and the proportion of respondents having low innovativeness was 17.9 percent. The findings of the study indicate that most of the respondents had medium and low innovativeness with various technology of adoption in homestead vegetable production. Medium innovativeness farmers are the most use of ITK users for homestead vegetable growers. So, the extension agents can make use of these views and opinions in designing their extension activities medium innovativeness growers.

4.2 Use of Indigenous Technical Knowledge (ITK) for Homestead Vegetables Production

Indigenous technical knowledge for home stead vegetable production score was found to range from 26 to 49. The average score was 38.09 with a standard deviation of 4.43. Based on the scores of ITK of vegetable production, the farmers were classified into three categories as low ITK users (up to 33), medium ITK users (34 to 42) and high ITK users (above 42). The distribution of the respondents according to their use of ITK for homestead vegetable production has been presented in Table 4.13.

Table4.13 Distribution of the farmers according to their use of indigenous technical knowledge for home stead vegetables production

Category	Number of Farmers	Percent	Observed range	Mean	Std.
Low ITK users (up to 33)	13	12.3	26-49	38.09	4.43
Medium ITK users (34 to 42)	78	73.6			
High ITK users (above 42)	15	14.2			
Total	106	100.0			

Table 4.13 revealed that the highest proportion (73.6 percent) of the respondents had medium, while 12.3 percent had low users and the rest 14.2 percent had users of ITK for homestead vegetable production. It also reveals that an overwhelming majority (87.8 percent) of the farmers had medium to high users of ITK for at the study area. Homestead vegetable production by women farmers makes family nutritionally sufficient. More than the products are mostly free from chemical activities and fresh. By the use of ITK farmers can easily cultivate the homestead vegetables. Now days the cost of modern agriculture is increasing day by day which lead the women farmers use of ITK for vegetable production in the study area.

4.3 Contribution between each of the Selected Characteristics of the Rural Women and Their Use of ITK in Homestead Vegetables Production

In order to determine the relationship of socio-economic characteristics of homestead vegetable producers to their use of indigenous technical knowledge, regression analysis was carried out which is presented in Table 4.14.

Table 4.14 Multiple regression co-efficient of the selected characteristics of the rural women with their use of indigenous technical knowledge in homestead vegetables production

Dependent variable	Independent variables	β	*p*	R^2	Adj. R^2	F
Use of ITK for homestead vegetables production	Age	.167	.272	.397	.327	5.64
	Level of education	-.009	.935			
	Family size	-.223	.030*			
	Annual income	.021	.884			
	Farm size	-.131	.362			
	Experience in homestead vegetable production	-.001	.992			
	Income from vegetable cultivation	.067	.468			
	Training received	.027	.778			
	Media exposure	.278	.022*			
	Cosmopoliteness	.253	.015*			
	Innovativeness	.223	.072			

* Significant at $p < 0.05$

Among the eleven hypothesized relationships, three (3) variables namely family size, media exposure, cosmopolitanism were found significantly contribution to the **use** of indigenous technical knowledge in homestead vegetable production (Table 4.17) while rest of the variables showed no significant contribution. All the factors jointly contribute 39.7% of the variance of the adoption ($R^2 = 0.397$). Each predictor may explain some of the variance in respondents' of ITK user's women farmers by chance. The adjusted R^2 value (0.327) penalizes the addition of extraneous predictors in the model, but values of 0.327 still show that the variance in respondents' of ITK users women farmers can be attributed to the predictor variables rather than by chance, and that both are suitable models (Table 4.13). In summary, the models suggest that the respective authority should consider the respondents 'cosmopolitanism and extension media contact on farm women increase for the improvement of homestead vegetable production.

4.3.1 Significant contribution of family size in use of ITK for home stead vegetables production by women farmers in Dhanbari upazila under Tangail district

The relationship of family size in use of ITK for home stead vegetable production by women farmers by testing the following null hypothesis; "there is no contribution of family size in use of ITK for homestead vegetable production by women farmers in Dhanbari upazila under Tangail district."

The p-value of the concerned variables was found .030. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of the family size was at 5% significance level.
b. So, the null hypothesis could be rejected.

Farmer's family size had negative influence on ITK user's farmers' in homestead vegetable production. It had the negative significant (significant at $p<0.030$) contribution on their vegetable production. It could be said that sometimes indigenous technical knowledge were not accepted by small family compared to large family and they might face obstacles to take new decision for going outside from indigenous technical practices considering benefit.

4.3.2 Significant contribution of media exposure in use of ITK for home stead vegetables production by women farmers in Dhanbari upazila under Tangail district

From the multiple regression, it was concluded that the relationship of media exposure in use of ITK for home stead vegetable production by women farmers by testing the following null hypothesis; "there is no contribution of media exposure in use of ITK for home stead vegetable production by women farmers in Dhanbari upazila under Tangail district."

The p-value of the concerned variables was found .022. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of the media exposure was at 5% significance level.
b. So, the null hypothesis could be rejected.

Women farmer's extension media contact for ITK practices had positive influence on homestead vegetable production and. This implies that with the increase of extension media contact of the women farmers will increase with their use of ITK on homestead vegetable production. Based on the above finding, it can be said that women farmers were interested media exposure on ITK practices for homestead vegetable production by women farmers in Dhanbari upazila. So, media exposure on ITK practices has significantly contributed to the women farmers for homestead vegetable production.

4.3.3 Significant contribution of cosmopoliteness in use of ITK for home stead vegetable production by women farmers in Dhanbari upazila under Tangail district

From the multiple regression, it was concluded that the relationship of cosmopolitanism in use of ITK for home stead vegetable production by women farmers by testing the following null hypothesis; "there is no contribution of cosmopolitanism in use of ITK for home stead vegetable production by women farmers in Dhanari upazila under Tangail district."

The p-value of the concerned variables was found .015. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

c. The contribution of the cosmopolitanism was at 5% significance level.
d. So, the null hypothesis could be rejected.

Women farmer's cosmopolitanism for ITK practices had positive influence on homestead vegetable production. This implies that with the increase of cosmopolitanism of the women farmers will increase with their use of ITK on homestead vegetable production. Based on the above finding, it can be said that women farmers are interested in cosmopolitanism and by this they share their ideas and experience on ITK for homestead vegetable cultivation with others.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with the summary of findings, conclusions and recommendations of this study. Regression analysis was used to test the proposed hypotheses using SPSS v.25. In this chapter, the summary of this study is presented.

5.1 Summary of the Findings

The major findings of the study are summarized below:

5.1.1 Selected factors influencing the use of ITK for homestead vegetables production

Age

The middle aged sunflower farmers comprised the highest proportion 52.8 percent followed by old aged category 16.0 percent and the proportion were made by the young aged category 31.1 percent.

Education

Farmers under secondary education category constituted the highest proportion (44.3 percent) compared to 14.2 percent cannot read and write category, 13.2 percent primary level and 20.8 percent can only sign category. On the other hand the lowest (7.5 percent) belonged to above secondary level category.

Family size

Greater the half (52.8%) of the respondent had medium family compare to 12.3 % and 34.9% had large and medium family size.

Annual family income:

The highest proportion of the respondent (59.4 percent) had medium income while 26.4 percent had low income and only 14.2 percent had high income.

Farm Size

The small land holder constituted the highest proportion (91.5 percent) of the farmers followed by 2.8 percent with marginal land holder and remaining 5.7 percent with medium land holder.

Experience in homestead vegetables production

The highest proportion (56.6 percent) fell under medium experience category while 24.5 percent high experience and 18.9 percent were low experience.

Income from vegetables cultivation

The medium income constituted the highest proportion (56.6 percent) of the women farmers while 31.1 percent low income and 12.3 percent were high income under homestead vegetable production.

Training received in homestead vegetables production

The highest proportion (51.9 percent) of the women farmers received medium training compared to about 22.6 percent of them having low training and 25.5 percent having high training.

Media Exposure

Medium media exposure constituted the highest proportion (65.1 percent) of the women farmers compared to about 22.6 percent of them having low media exposure and 12.3 percent having high media exposure.

Cosmopoliteness

The highest proportion (67.9 percent) of the women received medium cosmopoliteness compared to about 22.6 percent of them having low cosmopoliteness and 9.4 percent having high cosmopoliteness.

Innovativeness

The highest proportion (68.9 percent) of the farmers had medium innovativeness while 13.2 percent had high innovativeness and the farmers' having low innovativeness was 17.9 percent.

5.1.2 Use of (ITK) for homestead vegetables production

The highest proportion (73.6 percent) of the respondents had medium, while 12.3 percent had low users and the rest 14.2 percent had high users of ITK for homestead vegetable production.

5.1.3 Contribution between each of the selected characteristics of the rural women and their use of ITK in homestead vegetables production

Family size, media exposure and cosmopoliteness had significant relationship with the use of ITK in homestead vegetable production. Age, education, annual family income, farm size, experience in homestead vegetable production, income from vegetable cultivation, training received and innovativeness had no significant relationship with the use of ITK in homestead vegetable production.

5.2 Conclusions

Conclusions drawn on the basis of the findings of this study and their logical interpretation in the light of the other relevant factors are furnished below:

1. Women farmers have been use different types of ITK for homestead vegetable production in various extents. There were 73.6 % medium, 12.3 % low and 14.2 % high extent of use of ITK respectfully. Therefore, it may be concluded that different ITK used by the farm women were moderate at the study area.
2. Family size of the farmers showed a significant negative relationship with the homestead vegetable women farmers. There are about half (52.8%) of the respondent had medium family compare to 12.3 % and 34.9% had large and medium family size. However, may be concluded that most of the farmers belonged under the medium family size group.
3. The findings indicate that the highest proportion (67.9 percent) of the women received medium cosmopoliteness compared to about 22.6 percent of them having low cosmopoliteness and 9.4 percent having high cosmopoliteness. Therefore, high cosmopoliteness percentage is comparatively low.
4. There are medium media exposure constituted the highest proportion (65.1 percent) of the women farmers compared to about 22.6 percent of them having low media exposure and 12.3 percent having high media exposure. So, majority (87.7 percent) of the women farmers belonged low to medium extension contact of women farmer’s categories.

5.3 Recommendations

From the discussion and finding of the present study, the following recommendations were made:

5.3.1 Recommendations for policy

i. A majority (87.8 percent) of the women farmers had medium to high use of ITK for homestead vegetable production. All the sample women farmers were more or less involved in homestead vegetable production yet their use of ITK practices were found to moderate. Therefore, it may be recommended that necessary steps should be taken to further increase the use of ITK for homestead vegetable production.

ii. Family size of the women farmer had significant negative relationship with the use of ITK. Therefore, it may be recommended that necessary steps should be taken by the concerned authority, so that the women farmers especially those who have small family labor could use ITK for homestead vegetable production.

iii. The findings had a significant positive relationship between the media exposure and use of ITK for homestead vegetable production by farm women. So, it may be recommended that the extension workers of the concerned authority should increase the contact with women farmers personally and motivate them to be connected with electronic and printed media that can help them to exchange related information which will reduce their problems and encourage them to use more ITK in their farming.

iv. Cosmopoliteness of the women farmers had positive significant relationship with their use of ITK for homestead vegetable production. If the cosmopoliteness increases the use of ITK for homestead production will also increase. Therefore, steps should be taken so that women farmers could increase their access to outside their own community. A mobile or ICT based platform could reasonably address their issues and help to overcome women farmer's low mobility.

5.3.2 Recommendations for further studies

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. This study investigated the use of ITK for homestead vegetable production by farm women of Dhanbari upazila under Tangail district. Therefore, it was a small and limited research has been conducted in the present study cannot provide much information related to this aspect. Further studies should be undertaken to cover more information in the relevant matters. So the following suggestions were given for further research:

- ✓ It is difficult to determine the all socio-economic characteristics of the women farmers of Dhanbari upazila. Measurement of ITK users of the women farmers is not free from questions. So, more reliable measurement of concerned variables is necessary for further study.
- ✓ The present study was conducted only in four villages of Dhanbari upazila under Tangail district. Findings of the study need further investigation through similar research in other parts of the country.
- ✓ The study investigated the relationship of eleven characteristics of the homestead vegetable production by farm women. So it is recommended that further study would be carried out with other dependent and independent variables.
- ✓ The study was carried out on female farmers but male farmers are equally important. So, a similar study may be carried out with male farmers.

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APPENDIX-A

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 Indigenous Technical Knowledge by the Farm Women for Homestead Vegetables Production

Serial No:……

Name of the respondent:…….

Village:…… Union: .....

Upazila:…….. District:……..

Mobile No:……..

(Please answer the following questions put tick wherever necessary)

1. Age: How old are you?.....years

2. Education: Please mention your educational status.

(a) Can't read or write----

(b) Can sign only----------

(c) Read up to class ----------

(d) Others (specify).....

3. Family size: Please mention the members of your family members (including yourself)

A. Male .....numbers

B. Female.....numbers

Total A+B=.....

4. Annual family income:

Please indicate your annual income (Thousand Taka) from the following different sources

SL No.	Source of Income	Total price (Tk)
Agricultural Source		
01	Crop	
02	Livestock	
03	Poultry	

04	Fisheries	
Sub-Total (A)		
Non-agricultural source of income		
01	Business	
02	Service	
03	Labor	
04	Others (If any)	
Sub-total (B)		
Total (Sub-Total A + Sub-Total B)		

5. Farm Size: Please mention the area of your land according to tenure status.

SL. No.	Type of land	Land Area	
		Local Unit	Hectare
A.	Homestead land		
B.	Own land under own cultivation		
C.	Land given to others on borga		
D.	Land taken from others on borga		
E.	Land taken from others on lease		
Total=A + B + 1/2(C + D) + E			

6. Experience in homestead vegetable production: How many years have you been involved in homestead vegetable production? …….....year(s).

7. **Income from vegetable cultivation**: Please mention your annual income from vegetable cultivation. …… (Thousand Taka)

8. Duration of training: Have you received any training related to homestead vegetables cultivation? Yes/No

If yes, please mention the name the following ones:

SL. No.	Name of the training course	Name of the organization	Days
01			
02			
03			

8. Media exposure: Please indicate the nature of your contact with the following information media.

SL. No	Media of Sources	Nature of visit				
		Regularly	**Often**	**Occasionally**	**Rarely**	**Not at all**
01	Progressive farmers/Neighbors	More than 7-8times/ month	5-6times/ month	3-4 times/ month	1-2 times / month	
02	Input dealers	More than 4 times/ month	3 times/ month	2 times/ month	1 time/ month	
03	Sub- Assistant Agriculture Extension Officer	More than 5 times /month	4-5 times /month	2-3 times/ month	1 time /month	
04	Agriculture extension officer	More than 6 times/year	5-6times/ year	3-4 times/ year	1-2 time/ year	
05	NGO workers	More than 5 times /month	4-5 times/ year	2-3 times/ year	1 time/ year	
06	Listening vegetables production programmed in Radio	More than5 times /month	4-5 times/ month	2-3 times/ month	1 time/ month	
07	Watching vegetable production programmed in TV	More than 5 times / month	4-5 times/ month	2-3 times/ month	1 time/ month	

8. Cosmopoliteness

Please mention your frequency of visit to the following places

SL. No.	Place of visit	Frequency of visit				
		Regularly	**Frequently**	**Occasionally**	**Rarely**	**Not at all**
01	Visit to other villages	More than 4 times/month	3-4 times/ month	2-3 times/ month	1 time/month	
02	Visit to other union	More than 5 times/month	4-5 times/ month	3-4 times/ month	1-2 times/ month	
03	Own Upazila Sadar	More than 4 times/month	3-4 times/ month	2-3 times/ month	1 time/ month	
04	Other Upazila Sadar	More than 3 times/ month	2-3 times / month	2 times/ month	1 time/ month	

05	Own district town	More than 4 times/month	3-4 month / month	2-3 times/ month	1 time/month	
06	Other district town	More than 3 times/month	2-3 times/ month	2 times/ month	1 time/ month	
07	Capital city (Dhaka)	More than 3 times/ year	2-3 times/ year	2 times/ year	1 time/ year	

9. Innovativeness: Please mention how many years after first hearing you use the following new technologies. Put (√) in appropriate place.

SL. No	**Practices/ Methods**	**Level of innovativeness**			
		Used just after hearing/seeing	**Used within 1-2 years after hearing**	**Used within 3-4 years after hearing**	**Do not use**
01	Use of high yielding variety (HYV) vegetable seed				
02	Use of IPM (Integrated Pest Management)				
03	Use of improved pest management system				
04	Use of modern fertilizers, pesticides				
05	Use of bio-fertilizer				
06	Use of sex pheromone trap to control insects				
07	Use of light trap to control insects				
Tolal =					

10. Extent of the use of Indigenous Technologies (ITs) in homestead vegetables production: Please indicate the extent to which you use the following technologies.

SL. No	Indigenous technical knowledge by the women farmers for homestead vegetables production	Extent Use of				
		Regularly	Frequently	Occasionally	Rarely	Not at all
01	Seeds are soaked in water for some time before sowing in the bed for rapid germination					
02	Using farmyard manure in the crop field					
03	Application of ash to control aphid					
04	Setting scarecrow in the field for controlling rodents/ aphids					
05	Use of neem extract as pesticides					
06	Select mature and healthy seeds for better growth and maximum yield of crop					
07	Setting up bamboo sticks, branches of trees etc. in vegetable field to let the birds sit and eat away insects					
08	Applying of poultry manure for better growth of plant					
09	Residues of crop are burned in the field					
10	Use of banana leaves and straw for preparation of seed germination bed					
11	Use of banana straw for the new plants from the protection of sun heat					
12	Use of earthen pot for seed preservation					
13	Dry properly seed for preservation					
14	Garlic-potato intercropping to reduce pest attack					
15	Hand pollination in cucurbit					

Thank you for your cooperation

.....

Signature of the

Interviewer with date