ENTREPRENEURIAL CAPACITY OF WOMEN IN RURAL BANGLADESH: THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

ROMANA AFROSE

Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University

Dhaka-1207

DECEMBER, 2018

ENTREPRENEURIAL CAPACITY OF WOMEN IN RURAL BANGLADESH: THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

BY

ROMANA AFROSE

Registration No. 11-04392

A Thesis

Submitted to the Faculty of Agribusiness Management

Sher-e-Bangla Agricultural University, Dhaka

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

IN

DEVELOPMENT AND POVERTY STUDIES

SEMESTER: JULY-DECEMBER, 2018

Approved by:

Md. Mahbubul Alam, PhD
Supervisor &
Professor
Department of Agricultural Extension
and Information System
Sher-e-Bangla Agricultural University

Dr. Mohammad Mizanul Haque Kazal
Co- Supervisor &
Professor
Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University
Dhaka-1207

Dr. Ashoke Kumar Ghosh
Associate Professor & Chairman
Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University
Dhaka-1207

ডেভেলপমেন্ট এন্ড পোভার্টি স্টাডিজ বিভাগ
শেরেবাংলা কৃষি বিশ্ববিদ্যালয়
শেরেবাংলা নগর, ঢাকা-১২০৭, বাংলাদেশ
টেলিফোন: +৮৮-০২-৪৪৮১৪০৫৩

Dept. of Development and Poverty Studies
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207, Bangladesh
Telephone: +88-02-44814053

CERTIFICATE

This is to certify that the research work entitled, **"Entrepreneurial Capacity of Women in Rural Bangladesh: The Role of Information and Communication Technology (ICT)"** conducted by **ROMANA AFROSE, bearing Registration No. 11-04392 (July-Dec/2018)** under my supervision and guidance in the partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE (M. S.) IN DEVELOPMENT AND POVERTY STUDIES** in the Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka 1207, Bangladesh. 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 this study has been dully acknowledgement by her.

Dated: December, 2019

Dhaka, Bangladesh ----------

Md. Mahbubul Alam, PhD
Supervisor & Professor
Department of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Dhaka-1207

Devoted to

My

Beloved Parents

ACKNOWLEDGMENT

First of all, I would like to thank the Almighty Allah, the most merciful and compassionate, the most gracious and beneficent to Whom every praise is due and to his prophet Mohammad (SM) who is forever a torch of knowledge and guidance for humanity as a whole with whose delighting the present and endeavor beautiful. All praises are due to the omnipotent, omnipresent, and omniscient Allah, who enables me to pursue my higher studies in 'Development and Poverty Studies and to complete the research work and this thesis successfully for the degree of Master of Science in Development and Poverty studies.

Second, I would like to pay ineffable gratitude to my supervisor **Md. Mahbubul Alam, PhD,** Professor, Department of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka-1207, for his ever-inspiring guidance, keen interest, scholarly comments and scholastic and constructive suggestions throughout the research work and preparation of the thesis. I am deeply indebted to and grateful for his prompt, comprehensive feedback, encouragement, and patience throughout the research undertaken for this thesis.

I am especially grateful to my respected Co-supervisor, **Dr. Md. Mohammad Mizanul Haque Kazal**, Professor, Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka-1207, for his proper guidance and co-operation during the research work and preparation of thesis.

I am also highly thankful to **Dr. Ashoke Kumar Ghosh**, Chairman, Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka, for his necessary help and co-operation during the whole study period.

I am highly grateful to all of my honorable teachers of Sher-e-Bangla Agricultural University, for their valuable teaching, direct and indirect advice, encouragement, and co-operation during the whole study period.

I would like to give thanks to all of my friends and well-wishers for their support and inspiration during my work. I feel proud to express my sincere appreciation to my

dear younger sister for her cooperation and dedication to help me out to conduct the surveys when traveling different upazilas.

I found no words to thank my parents for their never-ending affection and continues support, their sacrifices, and untiring efforts to fulfill my dream of higher education. They were a constant source of inspiration in the critical moments of my studies.

The Author

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ABBREVIATION AND ACRONYMS

AVE	Average Variance Extracted
BWCCI	Bangladesh Women Chamber of Commerce and Industry
CEO	Chief Executive Officer
DoI	Diffusion of Innovation
GDP	Gross Domestic Product
GNI	Gross National Income
IT	Information Technology
ICT	Information and Communication Technology
ICR	Internal Consistency Reliability
MMS	Multimedia Message Service
PFI	Problems Faced Index
R & D	Research and Development
SDG	Sustainable Development Goal
SEM	Structured Equation Modelling
SME	Small and Medium Enterprise
SMS	Subscriber Identity Module
SPSS	Statistical Package for Social Service
SAU	Sher-e-Bangla Agricultural University
PLS	Partial Least Square
WWW	World Wide Web

ENTREPRENEURIAL CAPACITY OF WOMEN IN RURAL BANGLADESH: THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

ROMANA AFROSE

ABSTRACT

Entrepreneurship development can play a pivotal role in ensuring women's right to equality and an adequate standard of living, and it should be the prime agenda in every development discourse. Women entrepreneurs in rural areas particularly in developing countries, continually be confronted by their Information and Communication Technology (ICT) use at home and office, which is often characterized by a number of deficiencies. Therefore, the key concern of this study was to determine the effect of selected entrepreneurial factors and ICT factors on the entrepreneurial capacity of women in rural areas. A conceptual model of the study was proposed. Data were collected from the selected women entrepreneurs (127) from two upazilas of Gazipur district and one upazila of Manikganj district using a structured interview schedule during 15th August-15th September, 2019. Data were analyzed by partial Least Square-based Structural Equation Modeling (PLS-SEM) using SmartPLS v2.0 M3 whereas the constraints faced by women entrepreneurs in running their business were analyzed qualitatively. Result revealed that the entrepreneurial capacity of women was positively influenced by perceived innovativeness followed by pro-activeness and explained 45.9 percent of the variance of entrepreneurial capacity, while self-dependency, risk-taking propensity were found to be non-significant. Two antecedents, ICT use for communication and ICT use for collaboration, positively influenced the extent of ICT use and jointly explained 20.3 percent of the variance of the extent of ICT use. Although these two variables significantly influence ICTs use, this research did not find any contribution of ICT use to the entrepreneurial capacity. Concerning the constraints faced by women entrepreneurs, 'resource-related constraints' and 'physical damage' were most frequently reported by respondents. Finally, this study proposed several theoretical and practical recommendations about improving women's entrepreneurial capacity in rural areas.

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Bangladesh is a resource-limited and overpopulated country where society is highly stratified, services and opportunities are determined by gender, class and location. Women make nearly half of the population which means huge potential to be utilized for socio-economic development of the country. Women have been contributing in many ways starting from crop production, harvesting, processing to livestock and poultry rearing. Entrepreneurship is one another way which can assist women in contributing more to their families and societies. It helps them to be proactive in addressing numerous social challenges, provides them the platform to take advantage of the opportunities for collective growth, and above all, allows them to voice their concerns and the ability to solve those challenges.

Rural women's economic and social development is necessary for the overall economic development of the society and nation. Particularly, it directly relates to the Sustainable Development Goal (SDG) 5 (Gender Equality) and indirectly affects SDG 10 (Reduced Inequalities), and SDG 1 (No Poverty). Women throughout history have proved their entrepreneurial skills, managerial skills in and out of the house, which however, have been neglected in men dominating society. Entrepreneurship is facilitating more job opportunities especially for women in small and medium enterprises. Women entrepreneurship, especially in rural areas, is relatively a new phenomenon across the world. Women entrepreneurs have become important players in the entrepreneurial landscape. Nowadays the Women of Bangladesh are a no more only homemaker but they owned businesses, and their involvement in the small and medium businesses is increasing day by day. Now women in some rural areas are running their own business and yet again proving their leadership skills. While women's entrepreneurship contributes positively towards achieving the overall social development and their empowerment, more needs to be done for women entrepreneurs so they can access more opportunities such as higher growth sectors, export, international markets through financing, capacity development, networks, entrepreneurial education, and Information and Communication Technologies (ICTs).

ICT offers essential tools for business set-up and effectiveness. It can help women entrepreneurs to overcome some of the challenges, including time constraints (due to women's multiple roles and responsibilities), social stigma, low physical mobility, and limited access to finance, education, skills training, information, and existing as well as potential markets.

ICT generally refers to a range of communication systems, devices, applications, and services (such as mobile phones, computers, and the Internet), which offers powerful tools to change and foster new economic opportunities for women. For micro and small enterprises, the use of ICT has led not only to better business performance but also better living conditions. It can also be particularly effective in loosening constraints for women in enterprise development. However, women lag behind men in access to technology and use ICT differently.

1.2 Statement of the Problem

Entrepreneurship is considered as the vehicle of economic development, and it has been recognized for its importance in the area of job creation, revenue generation, poverty alleviation and wealth creation (Josiane 1998). The importance of entrepreneurship integration of the people in a nation cannot be overemphasized; women who have been under-appreciated for a long time in developing economies. Women play essential and dynamic roles in economic life; they adapt easily to change and are very creative. As agents of development in all societies women play tremendous roles through creativity and innovations both in the formal and informal sectors, although prevalent in the informal sector. Women are therefore becoming increasingly important in the socio-economic development of both developed and developing economies as they account for a significant percentage of the operators of Small and Medium Enterprises (Kjeldsen and Nielson, 2000). Women entrepreneurs make a substantial contribution to national economies through their participation in start-ups and their growth in small and medium businesses. Women entrepreneurship contributes more than 50% to Gross Domestic Product (GDP) of most nations, both developed and less developed. Its contributions to economic development have been predominantly in the area of job creation, poverty alleviation, environmental vitality, wealth creation and human capital (Ojo, 2006). Women entrepreneurs make a substantial contribution to entrepreneurship development. However, the realization of these potential contributions has been flawed by a lot of challenges. Despite the

potential contributions of women entrepreneur towards entrepreneurship development, entrepreneurship in Bangladesh has continued to perform below expectation and hence the expected role women entrepreneur will play towards entrepreneurship development has been constrained by challenges women entrepreneurs face such as Government regulations, gaining access to finance, lack of access to information technology, lack of access to control property, family dependence, restriction to family business with limited leadership role, which has been the cause of the failure of many women entrepreneurship. In the context of developing countries, ICTs have become very useful business tools especially for women entrepreneurs' capacity development. Use of ICT can play a very enabling role in unlocking the potential of women in general, and women entrepreneurs in particular. ICTs also appears to have much potential for rural women who lack access to business-related information, services, and opportunities that are much easily available to the urban population. In this regard, innovative use of ICTs can contribute to expedite the growth of the economy by engaging women in productive activities and importantly it can also contribute to the economic empowerment of women in the country. It can provide effective tools to support economic activities especially mobile phones, computers, and the Internet, which have become essential to develop business and enhance competitiveness. In particular, the high penetration of mobile phones in developing countries and the increased affordability of internet services have brought about unprecedented opportunities for people to leverage these technologies to start and grow businesses. As a business tool, ICT can ease access to information to help set up or grow a business, including vital information on markets, suppliers, and producers. It can reduce the cost of transferring money or enable access to financial services, allowing the development of more tailored and responsive financial products. ICT can be an especially powerful tool to support women entrepreneurs and reduce women-specific barriers to their businesses. These technologies can help overcome time and mobility constraints; ease access to formal financial services; increase access to information, skills training, and personalized advice; and enable participation in business networks. The study focused on assessing the contributions of different entrepreneurial factors as well as ICT factors towards entrepreneurship development in rural areas of Bangladesh.

1.3 Research Questions

The major research questions of this study were:

- What are the socio-demographic characteristics of women entrepreneurs?
- What is the extent of women's entrepreneurial capacity, and to what extent the selected factors impact that entrepreneurial capacity?
- What are the constraints that negatively affect women's entrepreneurial capacity in rural Bangladesh?

With regard to the previously mentioned questions, the researcher embraced a study entitled "Entrepreneurial capacity of women in rural Bangladesh: The role of Information and Communication Technology (ICT)."

1.4 Specific Objective of the Study

Based on the research questions of this study, the following specific objectives have been formulated to guide the research.

- To describe the selected socio-economic characteristics of women entrepreneurs,
- To determine the extent of women's capacity in terms of entrepreneurial capacity,
- To determine the contribution of the selected entrepreneurial- and ICT-related factors that influence women's entrepreneurial capacity,
- To identify and explore the severity of the constraints that the women frequently faced about entrepreneurship.

1.5 Rationale of the Study

Rural women's economic and social development is necessary for the overall economic development of society and nation. Women throughout history have proved their entrepreneurial skills, managerial skills in and out of the house yet they have always been neglected in a men dominating society. Entrepreneurship is facilitating more job opportunities to the unemployed especially women in small and medium sector industries in many countries. The emergence of women entrepreneurship is relatively a new phenomenon all over the world. Female entrepreneurs have become

important players in the entrepreneurial landscape. Nowadays, women of Bangladesh are no more the only homemaker; their involved businesses in the small and medium sector are increasing day by day. At present, many women in some rural areas are found running their businesses and yet again proving their leadership skills. Entrepreneurial capacity is one of the major contributing factors to the formation, growth, and development of women entrepreneurship. It promotes self-reliance and brings about initiatives. Moreover, they can contribute to their families economically. In this regard, ICTs have provided a wide range of opportunities for the development of women entrepreneur. It is a powerful catalyst for the political and social empowerment of women and the promotion of gender equality. Women are increasingly adopting ICTs for various business-related tasks like preparing letters and memos, producing a report, data storage and retrieval, budgeting, planning, and analyzing problems and alternatives. ICTs have been a dominant force in women's development since they offer and foster communication, which enhances the exchange of relevant information for marketing, purchasing and also knowledge creation and dissemination. Therefore, the study would enable the policymakers to prepare plans, which would address women's concerns and develop projects/schemes where the hidden potential could be utilized fully for the development of the economy.

1.6 Significance of the Study

An entrepreneur is an important constituent of the development process and an integral part of the socio-economic transformation process. Full participation of all sections of the population including women is important for the development of a society. Entrepreneurship development among women can be considered a possible approach to economic empowerment of women. Generally, when people are empowered to create and manage their own business, it is possible to create wealth, jobs, individual and collective well-being becomes a reality**.** The entrepreneurial capacity of rural women and their access and usage of ICT tools is very important for the empowerment and development of women entrepreneurship. In the past, women were only considered for household work and were left outside the mainstream of development. In today's Bangladesh, the scenario has not changed much. But with the advent of ICT, this conservative outlook about women is diminishing gradually. ICT is not only creating employment for women but also creating a chance for them to

emerge as entrepreneurs especially in SME. Women are encouraged to take initiatives to invest in ICT and they are also improving their competence using ICT as an entrepreneur in different sectors. For example, Grameen Telecommunications has an explicit goal of helping Grameen Bank members shift from relatively low-yield traditional ventures, like animal husbandry, into the technology sector by creating micro-enterprises that can both generate individual income and provide whole village phones. Women in Bangladesh are now acquiring more bargaining power as they are exposed to ICT specially the World Wide Web (WWW) through mobile phones, computers, the Internet. Their role in the family affairs, especially in decision-making, are no longer ignored. Now women earn for their family employing ICT and this substantial revenue stream has elevated the women positions in their households and the society they belong.

1.7 Limitation of the Study

Since the study is empirical research based on field-work through the interviews of women of two Upazilas of Gazipur district and one Upazila of Manikganj district, Bangladesh, it has some obvious limitations. These are as follows:

- Data collection through primary source or interview was a time-consuming matter. The respondents, a few instances, were found non-cooperative with the interviewers.
- Present study enclosed rural women's entrepreneurship capacity and how ICT influences their entrepreneurial capacity in three upazilas of two districts. A large number of women workers outside the place were out of the purview of the present study. Therefore, this may not reflect the total picture of Bangladesh relating to the study.
- Gathering information from some of the women was sometimes very difficult and extremely time-consuming. They did not give enough time to the interviewers as they were found busy with their business as well as their household matters.
- Further, it observed that respondents tended to disclose lower income and higher expenses. They might think that this would help them to get more credit. This found to be a limitation of this study.

- Because of time and resource constraints, conducting a comprehensive study in full depth and width has not been possible.

  The survey was conducted with a relatively smaller sample size that might limit the generalizability of the findings.

1.8 Definition of the Terms

This study intended to determine the entrepreneurial capacity of women and the salient factors that might affect entrepreneurship. Before further discussion, some key concepts and definitions of the terms are presented in this section.

Concepts	Definition
Information and communication technologies (ICTs)	In general, ICTs refers to as communication technologies which include computers, the Internet, geographical information systems, mobile phones as well as the traditional electronic media like radio, television and e-newspaper (Ajani, 2014; Balaji, Meera & Dixit, 2007). However, this is study, mobile phones, computers, and the Internet were considered as ICTs.
Internet	The internet is an interconnected network of thousands of networks and millions of computers using standardized communication protocol (TCP/IP). It is a network of computer networks that connect billions of webpages. The internet carries an extensive range of information resources and services, such as e-mail, apps, shopping, instant messaging, music, videos and news (Laudon and Traver, 2014).
SMS	SMS means Short Message Service. This is a feature of a mobile phone that allows a user to send or

	receive text message or any kind of information.
MMS	MMS means Multimedia Message Service. This is method of transmitting graphs, videos or sound files, etc.
Entrepreneurship experience	It referred to one's entire duration of business from the date of first starting the entrepreneurship business till the date of the interview.
ICT ownership	ICT ownership refers to as a respondent's possession of ICT devices like mobile phones, computers/laptops and the Internet.
ICT use for communication	The degree to which a user believes that using ICTs helps make business communication (*Johanessen, et al*. 1999).
ICT use for collaboration	The degree to which a user perceives that using ICTs help them to collaborate with others (e.g. business partners) (*Johanessen, et al*. 1999).
Perceived innovativeness	Shoemaker (1971) defines innovativeness as "the degree to which an individual is relatively earlier in adopting an innovation than other members of his system. Unlike Shoemaker, this study defines innovativeness as perceived innovativeness which is the degree to which a woman entrepreneur believes her enterprise is relatively innovative in terms of accepting new changes and applying new ideas for entrepreneurial development (adapted from Norasmah *et al.*, 2006; Noraishah, 2003).
Proactiveness	The degree to which an entrepreneurs develop new

	products and attempt to find new opportunities in a highly uncertain environment or actively endeavors to secure a leading/discriminative position in a newly created market (Kim, 2015).
Self-dependency	One's beliefs on her ability to control the initiation and continuation of work behavior and process (Spreitzer, G.M. 1995).
Risk taking propensity	The degree to which a person willingly pursues opportunities in an uncertain situation accepting any risks involved (Jung, 2015).
Entrepreneurial capacity	An individual's ability to acquire, assimilate and use information/knowledge in order to entrepreneurial development.

1.9 Organization of the Thesis

The study enclosed with seven chapters. The current chapter is the introduction and the next chapter provides a brief review of the literature. Chapter third deals with the methodology and analytical technique of the study. In chapter four, the socio-economic characteristics of women entrepreneurs are presented. In chapter five, enablers of women's entrepreneurial capacity are presented. Constraints regarding running the entrepreneurship business are presented in chapter six. Finally, a summary of the findings, conclusion and recommendations are presented in chapter seven.

CHAPTER II

REVIEW OF LITERATURE

The main purpose of this Chapter is to review the past research works that are pertinent to this study. First, this Chapter focuses on theoretical perspectives under which major concepts are defined and discussed. These include entrepreneurs and entrepreneurship, entrepreneurship development in Bangladesh, the importance of women entrepreneurship, ICT and women entrepreneurship. Second, the practical evidence of some related studies are presented. It focuses on findings from previous studies concerning entrepreneurs' capacity development and the role of entrepreneurial as well as some ICT enabled factors on the development of women's entrepreneurial capacity.

2.1 Concept of Entrepreneurship

Entrepreneurship is important for the support of small and medium enterprises (United Nations, 2006). Entrepreneurship is a process that involves a willingness to rejuvenate market offerings, innovate, risk-taking, trying out of new and uncertain products, services, markets and being more proactive than competitors towards exploring new business opportunities (Wiklund and Shepherd, 2005).

Since the dawn of the twenty-first century, the importance of entrepreneurship started to be recognized as an element of promoting economic growth so that the researches for finding how entrepreneurship contributes to the growth have become active. The definitions mainly used for the studies related to entrepreneurship are as following: "seizing an opportunity "regardless of available resources" (Stevenson and Jarillo, 1986); "the way of inferring, "thinking and behaving focusing on overall approach and specific leadership based on the importance of recognizing the opportunities" (Timmons, 1999); and "the spirit of challenge and adventure that commercializes the opportunities seized at risk" (Peter F. Drucker 1998). Meanwhile, Hisrich and Peters (1998) described entrepreneurship as a discernment that an enterpriser considers necessary, rather than defining it as his/her psychological state. Song (2011) defines the term as an enterpriser's will to create a new business through management innovation by showing his/her challenging spirit. Park and Ahn (2016) explained to the young CEOs that entrepreneurship is an important factor in improving their business performances, and they need to expend the effort to cultivate their business

competency. Although the definition of entrepreneurship varied depending on the situations which individual business, country or generation faced, the definition mainly used for recent studies is Miller's (1983) concept of definition which states that entrepreneurship is a behavior that re-combines or re-distributes resources with innovativeness, enterprising spirit and risk-taking mind to create a new value. The core of entrepreneurship is a positive energy that challenges or changes existing conventions by acutely responding to the changing environments with an innovative and creative mind. Cultivating entrepreneurship for young people will be effective in solving the problems concerning youth unemployment, low and falling economic growth rates while contributing to economic growth**.**

The concept of entrepreneurs has been variously defined, but all the definition mostly discuss some common types of traits such as, in some definition, the activities carried out by whom are entrepreneurs, risk-taking or capital investing by whom are entrepreneurs, or certain psychological characteristics possessed by whom are entrepreneurs. So, an entrepreneur is an individual who takes moderate risks and brings innovation. According to J.B. Say (1803), 'entrepreneur is an economic agent who unites all the means of production'. The entrepreneur is the person who creates a new business in the face of risk and uncertainty to achieve profit and growth by identifying opportunities and assembling the necessary resources to capitalize on them. According to Khanka (2002), an entrepreneur can be defined as a person who tries to create something new, organizes production and undertakes risks, and handles economic uncertainty involved in the enterprise. So finally, the women who took the initiative of starting enterprises, who shouldered all the risks as well as financial, administrative and social responsibilities as owner-managers fully in charge of their businesses, are the women entrepreneurs.

2.1.1 Development of women entrepreneurship

Entrepreneurship is about facing risks, understanding the bigger picture of opportunities as well as challenges, developing something new, or rediscovering some older ideas, and designing new ways of combining resources, with the end goal of accruing financial and, at times, social gains. Evidence shows that entrepreneurship can positively contribute to an individual's and society's development, to empower the marginalized, to usher in stability and prosperity for any country or region. An entrepreneur, whether male or female play important role in a particular economy.

Women entrepreneurship development has been recognized as important because of the contributions of women entrepreneurs to the economic development of developing and less developed countries. Their versatile role towards growth and development has always been neglected but now a day's women are not only involved in household activities. They take part in numerous activities to make an economic contribution to their family along with their male counterparts. Entrepreneurship development can help women-owned businesses generate more income, which then can be used to support their households and improve their family welfare outcomes (Thomson, 2002). They can support themselves and their families through the income they receive from their entrepreneurial activities. Women entrepreneurship in Bangladesh has witnessed many a transformation. Initially, business ventures were taken up by the educated upper class men who invested their own money to build fortunes. Then educated women followed and a few have made a significant mark over the years. Many uneducated women today are enthusiastically raising family incomes through micro ventures and reinvesting their earnings in their families and communities. These women also inspire other women in their localities to pursue their dreams through entrepreneurship at the grassroots level. Even though they do not undertake their businesses at a commercial level, they are breaking barriers and inspiring other women to become self-reliant.

Women now have access to and control over income and working conditions. This has empowered them for full involvement and participation in economic, social and political policymaking that might result in changes in gender inequality and discrimination especially in the labor market. All these leads them to gain self-confidence, self-esteem and greater control over their life. The increase of women's prominence in entrepreneurship has a positive contribution to the country's GDP and Gross National Income (GNI) (Kantor, 1999). This sector of business and its entrepreneurial characteristics are viewed by many to be central to innovation and are considered the engine of economic growth. Although politically, there are few women in a political position. Encouraging enterprise will considerably help to reduce the disparities between women and men increase their autonomy and allow them to play a more active role in the political and economic life of their country (Thomson, 2002). So it can be said that entrepreneurship helps women to effectively manage their dual role as career women and as mothers at home.

2.1.2 Perspective of women entrepreneurship in Bangladesh

Entrepreneurial culture is a key pre-requisite for the economic wellbeing of a country. Expanding the level of entrepreneurial activity within all nations is an increasingly important political and economic goal, especially for developing countries (Levenburg, and Schwarz, 2008). The stable economic success of a country, in the largest degree, depends on the entrepreneurial culture that nourishes a proper entrepreneurial environment wherein entrepreneurs can use their potentiality to the fullest extent. It could be mentioned here that in 2019, 49.40% of the population of Bangladesh is women (World Bank report, 2019). So the development of women entrepreneurship demands more importance in the present situation in Bangladesh. Further Bangladesh Government has set a vision titled Vision 2021 to free Bangladesh from its current state of crisis and to build a country whose citizens can live prosperous and happy lives. Considering the current political- socio- economic-context, five issues have been given priority. These are 'Maintenance of Economic Stability and Control over Commodity Price Hike,' 'Effective Action against Corruption,' 'Economic Usage of Power and Energy,' 'Elimination of Poverty and Inequity,' and 'Establishment of Good Governance.' (Election Manifesto, 2008). The main strategy of poverty reduction will center on bringing vibrancy in agriculture and rural life. The social safety net will be extended for the ultra-poor. At present, the poverty rate is 24.3 percent in the country and this rate is targeted to be reduced to 18.6 percent by 2020 (Economic review 2019). However current unemployment rate is 4.29 percent which should be fall down to 4.20 percent by 2020 (7^{th} five year plan, 2016-2020). The ruling election manifesto has pledged that social safety net will be increased twofold and there will be at least one earning member in every family (Election Manifesto, 2019). To achieve these targets, the development of women entrepreneurship with other development programs is needed.

The term Women Entrepreneur refers to a woman who is running her own or family's business. Women Entrepreneurs have to face several problems in many developing countries and Bangladesh is no exception. The lack of access to information especially information relating to business and technology poses a major hindrance to the progress of women-owned enterprises in Bangladesh. Women in Bangladesh, have limited access to technology and information, which leads to many problems. Their access to information is mainly limited because of the restraint on their mobility

and communication due to socio-cultural factors. Lack of access to information hinders women entrepreneurs in many ways. A new start-up is never an easy job and it is made more difficult when access to information regarding laws and regulations is limited. Also, women entrepreneurs, due to their limited resources and limited accessibility, usually do not have information about supplies; middles men and lack know-how about working out the feasibility of their start-ups. The lack of access to information and technology also leads to certain marketing problems, such as packaging and designing. With better access to business and practical information women entrepreneurs could also gain the opportunity of marketing and selling using the Internet.

Bangladeshi women of today have taken many steps towards business possession. The broad classification of women business owners includes women who establish, inherit, or acquire a business; women who start businesses with spouses or business partners but are either at the forefront or behind the scenes; and finally, women who start fast-growing or part-time or slow-growing firms. Development of women entrepreneurship is influenced by different factors such as different personal and ICT factors. Lumpkin and Dess (1996) analyzed the effect of various contingency factors on the effect of entrepreneurial orientation on the performance of businesses. Subsequently, some works have explored the moderating roles of internal factors such as the availability of resources (Wiklund and Shepherd, 2005), the capacity for commercialization, strategy training process (García-Villaverde et al. 2013; Covin et al. 2006), the internal social context (De Clercq et al. 2010) and the generation of the family involved in management (Chirico et al. 2011). ICT makes it possible to test different decision-making scenarios and can be used as a tool for creating and developing entrepreneurial competencies. It offers learning opportunities, business planning solutions, database tools as well as business training opportunities with the help of business plan simulators.

2.2 ICT and Women: A Bangladesh Perspective

In Bangladesh, as elsewhere in the developing world, women play a central role in the family, community, and social development. However, women often remain invisible and unheard of family and business matters. Women more than men have to balance the complexities of surviving in extreme poverty, yet these women are excluded from discussion because they are often illiterate, they lack confidence and they lack

mobility. ICT offer opportunities for direct, interactive communication even by those who lack skills, who are illiterate, lack mobility and have little self-confidence. Here are some aspects of life which have a direct influence of ICT especially on women:

2.2.1 Women's access to the job and improve entrepreneurship

In the past, women were only considered for household work and were left outside the mainstream of development. In today's Bangladesh, the scenario has not changed much yet with the advent of ICT, this conservative outlook about women is diminishing gradually. As a result, we find more women are employed in various industries. With this growing number of women employees, the job environment is becoming more convenient and friendly for women. The provisions for ladies common room, green room etc. are considered as a necessity now a day. This changed scenario indicates a positive attitude towards women's employment. Furthermore, ICT is creating a chance for women to emerge as entrepreneurs especially in SME. Women are encouraged to take initiatives to invest in ICT and they are also improving their competence using ICT as an entrepreneur in different sectors.

2.2.2 Women empowerment

The most important change that the ICTs makes about women is empowerment. Women's role in family affairs, especially in decision-making, are no longer ignored. Now women earn for their family using ICT and this substantial revenue stream has elevated the women positions in their households and the society they belong. The role models of women who actively participate in the socio-economic development can increase self-esteem and self-confidence of other women and therefore encourage them to push for changes in their social status. ICT is not just a technology but an inalienable weapon of women empowerment.

2.2.3 Shrinking information asymmetry

Women in Bangladesh are now acquiring more bargaining power as they are exposed to ICT specially through mobile phones and digital technologies. As Women entrepreneurs globally have said that access to information, especially market information, is their priority in accelerating the growth of their business, we can ameliorate the economic status of women by shrinking information asymmetry through ICT.

2.2.4 Easy home and work communication

The use of mobile and the Internet, even at home, has given a widening opportunity to women in general to communicate the world. Women remaining in close-doors or of a conservative atmosphere to have the privilege to know about, the where about their relatives and friends and complete business deals by the blessing of ICT.

2.2.5 ICTs' roles to women entrepreneurship development

This section discusses the relationship between ICT usage and entrepreneurs' innovations, and the impact of these ICT enabled innovations on business performance. Further direct impact of ICT on business performance also will be investigated; it is a synthesis of related facets that affect the emergence of entrepreneurial capacity. The rapidly changing business environment has led to increased reliance on ICTs to attain and maintain competitiveness, improve profitability, and succeed in today's dynamic market (Shamsuzzoha et al., 2012; Stanimirovic, 2015). An entrepreneur can use ICT to identify and acquire external information and knowledge. An example is environmental scanning on the Internet helps an entrepreneur to understand the current market trend and to obtain market-related information. Previous studies have confirmed the role of learning to a firm's entrepreneurial capacity and outcomes such as sharing and transfer of knowledge, innovation and performance (Tian and Soo, 2018). It can also be through interaction with, for example, consumers and customers or other value chain partners where the focus is on the integration of knowledge resources in relationships and collaboration with partners. That means that collaborations and relationships are being structured to pursue goals beyond coordination and transactional efficiencies. Ozer (2004) reported that ICT usage for collaboration provides firms with improved partner knowledge and the ability to coordinate relations with several partners through data management systems and real-time systems. These activities have a positive influence on a firm's network capability. Moreover, as entrepreneurs continue to expand their partner network with new and diverse partners successfully, the possibility to scan and absorb complementary knowledge is also enhanced through ICT usage for collaboration. Several ICT-based tools and services are available to use for enabling and enhancing knowledge acquisition, assimilate and apply in offering value-added products and

services. Cao & Dowlatshahi (2005) found empirical evidence on the significant relationship between ICT use and business performance. They assume ICT contribution for the business performance may extend in two different ways. ICT may directly influence the productivity of the organization and by supporting the product, process, market and organizational innovations. However, one should not discount the challenges associated with IT implementation at enterprises, particularly at the rural enterprises. Whereas the need for IT in business cannot be overemphasized, a significant number of IT adoption processes within small firms were reported flawed and many others were found struggling with their IT adoption process (e.g. Ashrafi and Murtaza 2008; Marthan and Tan 2010). Nevertheless, the collaboration and communication efficacy that is enabled by ICTs might work in favor of ICT adoption at rural enterprise by compensating the trouble experiences associated with ICT-adoption process.

There are some studies conducted on the stated topic that will help to put light on the fact of women entrepreneur capacity and the role of ICT on women entrepreneurship.

Parvin et al. (2012) have studied that women who involved in various micro, small and medium enterprises take on the challenge to work in a male-dominated society, competitive and complex economic and business environment with the government policy supports and financial institutions participation became able to improve their living conditions and earned more respect in the family and the society.

Schaper (2012), in his study, found three key factor areas of eco entrepreneurial activity, which generally encompass those related to a business venture. The first refers to risk, uncertainty, and possibility of failure, combined with a need to identify opportunities, research them, harness resources to turn the idea into a reality, execute business development and oversee its growth. The second aspect is the commercial activities that have a positive effect on the environment and can be seen as a move to a more sustainable future. The third set of factors refers to the individual's intentions, beliefs and drive, associated with personal values and aspirations.

Huda (2009) examine that women entrepreneur of Bangladeshi engaging both formal and informal sector of the economy and have growing interest of them to extend their business commercially. Most recently, Bangladesh Women Chamber of Commerce and Industry (BWCCI) 2008 made an extensive analysis as a case study on women

entrepreneurs in Bangladesh, which was the country's first trade body working exclusively for women's economic and social empowerment.

Afrin, Islam and Ahmed (2008) aimed at identifying the factors related to the development of entrepreneurship among the women borrowers through micro-credit programs and they showed that financial management skills and the group identity of the women borrowers had a significant relationship with the development of rural women entrepreneurship in Bangladesh.

Siddique (2008) conducted a study to investigate the existing condition of women entrepreneurs in Dhaka city where he also found that women entrepreneurs mostly engage in familiar enterprises but face obstacles such as lack of capital, absence of marketing facilities and sales centers and balancing time between family and business. Moreover, individual entrepreneurial skills and surrounding socio-cultural environment affect entrepreneurship development among women.

Vilaseca-Requena, Torrent-Sellens & Jime´nez-Zarco (2007) analyzed the role that ICT use in marketing plays in the processes of innovation. ICT use strengthens the degree of integration of agents favoring the establishment of relationships. Which directed towards the cooperation and the acquisition of useful market intelligence in the process of product innovation. Here the author can understand how ICT will serve for the networking need of entrepreneurs with agents in the supply chain.

According to Ndubisi N. O. & Kahraman C. (2005), there is a growing understanding of how businesses should operate using ICT to achieve optimal effectiveness. Implementation of ICT projects, especially large IT projects, is synonymous with the management of changes in an organization, be it for altering the work culture or gaining competitive advantage.

Ndubisi N.O. & Kahraman C. (2005), in their study, categorized varieties of ICT systems used in organizations; basic systems (e.g., electronic mail, word processing, spreadsheets, graphics, and database), and advanced systems (e.g., statistical analysis, application packages, and programming languages). The job tasks where systems are applied were divided into three categories: those for administrative purposes (e.g, producing reports, letters, and memos, data storage/retrieval, communication with others), planning purposes (e.g., analyzing trends, planning/forecasting, analyzing

problems/alternatives, and making decisions), control purposes (e.g., budgeting and controlling and guiding activities).

2.3 Conceptual Framework and Hypotheses Development

The study tried to focus on the role of ICTs in women entrepreneur's capacity. However, a model is constructed that helps easy visualization of the relationship between the dependent and independent variables. The study proposes a conceptual framework considering the factors that were found to be the stronger predictors for entrepreneurship development. Therefore, four entrepreneurial-related factors viz. perceived innovativeness, proactiveness, self-dependancy and risk-taking propensity were identified through an intensive literature search (Table 2.1 and Figure 2.1). The model further depicts that along with the entrepreneurial-related factors, women's capacity in handling the business might be influenced by their extent of ICTs use, which however, is influenced by women's perceived usefulness of ICTs use for communication and collaboration purposes. Since this study designed to know the impact of entrepreneurial characteristics and ICTs use on women's entrepreneurial skills, it controlled the effect of respondent's demographic factors (e.g., age, education, income, entrepreneur experience) in the model (Figure 2.1).

The ICT use for internal efficiency includes scanning mechanisms, which can enable entrepreneurs to identify and absorb potential information and knowledge. Further, through the development of individual competence and knowledge through the internal use of ICT, entrepreneurs can become efficient and effective in locating and accessing appropriate external technologies. Second, as entrepreneurs absorb knowledge from external sources, the use of ICT for maintaining collaboration with different actors becomes a critical precondition for building entrepreneurial capacity. Finally, the use of ICT for internal communication through an information communication system can provide convenient conditions for entrepreneurs to disseminate and comprehend acquired knowledge for commercial ends.

Besides ICT factors, entrepreneurial factors like perceived innovativeness, Proactiveness, risk-taking propensity, self-dependency also influence/increase the entrepreneurial capacity of rural women. An entrepreneur with innovativeness can support new ideas, experimentation, and new product development. From a strategic point of view, risk-taking propensity is associated with one's readiness to take

adventurous actions that might lead to substantial losses. It also implies that invest in unknown schemes where outcomes are risky but promising. A proactive individual is future-oriented, one's forward-looking perspective. The entrepreneur usually acts opportunistically by developing new products, targeting new markets, combining different resources, which will help her to turn the future threats into a profitable venture. Individuals with ICT use are better able to reduce the transaction costs, help overcome time and mobility constraints, ease access to formal financial services and market information, improved knowledge and participate in business networks. ICT enables the business environment which helps smaller businesses-where women are concentrated disproportionately.

Table 2.1 Prior researches focused on women's entrepreneurship and relating factors

Variables	**Source**
Innovativeness/Creativity/energy & inventiveness	Dougherty (2014), Kang (2011), Szirmai (2011), Nelson & Cengiz (2005), Lee (1999).
Proactiveness/Personality trait/Extraversion	Kim, (2015), Liang, (2013), Rauch et. al. (2009), Ariani (2013), Jahed, (2011).
Self-dependency/Desire to be independent/independence/Autonomy	Gittle, (2008), Carter, (2003), Gatewood et al. (2003) Schwartz, (1976).
Risk-taking propensity	Jung, (2015), Dougherty, (2014), Rauch et al. (2009), Carland & Carland, (2005), Swedberg,(2000).
ICT use/ICT communication/ICT skill	Dougherty, (2014), , Ehrich (2008), Mccloskey (2004), Swedberg(2000).
Entrepreneurship skill/Skill & ability/Good management Skill	Putta (2014), Akhalwaya & Havenga(2012) Shaver et al. (2001), Gordon (2000).

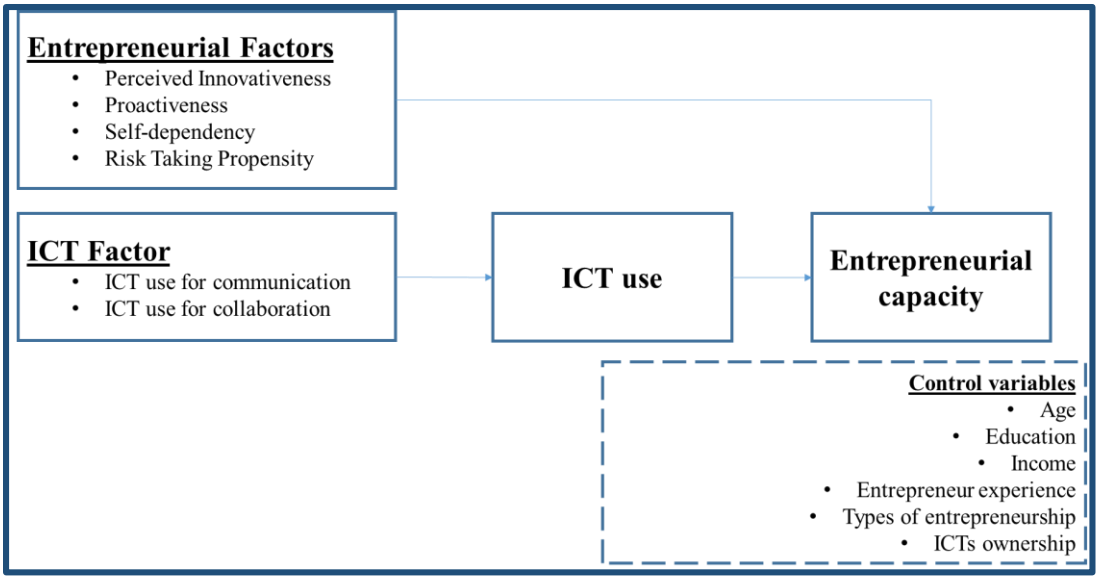

Figure 2.1 Conceptual framework of the study

2.3.1 Perceived innovativeness and entrepreneurial capacity

Innovativeness is regarded as a critical element of entrepreneurial capacity development. Lumpkin and Dess (1996) mentioned that it is a crucial element for promoting new products and services, novel experience, technological leadership, R&Ds for new methods and creativeness. Meanwhile, Lee (1999) argued that innovativeness is one that a firm emphasizes the technological innovation or actively conducts product designing, market survey as well as product advertisement through product or market innovation based on process innovation and experimental management technique. Kang (2011) suggested that innovation is one of the elements of entrepreneurial strategies that can be an important means of promoting investments for consistent development of new technologies and improvement of products to gain a competitive advantage. With all of these definitions and contentions, innovativeness should be considered as a critical element of entrepreneurship with which an entrepreneur can adapt herself to the rapidly changing environment and manage to make the right choice of action to the growth of her enterprise. Therefore, it was hypothesized that:

H1: The higher the individuals' perceived innovativeness, the greater their entrepreneurial capacity.

2.3.2 Proactiveness and entrepreneurial capacity

Proactiveness is a future-oriented disposition that allows an entrepreneur to forecast future when she is supposed to make a decision strategically. It can be defined as a tendency or behavior of actively participating in the market changes one step ahead of their competitors (Kim, 1994). An entrepreneur takes active behaviors after forecasting future opportunity and market demands. Lumpkin and Dess (1996) reported that a proactive firm preoccupies the market opportunity or holds a predominant position in the market. Thus, with proactiveness, companies develop new products or services, and attempt to find new opportunities in a highly uncertain environment or actively endeavors to secure a leading/ discriminative position in a newly created market (Kim, 2015). Covin and Slevin (1991) claimed that proactive entrepreneurs compete more aggressively than others. It means that they are not just simply counteracting their competitors but also consistently trying to introduce some new products/services development and management techniques into their enterprises.

H2: The greater the individuals' level of proactiveness, the greater the entrepreneurial capacity.

2.3.3 Self-dependency and entrepreneurial capacity

Self-dependency refers to one's beliefs on her ability to control the initiation and continuation of work behavior and process. People who have a strong desire to be successful and high levels of self-dependency are more likely to pursue entrepreneurial opportunities (Shane and Venkataraman 2000). In both social and commercial entrepreneurial environments, it is important to exploit opportunities and therefore it may be concluded that commercial and social entrepreneurs should show high levels of self-dependency. Self-dependncy has received much attention in entrepreneurship research and been acknowledged as one of the most important antecedents of business creation (Frese and Gielnik 2014). Self-dependency shows one's beliefs and confidence in her own's knowledge and skills. A self-dependent entrepreneur is expected to make a business decision with any delay and hesitation provides better agility for her enterprise. People who have a strong desire to be successful and thus show high levels of self-dependency are more likely to pursue entrepreneurial opportunities (Shane and Venkataraman 2000). Accordingly, this study argues,

H3: The higher the self-dependency, the higher the entrepreneurial capacity.

2.3.4 Risk-taking propensity and entrepreneurial capacity

Risk-taking propensity can be defined as someone's willingness to engage in decisions or actions that include uncertainty with regard to their success (Jackson 1994). Jung (2015) defined this term as a risk preferring decision-making behavior in an uncertain environment. While the entrepreneurs with low risk-taking tendency try to avoid risks or make decisions cautiously, ones with high risk-taking inclination tend to make decisions faster to capture opportunities (Bin and Park, 2002). Risk-taking is meaningful only if an entrepreneur is proactive in seizing an opportunity, not just accepting the risks. A higher risk-taking propensity better fits within the environment of commercial entrepreneurs because they expect to earn a considerable amount of money with this strategy, which cannot be transferred to social entrepreneurs. Resource scarcity in the environment of social entrepreneurs further reduces their risk-taking propensity because they have to think very carefully about where resources should be allocated.

H4: Risk-taking propensity positively influenced the entrepreneurial capacity of women.

2.3.5 Extent of ICT use and entrepreneurial capacity

The introduction of ICT in workplace not only making the communication process faster but also bring positive changes in managerial functions. Timely and accurate information is vital for making efficient business decisions. A considerable number of researchers have been conducted to find the impact of IT on work performance (e.g., Goodhue & Thompson, 1995; Delone & McLean, 1992; Igbaria & Tan, 1997). For increasing the entrepreneurs' business performance, ICTs like mobile phones, the Internet, computers, laptops can diminish the space and time limitation and provide better connectivity and flexibility. Therefore, it concludes that

H5: The greater the women's use of ICTs, the greater their entrepreneurial capacity.

2.3.6 ICT use for communication and the extent of ICT use

When an entrepreneur uses ICT, the capacity to learn is increased by generating knowledge through high speed, memory extension and communication facilities of

technology. To increase the individual's knowledge is likely to significantly impact the entrepreneurial learning, which in turn is likely to affect the entrepreneur performance positively. External knowledge is important for learning processes and firms with ICT capability are able to take advantage of this opportunity. Entrepreneurs with a strong ICT orientation can set up intranet and extranet facilities, which are technological platforms for communication with suppliers, customers or partners. Information technology can provide a competitive advantage to entrepreneurs by reducing their structural differences, such as the degree of vertical integration and diversification. Given the context of rural society, particularly women's perspective, ICTs provide more opportunity to be contacted with the market remotely. An entrepreneur might save her transportation time and cost but communicate with her clients and partners using ICT devices. ICT-enabled communication technologies can eliminate geographical barriers and facilitate the forming of collaboration with others (Ozer, 2004). Thus, this makes it possible for women entrepreneur to handle large pools of business contacts. Therefore this study assumes that:

H6: The greater the women's perceived usefulness of ICTs for communication purposes, the greater their use of ICTs.

2.3.7 ICT use for collaboration and the extent of ICT use

The use of ICT draws upon the technological associations between the entrepreneur and its partners, which may include customers, suppliers, and other external actors. Having a high level of ICT usage can create recognition of women entrepreneur as attractive business partners. This would advance not only their current business but also secure chances of collaborating with other attractive partners in the future. Women entrepreneurs using ICT can influence their partners to use it and educate them regarding the benefits that can encourage better relations. With strong ICT capabilities can provide special services such as updating records of transitions, just-in-time delivery, advanced quality communication, etc. All these services can lead to the development of trust, satisfaction and commitment, which all are important ingredients for healthy relations. Furthermore, ICT makes women entrepreneurs less limited due to their size and increases the opportunity for doing business and collaborating internationally (Dholakia & Kshetri, 2004). Thus, entrepreneurs can achieve quicker and better performance even in the early stages. It can, therefore, be

argued that the entrepreneur's use of ICTs for collaboration will lead to greater the extent of the use of it. Therefore, it was hypothesized that,

H7: The greater the women's perceived usefulness of ICTs for collaboration purposes, the greater their use of ICTs.

2.3.8 Control Variables

In this study age, education, entrepreneurship experience, income and ICT ownership were considered as the control variables. Assume that these four variables were not considered as the predictor but as the control variables.

2.4 Conclusion of the chapter

This chapter describes the theoretical background of the proposed study by critically analyzing the past research related to entrepreneurial capacity and their relation to ICTs use.

CHAPTER III

METHODOLOGY

This Chapter portrays the methodology and techniques utilized as a part of this study. A proper methodology selection is one of the prime importance for arriving at a meaningful conclusion is the purpose of the researcher. The selection of the methodology depends on the types of the study taken, the subject matter of the study, the objectives of the study, resource availability, etc. However, the main objective of this paper is to determine the entrepreneurial- and ICT-related factors and their influence on women's capacity for entrepreneurial development. Besides, identifying significant constraints regarding women entrepreneurship was the other objective. A chronological discussion of the methodology used in this study is presented as follows.

3.1 Research Design

3.1.1 Study area

Sadar and Kaliakair upazila of Gazipur district, and Singair upazila of Manikganj district were purposively selected as the locale of the study considering the closeness to the capital city and researchers easy access to the local community, and considerable number of women entrepreneurs who involved in various types of enterprises. The reason for selecting two districts was mainly to observe the variation in different women entrepreneur groups in different rural areas.

3.1.2 Population and sampling of the study

As the study concerns about the entrepreneurship capacity of women in rural areas, all women who engaged in any agri-business in Singair upazila of Manikganj district, and Kaliakair and Sadar upazila of Gazipur district were constituted the population of the study. Given the difficulties of having a conclusive list of women entrepreneurs in the study regions, the study adopted a Snow-ball sampling method to determine the sample and interview respondents. A total of 127 women entrepreneurs from the three selected upazilas were interviewed based on their availability during the data collection period (15th August 2019 to 15th September 2019) and their informed consent to participate in the survey. A distribution of the interviewed respondents from different upazila is given in Table 3.1. Data collection was carried out as a voluntary basis and in a face-to-face situation.

Table 3.1 Sample distribution of this study

Districts	**Selected upazilas**	**Sample size**
Manikganj	Singair	65
Gazipur	Gazipur sadar	30
	Kaliakair	32
Total		**127**

3.1.3 Data collection instrument

Since the reasons for the study were to test the hypotheses and measure the variances, a cross-sectional survey strategy was operationalized for this study. Concerning the objectives, the study adjusted approved estimation things from earlier investigations, at whatever point conceivable. The beforehand prepared interview schedule was pre-tested with five respondents who excluded from the final data collection. Based on the pre-test results, necessary corrections and modifications were made. For 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 attached in Appendix-A.

3.1.4 Variables of the study

Four 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, rural women's entrepreneurship capacity was considered as the dependent variable.

ii. **Independent variables**: These variables are generally known as indicator variables or predictor variables. In this study, four independent variables viz. perceive innovativeness, proactiveness, risk taking propensity, self-dependency and the extent of ICT use were considered as antecedents of women's entrepreneurship capacity while ICT use for communication and ICT

use for collaboration were considered as the antecedent of the extent of ICTs use.

iii. **Mediator variable**: It is a variable that explains the relationship or provides a causal link between other variables. This is often known as the intervening variable that accounts for the relation between the predictor and the criterion variables. Here, the extent of ICT use by women entrepreneurs was used as a mediator variable.

iv. **Control variable**: It is a variable that the researcher does not want to test in a study and therefore controls its effect on the other variables to be studied. Here, age, education, entrepreneurship experience, types of entrepreneurship ICTs ownership were considered as the control variables.

3.2 Measurement of Variables

This section describes the measurement procedure of dependent and independent variables.

3.2.1 Measurement of independent variables

3.2.1.1 Perceive innovativeness

In Diffusion of Innovation (DoI) research, innovativeness is defined as "the degree to which an individual is relatively earlier in adopting an innovation than other members of his system" (Shoemaker 1971). Innovativeness in this discipline predominantly measures in terms of how quickly a person adopts a technology/service after its initial introduction in a social system. Unlike this operationalization, perceived innovativeness refers to a person's subjective belief about her skills, knowledge and attitude towards apply new ideas or try out new things for meeting her needs or wants. Based on this argument, this study defines perceived innovativeness as "the degree to which a woman entrepreneur believes her enterprise is relatively innovative in terms of accepting new changes and applying new ideas for entrepreneurial development." Measurement items of this scale were mostly adapted from Norasmah *et al.* (2006) and Noraishah (2003). A 5-point Likert scale was used to capture respondents' responses. Scores of innovativeness were assigned as follows:

Items	Score Assigned
Strongly disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly agree	5

3.2.1.2 Proactiveness

Proactiveness was determined by how an entrepreneur develop new products and attempt to find new opportunities in a highly uncertain situation. Respondents' responses were captured by a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree' as follows against four statements.

Items	Score Assigned
Strongly disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly agree	5

3.2.1.3 Self-dependency

Respondents' self-dependency was measured by the degree to control over the initiation and continuation of any work behavior and process. The respondents' responses were captured by using a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree' as follows against four statements:

Items	Score Assigned
Strongly disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly agree	5

3.2.1.4 Risk-taking propensity

Risk-taking propensity was measured by the degree to which a person willingly pursues opportunities in an uncertain situation accepting any risks involved.

Responses were captured using a five-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’ which is shown as follows:

Items	Score Assigned
Strongly disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly agree	5

3.2.1.5 ICT use for communication

ICT use for communication was measured by the degree to which the user believe that the use of ICTs helps make business communication. The respondents’ responses were captured by using a five-point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree’ as follows against three statements:

Items	Score Assigned
Strongly disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly agree	5

3.2.1.6 ICT use for collaboration

ICT use for collaboration was determined by the degree to which the user perceives that the use of ICTs is useful to collaborate with other business partners/actors. Hence, respondents’ responses were captured by using a five-point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree’ as follows against three statements:

Items	Score Assigned
Strongly disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly agree	5

3.2.1.7 Extent of ICT use

The extent of ICT use refers to the frequency of using ICT devices for the accomplishment of a task, particularly respondents’ business. The respondents’

responses were captured by using a frequency scale. Scores of the scale were given as follows. Respondents' were asked to inform about the extent of use for three types of ICT devices such as mobile phone, Internet and Computer/laptop/tablet. Since these three types of devices are most commonly used in business operations, types of ICT devices were confined within these three devices.

Items	**Extent of use**	**Score**
Mobile Phone (voice call, SMS, MMS, Video etc.)	Frequently (4-6 times/day) Often (1-3 times/day) Occasionally (5-6 times/week) Rarely (1-3 times/week) Not at all (No use)	4 3 2 1 0
Internet	Frequently (4-6 times/day) Often (1-3 times/day) Occasionally (5-6 times/week) Rarely (1-3 times/week) Not at all (No use)	4 3 2 1 0
Computer/laptop/tab	Frequently (4-6 times/day) Often (1-3 times/day) Occasionally (5-6 times/week) Rarely (1-3 times/week) Not at all (No use)	4 3 2 1 0

After collecting respondents' initial responses, a composite scale (weighted) of the extent of ICT use was determined using an equation given below.

$$\boldsymbol{Composite\ Score\ of\ the\ extent\ of\ ICT\ use} = \sum (Mobile\ phone * 0.4) + (Computer * 0.3) + (Internet\ * 0.3)$$

Since the mobile phone was found the most common device in the study area, it was given a relatively higher weight compared to the other two types of ICT devices.

3.2.2 Measurement of dependent variable

Women's entrepreneurial capacity was the dependent variable of this study, which was measured using a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree' against four statements. Items of the scale were mostly adapted from (B.Nuraishah *et.,al 2014).*

Items	**Score Assigned**
Strongly disagree	1
Disagree	2
Undecided	3

Agree	4
Strongly agree	5

3.2.3 Measurement of control variables

3.2.3.1 Age

Age of the respondent was measured in terms of actual years from their birth to the time of the interview, which was found on the basis of the verbal response of the rural people. A score of one (1) was assigned for each year of one's age. The variable appears in item number 1 in the interview schedule as presented in appendix A**.**

3.2.3.2 Education

Education was measured by assigning score of successful years 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 her education score has given five (5). Each respondent of can't read and write has given a score of zero (0). If a respondent did not go to school but took no formal education, his/her educational status was determined as the equivalent to a formal school student. This variable appears in item number 2 in the interview schedule as presented in Appendix-A.

3.2.3.3 Income

Annual income of a respondent was measured on the basis of total yearly earning from entrepreneurship business (service, business, daily labour etc.) by the respondent her-self and other family members. The value of all the agricultural products encompassing poultry, livestock, fisheries, food processing business, handicraft etc. was taken into consideration. This variable appears in item number 3 in the interview schedule as presented in Appendix-A.

3.2.3.4 Types of entrepreneurship

Types of entrepreneurship was measured by the nature of possession of the business by the respondents, either it was managed personally by the respondents or jointly with others. This variable appears in item number 3 in the interview schedule as presented in Appendix-A.

3.2.3.5 Entrepreneurship experience

Entrepreneurship experience of a respondent was determined by the total number of the year involved in entrepreneurship business. A score of one (1) was assigned for each year of business. This variable appears in item number 5 in the interview schedule as presented in Appendix-A.

3.2.4 Measurement of constraints faced by women entrepreneurs

Women's problems with their entrepreneurship were identified using a qualitative approach. Respondents were asked about various types of problems that they encountered in their day-to-day activities and their responses were captured free from any bias. The responses were then codified based on their meaning (i.e., key message), and similar codes were grouped for reaching overarching themes.

3.3 Data Analysis

3.3.1 Editing

Raw data were properly reviewed for omitting errors. The researcher made a careful scrutiny when she completed an interview so that all data were included to facilitate coding and tabulation.

3.3.2 Coding and tabulation

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

3.3.3 Categorization of data

For coding operation, the collected data were classified into various categories. These categories were developed for each of the variables. For categorization purposes first, the mean of each variable was computed. Afterward, based on the mean score, each latent variable (e.g., perceived innovativeness, proactiveness, risk-taking propensity, self-dependency, entrepreneur capacity) was categorized for descriptive statistics. Other variables (e.g., age, education, income, entrepreneurship experience) were categorized on the basis of appropriate schema which is further described in the subsequent sections of Chapter 4.

3.3.4 Method of data analysis

The model of the study (Figure 2.1) was analyzed by Structural Equation Modeling (SEM) using SmartPLS v.2 M3. Data analysis in SEM requires two phases. First, validation phase and second, result phase. The validation phase establishes the reliability and validity of the measurement items. Four tests need to be carried out to test the reliability and validity of the measurement model, internal consistency (composite reliability), convergent validity (average variance extracted), and discriminant validity and indicator reliability (Hair et al., 2014). Internal consistency is the value of Cronbach's alpha, which assumes that all the indicators have equal outer loading on the relative constructs or latent variables. It is expected that the outer loading for each indicator should be above 0.7.

Convergent validity shows whether the indicator can converge or share a high proportion of the variation of the constructs. Average Variance Extracted (AVE) is the common measure of convergent validity, which is the grand mean of the squared loadings of a construct's indicators. A value greater than 0.50 dependency as a satisfactory AVE score, which says that the construct explains more than half of the variance of its indicators.

Discriminant validity shows the distinctiveness of one construct from others and the cross-loadings of the indicators can examine this. If the outer loadings of one indicator on the respective construct are higher than all of its loadings on other constructs, assure that the construct has no discriminant validity problem. On the other hand, for indicator reliability, a bootstrapping (a test that relies on random sampling with replacement) procedure needs to be performed. If it shows that the indicator's weight is statistically significant, then the indicator should be retained otherwise should be removed from the model.

As the theoretical model of this study consists of six independent variables, one mediator variable, one dependent variable and six control variables, the confounding effect of one variable on other variables cannot be captured by SPSS and hence, SmartPLS v.2 M3 software was used to test the model. 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 were 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.

3.4 Conclusion of the chapter

This chapter presents the detail methodology of the study. At first, it describes the process of the study area and sample respondents of the study. Second, it discusses the measurement of each latent variable used in this study. Finally, the last section describes the method used for measuring the interrelationship between predicted and criterion variables.

CHAPTER IV

SOCIO-ECONOMIC CHARACTERISTICS OF WOMEN ENTREPRENEURS

Before performing any statistical analysis, it is important to know the background characteristics of the study population or the nature of the data. In order to study these characteristics, it is necessary to focus on the percentage distribution of the considered variables. The percentage distribution demonstrates the pattern of variables and observations in different groups. Consistent with research objective one, research question one of this study was: what are the socio-economic characteristics of the respondents? To answer this question, data were collected through structured interviews using a questionnaire. The variables covered include age, education, income, types of entrepreneurship, experience, and ICT ownership. These variables are analyzed and discussed in the following sub-sections.

4.1 Respondents' Socio-economic characteristics

In this section, the respondent's characteristics and descriptive statistics are presented in Table 4.1. Age was categorized based on the recommendation of the Ministry of Youth and Sports, Government of the People's Republic of Bangladesh, education was categorized by its level, and entrepreneurship experience was categorized by $\boldsymbol{Mean \pm 0.5\, SD}$.

Table 4.1 Respondents' Socio-economic characteristics (N=127)

Categories	Number	Percent	Mean	SD
Age (in years)				
Young (up to 35 years)	48	37.8	37.45	9.85
Middle aged (35-50 years)	67	52.8		
Old (>50 years)	12	9.4		
Education				
Can't read and write	9	7.1	6.35	4.32
Can sign only	23	18.1		
Primary education	22	17.3		
Secondary education	61	48.0		
Higher secondary education	6	4.7		
Above higher secondary education	6	4.7		
Entrepreneurship experience				
Less experienced (<6 years)	44	34.6	10.38	8.26
Moderately experienced (6 to 14 years)	50	39.4		
Highly experienced (>14 years)	33	26		

The mean of the respondents' age was 37.45 years with a standard deviation of 9.85. Table 4.1 reveals that more than half of the respondents (52.8%) were middle-aged, whereas 37.8% were young and 9.4% were old aged. In the case of education, almost half of the respondents (48%) attended secondary education, and the number of respondents with higher secondary and above higher secondary education were identical (4.7%). While can't read & write, can sign only and respondents with primary education were 7.1, 18.1 and 17.3 percent, respectively. Distribution of the respondents according to their length of business, were found nearly similar to their age distribution with a mean of 10.38 years. The highest proportions (39.4 percent) of the respondents had moderate business experience while 34.6 percent had less experience and 26 percent of the respondents were highly experienced in managing enterprises.

4.1.1 Types of entrepreneurship

Fig 4.1 presents the respondents' ownership of enterprises, which reveals that 53.5 percent respondents owned their entrepreneurship personally, while 21.3 percent, 13.4 percent, and 11 percent respondents jointly owned with husband, jointly owned with other family members and owned by husband, respectively.

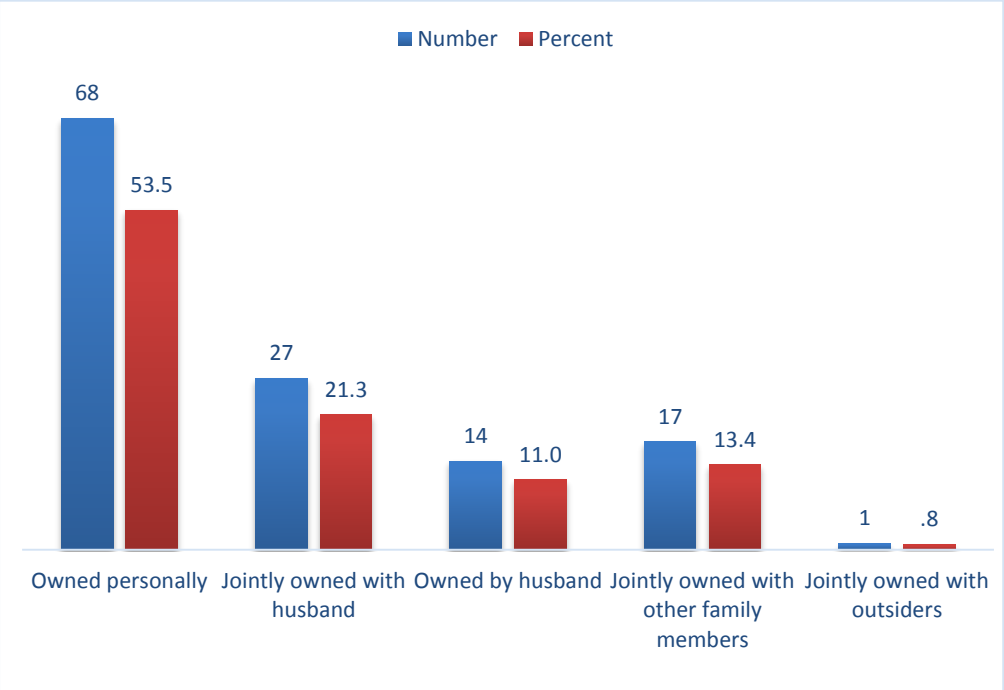

Fig 4.1Types of entrepreneurship

On the other hand, only 0.8 percent of respondents owned their business with outsiders. Therefore it can be concluded that the majority of respondents were capable of running their business solely.

4.1.2 Income

Respondents were categorized into four groups based on their income distribution. According to Fig 4.2, majority of the respondents (75.6 percent) belong to the low-income group, whereas 15.7 percent belong to the middle-income group and only 3.1 percent of respondents' income was high.

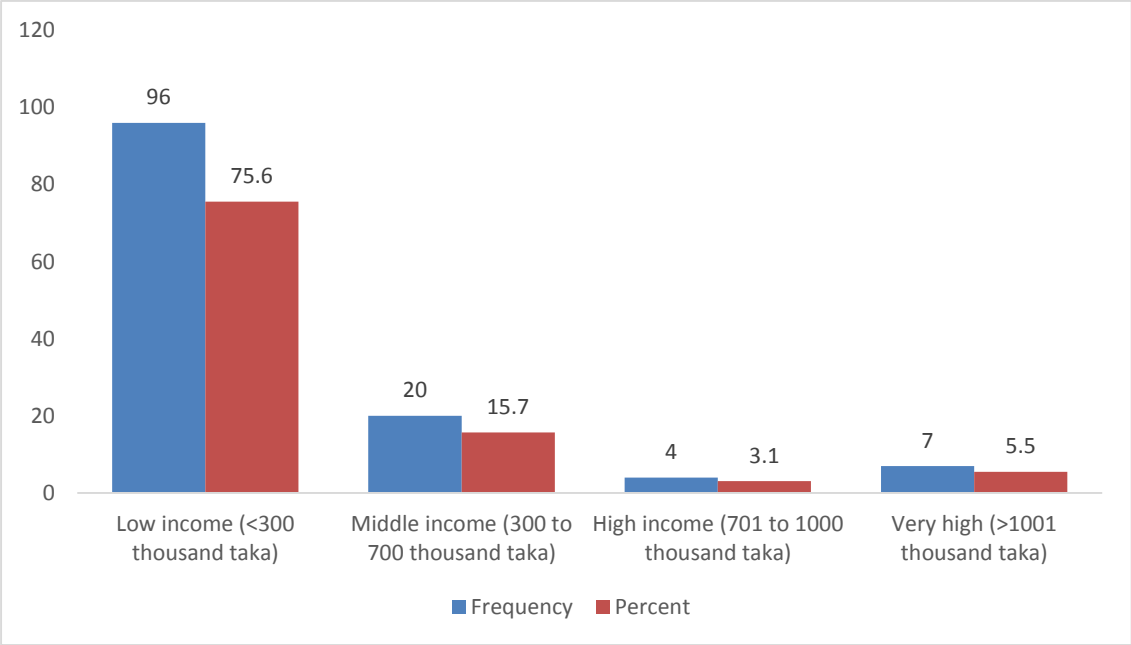

Fig 4.2 Income distribution of the respondents

On the other hand, 5.5 percent of respondents' income was found more than 10 lac BDT in a year (i.e., very high group). Nevertheless, data shows three-fourth of the rural enterprises had an income of less than 3 lac BDT in a year, which can be considered as low.

4.1.3 ICT ownership

Respondents were asked about their possession of various ICT devices, particularly their possession about mobile phones, computers, and their access to the Internet. Fig 4.3 shows that only 6.3 percent of the entrepreneurs had access to all the three types of ICTs. A little above one-third of the respondents (38.6 percent) owned mobile phones with the Internet, and the rest of them (55.1 percent) owned mobile phones

only. Despite the ICT ownership status in the study regions are not favorable in terms of entrepreneurship development as most of the respondents' ICTs use only limited in mobile phones use, use of the Internet via mobile phones by one-third of the respondents shows an upward trend concerning ICTs use by rural entrepreneurs.

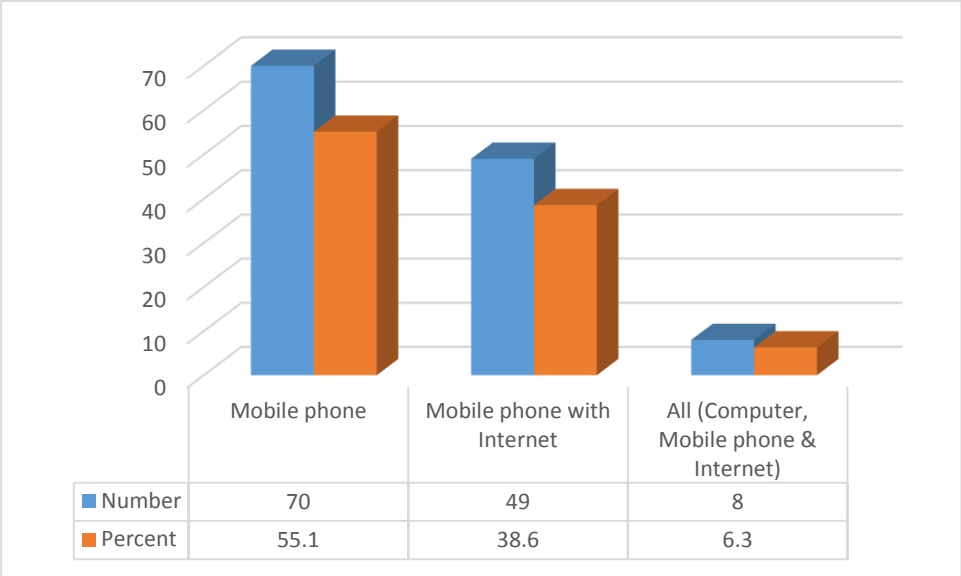

Figure 4.3 Respondents ICT ownership status

4.2 Conclusion of the chapter

The overall socio-demographic characteristics of the respondents are analyzed in this chapter, which played an important role in identifying the factors that influenced the entrepreneurial capacity of women.

CHAPTAR V

ENABLERS OF WOMEN ENTREPRENEURIAL CAPACITY

In this chapter the enabling factors that influenced the capacity development of women entrepreneurs are analyzed and discussed. There were mainly two factors, entrepreneurial factors (perceive innovativeness, proactiveness, self-dependency and risk-taking propensity) and ICT factors (extent of ICT use which was influenced by two antecedents i.e. ICT communication and ICT collaboration). The chronological discussion of the enabler factors is presented below.

5.1 Respondents' Categories based on Latent Variables

Respondents' distribution based on the observed scores of the latent variables is presented in this section. All the latent variables were measured using a 5-point Likert scale (1-5) ranging from strongly disagree to strongly agree. In order to find respondents' distribution based on their responses, the mean score of each item was computed. This mean score was further used as a basis for each category (Table 5.1). The score could range from 1 to 5, where '1' indicated very low, and '5' indicates very high capacity.

Table 5.1 Respondents' distribution based on the score of each latent variables with its descriptive statistics

Categories	Number	Percent	Mean	SD
Perceived innovativeness				
Less innovative (up to 2)	5	3.9	3.86	0.78
Moderately innovative (2 to <4)	49	38.6		
Highly innovative (4 to higher)	73	57.5		
Self-dependency				
Low self-dependency (up to 2)	2	1.5	4.29	0.54
Moderate self-dependency (2 to <4)	19	15.0		
High self-dependency (4 to higher)	106	83.5		
Proactiveness				
Moderately proactive (2 to <4)	17	13.4	4.31	0.41
Highly proactive (4 to higher)	110	86.6		
Risk-taking propensity				
Low risk-taking propensity (up to 2)	3	2.4	3.89	0.77
Moderate risk-taking propensity (2 to <4)	45	35.4		
High risk-taking propensity (4 to higher)	79	62.2		
Entrepreneurial capacity				

Less capable (up to 2)	4	3.1	3.82	0.75
Moderately capable (2 to<4)	43	33.9		
Highly capable (4 to higher)	80	63.0		
ICT use for communication				
Low use for communication (up to 2)	3	2.4	3.93	0.64
Moderate use for communication (2 to <4)	53	41.7		
High use for communication (4 to higher)	71	55.9		
ICT use for collaboration				
Low use for collaboration (up to 2)	70	55.1	4.08	0.56
Moderate use for collaboration (2 to <4)	49	38.6		
High use for collaboration (4 to higher)	8	6.3		
Extent of ICT use				
Rarely use	46	36.2	1.46	0.74
Occasionally use	60	47.2		
Often use	16	12.6		
Frequently use	5	3.9		

The mean of perceived innovativeness score was 3.86, with a standard deviation of 0.78. The majority of the respondents (57.5 percent) were perceived them as highly innovative in terms of applying new ideas for their business growth, while 38.6 percent were perceived them as moderately innovative and only 3.9 percent were perceived them as less innovative. About proactiveness, an overwhelming majority of the respondents (86.6 percent) reported them highly proactive and the rest of them (13.4 percent) as moderately proactive. Therefore, it is expected that respondents' high perceived innovativeness and proactiveness positively reflect in their entrepreneurship capacity.

The observed mean of self-dependency was 4.29 and a standard deviation was 0.54. Data concerning self-dependency reveals that more than four-fifths of the respondents (83.5 percent) reported they make their business decisions by themselves while less than one-fifth of them (15 percent) often seek others help and only 1.5 percent of the respondents mostly depend on others for making business decisions. Therefore, it can be said that in terms of business decision makings, the respondent groups were found independent.

The respondent women were found taking considerable risks regarding their business. The mean of risk-taking propensity was 3.89 with a standard deviation of 0.77, and more than three-fifths of the respondents (62.2 percent) reported they take a high level of risk while a little over one-third of the respondents (35.4 percent) take moderate

level of risk concerning their business. They further reported that they take this risk with a view to business growth and promotion. The observed higher innovativeness score implies that the respondents tended to try out new things in business with a seek for entrepreneurship development.

Concerning women's entrepreneurial capacity, more than three-fifths of the respondents (63 percent) had higher entrepreneurial capacity compared to one-third (33.9 percent) had moderate and 3.1 percent had low entrepreneurial capacity. To be concluded, the majority of the respondents had moderate to high level of capacity to manage their enterprises.

The mean of ICT use for communication and ICT use for collaboration was 3.93 and 4.08, with a standard deviation of 0.64 and 0.56, respectively. The majority of the respondents (55.9 and 55.1 percent) reported that they used ICTs mostly for communication and collaboration for business purposes while 41.7 percent and 29.1 percent of them moderately used ICTs for communication and collaboration purposes, respectively. Less than 3 percent of the respondents (2.4 and 1.6 percent) rarely used ICTs for communication and collaboration purposes. Therefore, it may assume that the major purposes of using ICTs by women entrepreneurs are communication and collaboration.

The extent of ICTs use was measured by computing a composite score of three ICT tools; mobile phones, computer and the Internet. The mean of the extent of ICTs use was 1.46 and a standard deviation of 0.74. Despite the fact that the respondents were found innovative and proactive in terms of their business, their extent of ICTs use was found very low. Only 3.9 percent of the respondents frequently used all the three forms of ICTs, while nearly half of them (47.2 percent) occasionally used ICTs. Nearly one-third (36.2 percent) of the respondents rarely used ICTs. Mobile phone was found the common ICT tool and all respondents used it for home and business purposes but their access to computers was considered very low and nearly half of them had access to the Internet through mobile phones. That means rural women have not yet used any computer-based business applications or programs such as spreadsheets or account registry for managing their businesses. Although they frequently use mobile phones for communication and collaboration, the overall use of ICTs was found unsatisfactory. Therefore, there is ample scope of increasing other ICT-based business applications in the study area.

5.2 Reliability and Validity of the Latent Variables

PLS-SEM based analysis requires a test of two models, measurement and structural models. Measurement model tests and reports the reliability and validity of the measurement items while the structural model shows the path-coefficients of the hypothesized relationships. For the measurement model, first, indicator reliability was assessed by observing the outer loadings of the measurement items (see, appendix-B for cross-loading). The threshold level of the indicator is (0.70). The internal consistency reliability (i.e., composite reliability) (Table 5.2) demonstrates that all the constructs had high levels of internal consistency (>0.70). Convergent validity of the constructs are assessed by the value of Average Variance Extracted (AVE). The minimum requirements of AVE is 0.50. Therefore, it can be concluded that the convergent validity of all the constructs were satisfactory indicates that the constructs explained all the variance among the indicators**.**

Table 5.2 Average Variance Extracted and Composite Reliability

	AVE	CR
CAP	0.695	0.872
CoM	0.688	0.869
ColB	0.631	0.836
DepN	0.636	0.839
InnO	0.686	0.897
ProAct	0.694	0.819
Risk	0.690	0.870

Table 5.3 Measurement model of validation and bivariate correlations

	CAP	CoM	ColB	DepN	InnO	ProAct	Risk
CAP	**0.833**						
CoM	0.451	**0.830**					
ColB	0.546	0.567	**0.794**				
DepN	0.269	0.188	0.156	**0.797**			
InnO	0.643	0.394	0.529	0.332	**0.828**		
ProAct	0.393	0.308	0.408	0.329	0.354	**0.833**	
Risk	0.524	0.362	0.429	0.138	0.649	0.403	**0.831**

- Constructs: CAP (Entrepreneurial capacity), CoM (ICT use for communication), ColB (ICT use for collaboration), DepN (Self-dependency), InnO (Perceive innovativeness), ProAct (Proactiveness), Risk (Risk-taking propensity).
- ICR= Internal Consistency Reliability (Composite Reliability); AVE= Average Variance Extracted.
- Diagonal elements are the square root of AVE and off-diagonal elements are correlations.

Two steps were used to test the discriminant validity of the constructs. First, the cross-loadings of the indicators and second the Fornell-Larcker criterion (Fornell & Larcker, 1981). The cross-loadings of the constructs (Appendix-B) showed that the loadings of all the indicators on their respective constructs were higher than all of their cross-loadings with other constructs. According to the Fornell-Larcker criterion, if the square root of the AVE of each construct is higher than the construct's higher correlation with other constructs, it demonstrates discriminant validity. Table 5.3 indicates that the square roots (diagonal element in Table 5.3) of all the constructs were higher than their correlations with other constructs in the model. Therefore, it can be summarized that the cross-loadings and the Fornell-Lacker test provided support that the model had satisfactory discriminant validity.

5.3. Results of the Structural Model

The theoretical model and hypothesized relationships were tested by using Smart-PLS v2.0 M3. The explanatory power of the model was assessed by the R^2 of the dependent variable. Hypotheses were assessed by calculating the t-statistics for the standardized path coefficient at the 5% level of significance. The model (Fig. 5.1) predicts that entrepreneurial capacity (i.e., dependent variable) of women was determined by five exogenous factors viz., perceived innovativeness, proactiveness, self-dependency, risk-taking propensity and the extent of ICT use which jointly explained 45.9 percent of the variance of entrepreneurial capacity. Concerning the contribution, perceived innovativeness was the strongest contributor to entrepreneurial capacity, followed by proactiveness. However, self-dependency, risk-taking propensity and ICT use were not found significantly contribute entrepreneurial capacity. Nevertheless, the extent of ICT use was positively influenced by two antecedents, ICT use for communication and ICT use for collaboration, which jointly explained 20.3 percent of the variance of the extent of ICT use. ICT use for collaboration was found stronger driver than ICT use for communication for ICTs use

by women entrepreneurs. Although these two variables significantly influence ICTs use, this research did not find any contribution of ICT use to the entrepreneurial capacity. This might be reasoned that overall, the level of ICTs used by the respondents were found very low. Their ICTs use was mostly limited in their mobile phone use. And many of the respondents did not have the other ICT tools like computers, the Internet (55.1 percent of the respondents had mobile phones, 38.6 percent had mobile with Internet and 6.3 percent of the respondents owned all ICT devices). Therefore it assume that such a low level of ICT use might not impact the entrepreneurial capacity to a large extent. And therefore, the path coefficient between the extent of ICTs use and women's entrepreneurial capacity was found insignificant. However, one should not discount the importance of ICT use in terms of business collaboration and communication. Due to their limited mobility, rural women use ICTs, mainly mobile phones, for their communication and collaboration with different market actors. The other entrepreneur-induced constructs viz. self-dependency and risk-taking propensity were found to be statistically insignificant with the entrepreneurial capacity (Table 5.4). A summary of the proposed hypotheses is presented in Table 5.5.

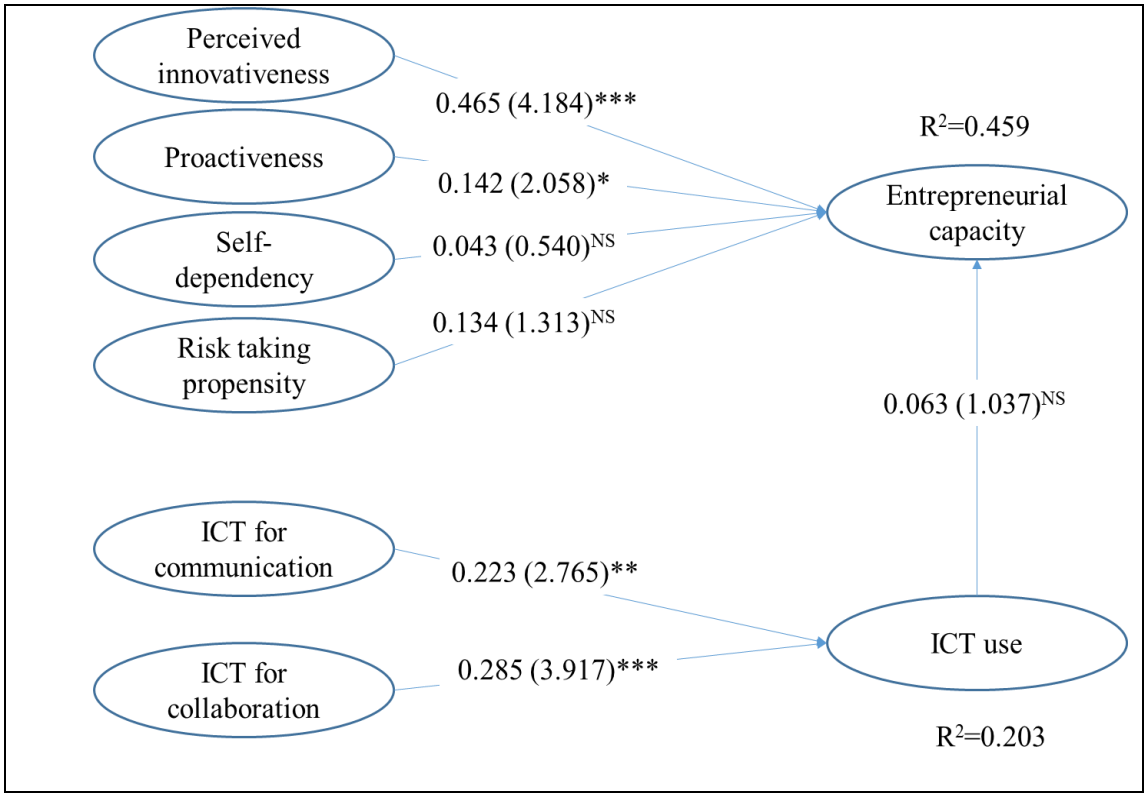

Figure 5.1 Results of the study model showing co-efficient and variance

Table 5.4 Results of the structural model path coefficients with sig. levels

Relationships	Path coefficients	t values	Sig. level	P-value
Communication -> Use	0.223	2.765	**	**0.01**
Collaboration -> Use	0.285	3.917	***	**0.00**
Self-dependency -> CAP	0.043	0.540	NS	0.59
Perceived innovativeness-> CAP	0.465	4.184	***	**0.00**
Proactiveness -> CAP	0.142	2.058	*	**0.04**
Risk taking propensity -> CAP	0.134	1.313	NS	0.19
ICT Use -> CAP	0.063	1.037	NS	0.30
NS=Not significant	*p<0.05	**p<0.01	***p<0.001	

Table 5.5 Summary of the proposed hypotheses

No	Hypothesis	Supported
H1	The higher the individuals' perceived innovativeness, the greater their entrepreneurial capacity.	Yes
H2	The greater the individuals' level of proactiveness, the greater the entrepreneurial capacity.	Yes
H3	The higher the self-dependency, the higher the entrepreneurial capacity	No
H4	Risk-taking propensity positively influenced the entrepreneurial capacity of women.	No
H5	The greater the women's use of ICTs, the greater their entrepreneurial capacity	No
H6	The greater the women's perceived usefulness of ICTs for communication purposes, the greater their use of ICTs.	Yes
H7	The greater the women's perceived usefulness of ICTs for collaboration purposes, the greater their use of ICTs	Yes

A total of seven hypotheses were proposed in this study, of which four hypotheses were supported. This section provides the discussion of the key findings as follows:

Perceived innovativeness was found to be the strongest predictor of entrepreneurial capacity (β= 0.465, p< 0.00) followed by proactiveness (β=0.142). Data in descriptive analysis reported that majority of the respondents were highly (57.5 percent) to moderately (38.6 percent) innovative, and only 3.9 percent were less innovative. The finding seems to be consistent with respondents' perceived innovativeness status. Furthermore, 86.6 percent of the respondents were found highly

proactive, followed by 13.4 percent were found moderately proactive. None of them were found less proactive.

Respondents' extent of ICT use was influenced by two antecedents, such as ICT use for communication and ICT use for collaboration. Among these variables, ICT use for collaboration was found stronger than ICT use for communication. An individual with a high level of ICT use enables them to improve their communication efficiency and develop strong business collaboration compared to a person with low use of ICTs.

Despite descriptive statistics of this study revealed that self-dependency, risk-taking propensity, and the extent of ICT use were found to be perceived highly influential for women entrepreneurs' capacity development, the path analysis did not show any statistically significant relationship among the concerned variables. This might be caused due to the stronger effects of other predictors such as perceived innovativeness and proactiveness. Therefore, further investigation would be necessary to test the generalizability of this finding.

5.4 Conclusion of the chapter

Now a days women are not only home makers, rather they are playing their dual role by involving entrepreneurship business. There are some factors that influenced much in their entrepreneurial capacity development. Perceived innovativeness was the strongest influencing factors along with proactiveness. An innovative person can generate new business ideas and can pursue their business in own unique way. Where individual with pro-active personality manages their business in strategic way. Women entrepreneurs use ICT mostly for business communication and collaboration.

CHAPTAR VI

CONSTRAINTS FACED BY WOMEN IN DEALING WITH ENTERPRISES

Women entrepreneurship is not only a way of attaining economic freedom but also a source of generating income and employment. Their contribution in the economy is also significant. Despite these they are faced with various barriers in operating their business. Women who are engaged in enterprise are better off compared to those that are not. Though Bangladesh government has been recognizing the importance of women entrepreneurship taken several initiatives to encourage women getting involved in diverse micro, small and medium enterprises (MSMEs), In developing women entrepreneurs in banks, financial institutions, still there is a greater lack of incorporation among various supportive organizations and lack of communal efforts to have sustainable benefits. The remaining barriers and challenges are lack of access to collateral free loans, skilled and trained manpower, infrastructure facility and utility services, traditional technology, training and educational institutions, access to markets, information, land and so on.

6.1 Major Constraints Faced by Women in Running their Business

Rather than following a conventional Problem Faced Index (PFI) determination, this study used an open-formed question to identify the problems faced by women entrepreneurs in their capacity development. The respondents responded to this interview's questions with free-form answers and each respondent was allowed to mention multiple responses concerning her difficulties in running the entrepreneurship business. Since the responses were made in raw form, later the responses were analyzed qualitatively to obtain the 'key message' of their responses. Thematic analysis is a method of developing 'theme' from the raw "codes" based on their 'commonalities' which provides better understanding and interpretation of the concerned subject. Women were asked about the constraints that they faced during day-to-day activities about their enterprises, and their responses were analyzed qualitatively. Respondents were not forced to answer this question. Among 127 respondents, 115 women stated their responses. The raw responses were then coded based on the key message of the text. Similar codes were then grouped and provided a name (i.e., theme). The qualitative analysis concludes with twenty codes and eight

themes (Table 6.1). The respondents stated multiple responses where resource related constraints and physical damage were most frequent. On the other hand, natural calamities and lack of training were least frequent responses of the respondents.

Table 6.1 Women's Constraints with regard to their enterprises

Theme	Codes	No of time mentioned by respondents	Rank
Resource-related constraints (75)	Lack of capital	32	1
	Lack of loan facilities	9	
	Lack of vaccination facilities	6	
	High cost of raw material	7	
	High cost of feed	8	
	High cost of treatment	13	
Physical damage (74)	Disease	58	2
	Death	16	
Economic losses (39)	Less profit	28	3
	Low price of final product	11	
Work-related Stress (28)	Physical stress	11	4
	Workload	4	
	Eye strain	13	
Lack of institutional support (18)	Lack of Govt. support	11	5
	Lack proper monitoring of the market	7	
Social problems (18)	Demotivation from society	12	6
	Livelihood problems	6	
Natural calamities (11)	Flood	5	7
	Rain	6	
Lack of training (5)	Training facilities	5	8

Note: Number shown in the parenthesis indicate the women respondents informed the severity of the problems.

From the socio-economic characteristics of the respondents (Chapter four) it was found that most of them belongs to low income group and and they were unable to generate adequate capital to run their business. Many of them stated about lack of loan facilities with low rate of interest along with high cost of raw materials.

As the study conducted in rural areas all the respondents were engaged mostly with poultry, livestock, fisheries, handicraft and food processing business. They stated

about the high cost of feed and high cost of disease treatment of poultry, livestock and fisheries business. Sometimes they experienced expired vaccination. Most of the respondents faced the constraint of frequent disease and death of poultry (Bird flu, Ranikhet disease), livestock and fisheries.

Moreover most of the respondents did not have adequate capital or any loan facilities and they had to face the problems of severe loss and low price of their final product which discouraged them to continue the business. Respondents were suffered from eye strain who were involved with handicraft business for their long hour work. All these constraints were most frequent stated by the respondents of this study.

6.2 Conclusion of the chapter

To attain the sustainable development and poverty free goals, women must be incorporated in the income generating activities. Though there are so many limitations, obstacles, and road blocks in this pathway, they have started to move forward. Society has also started to welcome women entrepreneurs for contributing in the nation's economy. Through facing the challenges they are involving themselves in business activities. Gradually they are becoming aware of their socio-economic rights as well.

CHAPTER VII

SUMMARY, CONCLUSION AND RECOMMENDATION

This study aimed to understand the role of ICTs on women entrepreneurs' capacity development. Data were collected using a cross-sectional survey methodology and analyzed by PLS-SEM using Smart PLS v2.0 M3. In this Chapter, the summary of this study was presented.

7.1 Summary of the Findings

The major findings of the study are summarized below:

7.1.1 Selected factors influencing the entrepreneurial capacity of women

7.1.1.1 Perceived innovativeness

The mean of perceived innovativeness score was 3.86, with a standard deviation of 0.78. The majority of the respondents (57.5 percent) were perceived them as highly innovative in terms of applying new ideas for their business growth, while 38.6 percent were perceived them as moderately innovative, and only 3.9 percent were perceived them as less innovative.

7.1.1.2 Proactiveness

An overwhelming majority of the respondents (86.6 percent) reported them highly proactive and the rest of them (13.4 percent) as moderately proactive. Therefore, it is expected that respondents' high perceived innovativeness and proactiveness positively reflect in their entrepreneurship capacity.

7.1.1.3 Self-dependency

Data concerning self-dependency reveals that more than four-fifths of the respondents (83.5 percent) reported they make their business decisions by themselves while less than one-fifth of them (15 percent) often seek others help and only 1.5 percent of the respondents mostly depend on others for making business decisions. Therefore, it can be said that in terms of business decision makings, the respondent groups were found independent.

7.1.1.4 Risk-taking propensity

The respondent women were found taking considerable risks regarding their business. More than three-fifths of the respondents (62.2 percent) reported they take a high

level of risk while a little over one-third of the respondents (35.4 percent) take a moderate level of risk concerning their business. They further reported that they take this risk with a view to business growth and promotion. The observed higher innovativeness score implies that the respondents tended to try out new things in business with a seek for entrepreneurship development.

7.1.1.5 ICT use for communication

The majority of the respondents (55.9 percent) reported that they used ICTs mostly for communication while 41.7 percent of them moderately used ICTs for communication and less than 3 percent of the respondents (2.4 percent) rarely used ICTs for communication.

7.1.1.6 ICT use for collaboration

The majority of the respondents (55.1 percent) reported that they used ICTs mostly for collaboration for business purposes, while 38.6 percent of them moderately used ICTs collaboration purposes. Less than 7 percent of the respondents (6.3 percent) rarely used ICTs for communication and collaboration purposes. Therefore, it may assume that the major purposes of using ICTs by women entrepreneurs are communication and collaboration.

7.1.1.7 Extent of ICT use

The extent of ICTs use was measured by computing a composite score of three ICT tools; mobile phones, computer and the Internet. The mean of the extent of ICTs use was 1.46 and a standard deviation of 0.74. Despite the fact that the respondents were found innovative and proactive in terms of their business, their extent of ICTs use was found very low. Only 3.9 percent of the respondents frequently used all the three forms of ICTs, while nearly half of them (47.2 percent) occasionally used ICTs.

7.1.2 Entrepreneurial capacity

More than three-fifths of the respondents (63 percent) had higher entrepreneurial capacity compared to one-third (33.9 percent) had moderate and 3.1 percent had low entrepreneurial capacity. To be concluded, the majority of the respondents had moderate to high level of capacity to manage their enterprises.

7.1.3 Results of the theoretical model

There were seven hypotheses were proposed in the model. Four out of seven were found to be statistically significant while three hypotheses were found to be unsupported. A summary of the findings of the proposed hypotheses are presented as follows:

7.1.3.1 Contribution of the entrepreneurial factors to entrepreneurs' capacity development

Perceived innovativeness was the strongest contributor to entrepreneurial capacity followed by proactiveness and these two factors were found to be significant predictor which jointly constitute 45.9 percent of the variance (R^2= 0.459). Data in descriptive analysis reported that majority of the respondents were highly (57.5 percent) to moderately (38.6 percent) innovative, and only 3.9 percent were less innovative. And 86.6 percent of the respondents were highly proactive while 13.4 percent of respondents were moderately proactive. It was observed that 100 percent of the respondents were highly to moderately proactive and none of the respondents were found with less proactiveness.

7.1.3.2 Contribution of the ICT factors to entrepreneurs capacity development

ICT use was influenced by two antecedents such as ICT use for communication and ICT use for collaboration and which jointly explained 20.3 percent of the variance of ICT use (R^2=0.203). Among these variables, ICT use for collaboration (β=0.285) was found stronger than ICT use for communication (β=0.223).

7.1.4 Constraints faced by women regarding entrepreneurship

Constraints faced by women entrepreneur was identified by using a qualitative data analytical tool which revealed eight problems. These were resource related constraints, physical problems, economic losses, work related stress,, lack of institutional support, social problems, natural calamities and lack of training.

7.2 Conclusion

Finding of the present study and the logical interpretation of other relevant facts prompted researcher to draw the following conclusions:

- ✓ Concerning the contribution, perceived innovativeness was the strongest contributor of entrepreneurial capacity of women followed by proactiveness. The observed higher innovativeness of the women entrepreneur implied that the respondents tended to try out new things in business with a seek for entrepreneurship development. Further reported that they take this risk with a view to business growth and promotion.
- ✓ The use of ICTs by the respondents was mostly for business communication and business collaboration purposes. Whereas, ICT collaboration had stronger influence than ICT communication on the extent of ICT use.
- ✓ The respondents were found innovative and proactive in terms of their business, but their extent of ICTs use was found very low. Mobile phone was found the common ICT tool and all respondents used it for home and business purposes but their access to computers was considered very low and nearly half of them had access to the Internet through mobile phones. That means rural women have not yet used any computer-based business applications or programs such as spreadsheets or account registry for managing their businesses. Although they frequently use mobile phones for communication and collaboration, the overall use of ICTs was found unsatisfactory. Therefore, there is ample scope of increasing other ICT-based business applications in the study areas.

7.3 Recommendation

Based on the findings revealed from the study, the following recommendations are put forward that might guide the policy formulation**:**

7.3.1 Recommendations for policy implications

- ✓ All the women entrepreneurs at least had access to mobile phones, yet their possession of other ICT devices like Computers was found very negligible. Only nearly half of them connected to the Internet using mobile phones. This means, women entrepreneurs, at least in the study region, still remained away receiving benefits from ICT-based business applications. Therefore, an

awareness campaign needs to be conducted in the study region informing potential women entrepreneurs about the benefits of ICT-based applications, such as Spreadsheets, Farmbook and they are provided with adequate training.

- ✓ As it was found from the study, that ICT use for collaboration and ICT use for communication were the significant contributors of ICT use, effort should be given to increase the accessibility take initiatives to invest in ICT and also improving their competence using ICT as an entrepreneur in different sectors. Besides, women entrepreneurs should be provided with a subsidy for Computers, ICT-based business application, and the cost of the Internet.

7.3.2 Recommendations for further studies

The study was conducted in Gazipur and Manikganj district as the area was well known to the researcher. Considering the time and budget, three upazilas from two districts were randomly selected as the study area. Moreover, a cross-sectional survey methodology, as used in this study, is limited in generalizing the findings. Therefore, repeating this study at the other parts of our country and compare the findings would be effective and helpful for policy formulation.

- ✓ Unexpectedly, no significant relationship was found between self-dependency, risk-taking propensity and entrepreneurial capacity building of the respondents. So, further verification is necessary.
- ✓ Despite the fact that study results show that ICT use has no significant impact on entrepreneurs' capacity enhancement, ICT use for communication and collaboration were significant influences users' ICT use. That means the use of ICT bears some significance in terms of business communication and collaboration. However, due to the very low level of ICT use by the respondent group, the researcher did not find any causal relationship between ICT use and entrepreneurial capacity development. But it may not discount the importance of ICT use for business purposes. So it is important to carry out this research in other settings where different socio-economic conditions persist and see the impact of ICTs' on entrepreneur behavior.

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APPENDIX- A

English Version of the Interview Schedule
Department of Development and Poverty studies
Sher-e-Bangla Agricultural University
Dhaka-1207

Interview Schedule for data collection for the Research on

Entrepreneurial Capacity of women in rural Bangladesh: The role of Information and Communication Technology (ICT)

(This interview schedule is entitled for a research study. Collected data will only be used for research purpose and will be published aggregately)

Serial No:

Name of the respondent:

Upazila: District:

1. **Age**: Please mention your current age _____(years)
2. **Education**:

Please mention your educational status from the following:

- No formal education
- I cannot read and write.
- I can sign only.
- I cannot go to school but can read and write which will be equal to**…….**class
- I read up to**……...**class/pass.

3. **Ownership of Entrepreneurship:**

Please mention the ownership status of business from the following

- Owned personally
- Jointly owned with husband
- Owned by husband
- Jointly owned with other family members
- Jointly owned with outsiders

4. **Nature of business and income from entrepreneurship:**

Please mention the nature of your business and the yearly income from the entrepreneurship from the following

Nature of business	Income (Thousand Tk)
Livestock	
Poultry	
Fisheries	
Food business	
Others	

5. **Entrepreneur Experience**: Please mention your experience as an entrepreneur _____ (years).

6. **ICT ownership**: please mention your possession to the following ICTs'.

Items	Possession
Mobile phone	
Computer	
Internet	
Mobile & internet	
Computer & internet	
Computer & mobile phone	
All	

7. **Perceive innovativeness**: (Norasmah *et al.*, 2006; Noraishah, 2003).
Please mention your degree of agreement or disagreement with the following statements.

No.	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	I usually think of how to find a new way of doing business.					
2.	I have the ability to generating new ideas.					
3.	I prefer to try my unique way when learning new things rather than doing it likes everyone else does.					
4.	I am able to identify opportunities where others do not see them.*					
5.	I always keep an eye out for new business ideas when looking for information.					

*This items were dropped from the analysis due to low factor loading.

8. **Proactiveness**: (Jeyakumar and Venkadeshwaran, 2018) Please mention your degree of agreement or disagreement with the following statements.

No.	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	I work hard for the growth of my business.*					
2.	I have smart business strategy to get things done successfully.					
3.	I am able to solve the business problems before they become complicated.*					
4.	I have a complete understanding of the task or problem by an appropriate approach to end in a smart solution.					

*This items were dropped from the analysis due to low factor loading.

9. **Self-dependency**: (Norasmah *et al.*, 2006; Noraishah, 2003) Please mention your degree of agreement or disagreement with the following statements.

No.	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	I have significant independence in determining how I do my job					
2.	I can decide on my own on how to go about doing my work					
3.	I have considerable opportunity for independence and freedom in how I do my job.					
4.	I enjoy being unique and different from others in many aspects.*					

*This items were dropped from the analysis due to low factor loading.

10. Risk-taking propensity: (Norasmah *et al.*, 2006; Noraishah, 2003). Please mention your degree of agreement or disagreement with the following statements.

No.	**Items**	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
1.	I would like to try out new business opportunities even when I am not familiar with the situation.					
2.	I would like to take risks if there are some business opportunities.					
3.	I have confidence on my ability to recover from my mistakes.*					
4.	I think I can handle challenges and disappointments in business with little difficulty.*					
5.	I view myself as a risk seeker with regard to business opportunities.					

*This items were dropped from the analysis due to low factor loading.

11. ICT Use for Communication :(*Johanessen, et al*. 1999) Please mention your degree of agreement or disagreement with the following statements.

No.	**Items**	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
1.	ICT help me to handle communication with other members of my own business/enterprise.					
2.	ICT help me to handle communication with external					

	members related to my business/enterprise.					
3.	ICT help me to promote marketing activities for my enterprise/business.					

12. ICT Use for Collaboration: (*Johanessen, et al*. 1999) Please mention your degree of agreement or disagreement with the following statements.

No.	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	ICT helps me to maintain collaboration with existing business partners.					
2.	ICT help me to establish new business collaboration with new partners.					
3.	ICT enables me to work flexibility (e.g. work outside the office).					

13. Extent of ICT use: Please mention your frequency of using the following ICTs for your working purpose.

No.	Items	Not at all	Rarely	Occasionally	Often	Frequently
1.	Mobile phones	No use	1-3 times/week	5-6 times/week	1-3 times/day	4-6 times/day
2.	Internet	No use	1-3 times/week	5-6 times/week	1-3 times/day	4-6 times/day
3.	Computer/laptop/tab/other communication device	No use	1-3 times/week	5-6 times/week	1-3 times/day	4-6 times/day

14. Entrepreneurial Capacity: (B. Nuraishah *et., al* 2014) Please mention your degree of agreement or disagreement with the following statements

No.	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	I am able to recognize and understand new business opportunities.					
2.	I am able to use my updated knowledge for entrepreneurial development.					
3.	I am better able to provide solutions to any problems identified at my business.*					
4.	I am better able to make effective decisions in favor of entrepreneurial growth.					

*Items were dropped from the analysis due to low factor loading.

15. Constraints: Please mention what are the main constraints you are facing in running a business:

1.
2.
3.
4.
5.

Thank You for your kind co-operation

Name & Signature of the Interviewer:

Respondent's Mobile:

APPENDIX- B

Cross Loadings

	CAP	CoM	ColB	DepN	InnO	ProAct	Risk	Use
Cap1	0.850	0.417	0.453	0.250	0.553	0.303	0.465	0.257
Cap2	0.803	0.457	0.516	0.140	0.521	0.326	0.391	0.369
Cap4	0.847	0.258	0.400	0.278	0.534	0.354	0.453	0.273
Depn1	0.176	0.047	0.035	0.780	0.237	0.264	0.068	0.078
Depn2	0.270	0.179	0.155	0.875	0.266	0.271	0.072	0.032
Depn3	0.177	0.216	0.173	0.730	0.300	0.260	0.214	0.165
ICTCoM1	0.377	0.822	0.510	0.110	0.350	0.220	0.318	0.327
ICTCoM2	0.337	0.809	0.413	0.237	0.350	0.300	0.308	0.349
ICTCoM3	0.416	0.857	0.492	0.105	0.263	0.239	0.266	0.268
ICTColb1	0.471	0.450	0.758	0.067	0.440	0.317	0.312	0.311
ICTColb2	0.432	0.418	0.743	0.262	0.446	0.389	0.398	0.272
ICTColb3	0.413	0.482	0.875	0.075	0.395	0.289	0.329	0.384
Inno1	0.563	0.342	0.555	0.281	0.888	0.326	0.521	0.389
Inno2	0.546	0.403	0.405	0.203	0.821	0.249	0.606	0.327
Inno3	0.527	0.239	0.448	0.311	0.831	0.318	0.507	0.313
Inno5	0.490	0.317	0.332	0.309	0.768	0.278	0.516	0.368
ProAct2	0.365	0.179	0.305	0.288	0.311	0.878	0.365	0.239
ProAct4	0.283	0.360	0.389	0.260	0.277	0.786	0.302	0.255
Risk1	0.439	0.280	0.373	0.129	0.533	0.366	0.852	0.443
Risk2	0.389	0.295	0.336	0.117	0.522	0.270	0.806	0.301
Risk5	0.472	0.326	0.358	0.099	0.562	0.359	0.834	0.248