

YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF COMMERCE
MASTER OF BANKING AND FINANCE PROGRAMME

INFLUENCING FACTORS ON FARM PERFORMANCE
(CASE STUDY IN BOGALE TOWNSHIP, AYEYARWADY DIVISION)

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(MBF 4th BATCH – 30)

DECEMBER 2018

**INFLUENCING FACTORS ON FARM PERFORMANCE
CASE STUDY IN BOGALE TOWNSHIP, AYEYARWADY DIVISION**

A thesis submitted as a partial fulfillment towards the requirements
for the Degree of Master of Banking and Finance (MBF)

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ABSTRACT

This study aims to identify the influencing factors on farms' performance in Bogale Township. This research used both primary and secondary data. The primary data were collected by interviewing with farmers from 5 groups of villages. The sample size includes 150 farmers (6% of the total farmers of each village). Survey was conducted by using structured questionnaires. Descriptive analysis and linear regression methods are used. According to the farmer survey, the household size of the respondent is from 2 to 8 members. Average numbers of farmers are 2 farmers. Duration of farming experience is from 11 to 20 years and their main source of earning is farming. Their living standard is above average level possessing own home, motorcycle and almost they owned farmland and cows. The cultivated acre is 30 acres maximum and 1 acre minimum. Average paddy yield per acre is around about 60 bushels per acre for rainy season and 100 bushels per acre for summer season. They borrowed loan from MADB and some also obtain loan from other organizations. However, most of farmers received loan only after farming period. More than half of farmers covered about fifty percent loan sufficient rate. The finding shows that according to linear regression analysis, credit accessibility to farmers indicated that credit is the most influencing factors on farm yield per acre in summer season and farming experience of farmers indicated that farming knowledge is also the most influencing factors on paddy yield per acre in rainy season. Therefore, the farming experience, the new technologies for maintaining farms after environmental effects and financial knowledge should also be supported to farmers to manage agricultural credit as effectively and efficiently. Furthermore agricultural credit should also be provided to farmers sufficiently and timely manner.

ACKNOWLEDGEMENTS

Firstly, I would like to convey my gratitude to the Rector, Prof. Dr. U Tin Win, Yangon University of Economics for giving me opportunity to do this thesis as requirement of Master Degree.

My sincere appreciation is extended to Prof. Dr. Daw Soe Thu, Head of Department of Commerce and Program Director of Master of Banking & Finance Programme, Yangon University of Economics for her invaluable advices, thoughtful comment and support for my research.

I would also like to thank again to my supervisor, Prof. Dr. Daw Tin Tin Htwe for her helpfulness and her useful advices for the early stages of preparing this thesis as well as giving me proper guidance through the whole period of preparing theses. I would also like to thank my all teachers for sharing their knowledge and experience.

Moreover, I would like to thank MADB managers and all staffs in Yangon Head Office and Bogale Township and all respondents who participated in collecting data for their kindness to answer the questionnaire.

Besides, I also thank all friends and classmates of Master of Banking & Finance for sharing spirit of friendship and passing together along the Master programs. Finally, I would like to thank everybody who was important to the successful realization of thesis, as well as expressing my apology that I could not mention personally one by one.

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LIST OF ABBREVIATIONS

ADB	Asia Development Bank
CSO	Central Statistical Organisation
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
HDI	Human Development Initiative
JICA	Japan International Cooperation Agency
LIFT	Livelihoods and Food Security Fund
MAB	Myanmar Apex Bank
MADB	Myanmar Agricultural Development Bank
MAP	Making Access Possible
MEB	Myanma Economic Bank
MFI	Microfinance Institution
MIMU	Myanmar Information Management Unit
NGOs	Non-government Organizations
RRBs	Regional Rural Banks
SHG	Self Help Groups
UNDP	United Nations Development Programme

CHAPTER 1

INTRODUCTION

Agriculture occupies one of the key positions in a country's economy growth. Agriculture has a greater role in the development of industries such as textiles, sugar, tea etc. The contribution of the banking and financial sector to the current economic growth of the country's economy is very significant. Most of the developing countries have been attempting to provide agricultural credit to farmers for increasing productivity of farm's performance that will be effected to economy growth of the country. Across Southeast Asia, agricultural growth has historically been a major driver of overall economic growth and poverty reduction (Christiansen, Demery, and Kuhl 2011).

India, Bangladesh, Indonesia, Malaysia, Thailand and Vietnam all enjoyed rapid agricultural growth as part of their successful development over the past several decades. Given broad similarities in the economic structures of these countries in the 1970s, 1980s and 1990s in comparison with Myanmar today, the historical evidence suggests that rapid agricultural growth in Myanmar has the potential to be the engine for broad-based economic growth and poverty reduction. Moreover, the current democratic reforms in Myanmar create opportunities for development of agricultural and economic policies for greater food security and poverty reduction. (Than Tun, Adam Kennedy and Ulrike Nischan, Nov 2015)

Agriculture is the backbone of the Myanmar economy with a contribution of about 38% to Myanmar's GDP and 23% in exports, agriculture is the leading employer in the economy (60%). Out of 67.6 million hectares of land in Myanmar, 12.8 million hectares are cultivated land. When measured by value of production, rice is the dominant commodity, accounting for 43% of production value, which is almost five times as high as the second highest value commodity. (CSO 2017).

The Government of Myanmar is at this moment facing critical decisions that will determine the future direction of agriculture. Myanmar's agricultural potential is enormous, given the country's resource endowments as well as its favorable geographic location in the Greater Mekong Sub region, which places Myanmar advantageously between two huge markets, India and China. Nowadays, two-thirds of the population of Myanmar is primarily engaged in agriculture although about one quarter of the population still falls below the national poverty line. (MIMU 2016).

At the same time, the agricultural potential of Myanmar is largely an available opportunity, as agricultural development to date is limited. Land productivity likewise trails most neighbors. Furthermore, most farms with low input, low productivity, low quality output, and low returns are caught in a “low equilibrium trap.” In Myanmar two-thirds of population involved directly or indirectly in agriculture, this “low equilibrium trap” has contributed to high rates of poverty and food insecurity. (ADB Report Dec 2015)

As Myanmar is one of the developing countries, whenever rural development is considered, it is needed to think of farm performance. External factors and internal factors are also affected to the performance of farms’.

1.1 Rationale of the Study

Agricultural Credit is the amount of investment funds made available for agricultural production from resources outside the farm sector. Veerpaul Kaur Maan, Dr. Sandeep kumar (2012) conducted a study on the topic “State wise agricultural sector growth and performance” express major sector of the Indian economy is agriculture by defining a source of income, employment and export earnings.

Myanmar has one of the least developed financial systems in the world and poor access to credit is widely believed to be a major constraint to investment and productivity improvements in agriculture. In the absence of secure term, Myanmar has encountered vicious cycles that limit agricultural productivity. Lacking documentation of land use rights, access to capital has remained limited and is a commonly identified constraint to improved production by farmers. As a result of limited capital, input use remains constrained as farmers cannot afford the up-front costs of fertilizer and other inputs. Myanmar has made much progress through the recent expansion of agricultural credit under the Myanmar Agricultural Development Bank and the Myanmar Livestock and Fisheries Development Bank (MLFDB) which offer subsidized credit rates to farmers.

In agricultural sector, providing loans to farmers for crop production as monsoon and winter loans primarily by MADB, other financial institution and NGOs. MADB provides agricultural loans to farmers on a maximum amount per acres basis, up to a maximum of 10 acres, and farmers supervise to take the maximum loan amount. This maximum amount per acre has improved significantly over the last few years from as low as MMK 8,000 per acre in 2009, to a current level of MMK 150,000 per acre for

paddy, MMK 100,000 per acre for sugar cane and MMK 50,000 per acre for other crops. Three quarters (75%) of farmers which had taken out at least one loan from MADB during the last two growing seasons (dry season and monsoon). (MADB's agriculture loan procedure Dec 2017).

This study focus on the agricultural loan based on specific region and crop. In the agricultural loan cluster, 30% of Union Agricultural seasonality loans are related to Ayeyarwady Region, 20% of loans are associated with Bago region and other 50% are related to other states and regions. In the agricultural loans by crop, approximately 90% of loans by crop are related to Paddy crop among other types of crops. (CSO, MADB 2017)

According to Myanmar Agriculture Statistical data 2017, Ayeyarwady is the highest yield of rice in terms of accounting for 60% of the country's yield. As a staple food in Myanmar, rice cultivation is observed in the whole country. There are six district in Ayeyarwady region such as Pathein, Pyapon, MaOuPin, Myaing Mya, Latputta and Hinthada district. In relation to statistical information of total population and actual Paddy Yield (Acre) of 2013-2017, Bogale is the largest population in Ayeyarwady Division. Bogale is located in Pyapon district which is the main transportation region by river in Ayeyarwady Division. The coverage areas of Pyapon District includes Kyit Latt, Day Dayae, Pyapon and Bogale Township. (CSO, MADB 2017)

1.2 Objectives of the Study

The objectives of this study are as follow;

- To identify credit accessibility in Bogale Township
- To determine the influencing factors on farms' performance in Bogale Township

1.3 Scope and Method of the Study

This study focused on the influencing factors on farms' in Bogale Township. In Bogale Township, there are 71 number of village tracts which are composed of 630 small villages these groups. This survey was accompanied by two-stage random sampling method based on pilot survey which have been collected over 60 farmers' households in Pathein and Pyapon Township since May 2018. Total respondents are 150 farmers with whom face-to-face interview were conducted by using structured questionnaire. Before the survey, meeting and open discussion with managers from MADB (Bogale Branch) and village administrators were organized. The scope is

limited to the period Financial Year 2016-2017. This study used descriptive statistic and linear regression method. Secondary data is collected from yearly report of Myanmar Agriculture report, Statistical Year Book from Central Statistical Organization (CSO), five years statistical agricultural data from Ministry of Agriculture, Livestock and Irrigation, five years agriculture loan data from MADB, previous studies, thesis, reports, internet websites and any other related reports.

This analysis evaluates the influencing factors on farms' performance by using macro and micro factors. Macro factors include loan of microfinance institution, market price of crops, input cost and weather conditions. Reliance of existing skills, loan availability to Farmers, loan utilization, family demographic, property and farm machinery ownership are included in micro factors. The result of the study can support influencing factors on farms' performance in agriculture sector which can increase the country's economy growth and to help farmers in credit accessibility.

1.4 Organization of the Study

This thesis consist of five Chapters. Chapter (1) is introduction, including rationale, objectives, scope, method and the organization of the study. Chapter (2) is literature review where the definitions and concept of agriculture credit, influencing factors on farms, previous research studies will be presented. Chapter (3) background information of Bogale Township, Ayeyarwady Division. Chapter (4) analysis of the influencing factors on farm's performance in Bogale Township, Ayeyarwady Region. Chapter (5) is conclusion where findings and recommendations will be presented.

CHAPTER 2

THEORETICAL BACKGROUND

This chapter provides the literature review concerning the theories and research finding from previous studies. There are nature and source of loan from Financial Institutions, market access, farm input cost, weather condition, reliance of existing skills, role of agricultural credit, credit availability to farmers, credit utilization, technology improvement, ownership of property and farm machinery.

2.1 Nature and Sources of Agricultural Finance

Agricultural finance refers to financial services ranging from short-, medium- and long-term loans, to leasing, to crop and livestock insurance, covering the entire agricultural value chain - input supply, production and distribution, wholesaling, processing and marketing. Dhondyal (1962) defined agricultural finance “as a branch of agricultural economics, which deals with financial resources related to individual farm units.” Farm finance has become an important input due to the advent of capital intensive agricultural technologies. Farmers require capital in order to enhance the productivities of various farm resources.

The agricultural credit system consists of informal and formal credit supply. Farmers need the financial credit required for investment in agricultural sector. Various delivery systems are used by different types of institutions to deliver financial services to low-income families in the region. The farmers obtain the required credit from various sources which can be categorized into two sectors. Credit is also classified on the basis of lender according to such as

- Institutional Credit – The formal sources include government, Self-Help Group (SHG), cooperative credit societies, commercial banks and regional rural banks (RRBs).
- Non-Institutional Credit - The informal sources include friends, relatives, commission agents, traders, landlords and private moneylenders.

2.1.1 Institutional Credit Sector

Institutional credit has been considered to play an essential role in the agricultural development. A large institutional agencies are contained in the disbursement of credit to agriculture. However, the persistent of money lenders in the rural credit market is still a major concern. The institutional sources which provides the

credit to the farmers are known as organized sources of agricultural credit which are recognized for the development of agricultural sector. Institutional funding of the farm sector is mainly done by commercial banks, regional rural banks, and cooperative banks.

Government

The government recognized the importance of agriculture to country's economic development, which is reflected in a number of its reform initiatives in the past decade. The government banks spread out for both short-term and long-term loan for agriculture. These loans are popularly known as "Taccavi loans" which are generally advanced in times of natural calamities. This loan was a short term loan given to poor farmers to purchase seeds, fertilizers, equipment's and for other agriculture purposes. This was introduced to enhance productivity of crop cultivation and help poor farmers to increase the income (Jim Giovinazzo, 2013). ADB provides short-term (less than 1 year), medium term (1 to 5 years) and long term (more than 5 years) credits to the farmers. The interest rate is low and it is not a major source of agriculture finance.

Commercial Banks

The role of the commercial banks is that they serve as intermediaries channeling funds from those wishing to save to those wishing to borrow. The second role is that they remove financial waste from this economy thereby helping to channel all available resources towards productive activities. Therefore commercial bank does not only protect the deposit money but also put it to work using it as the bases for loan and credit to those who needs the fund for investment, such fund injected on investment are use in capital asset accumulation and operations of Agriculture, manufacturing and services.

Through the credit extension process of the commercial banks, additional deposits are created in the economy thereby increasing the growth of domestic product of the country. This in turn has a positive impact on the economic growth and the overall development of the country. Hence, bank can be referred to as engine of growth in societies where they operate and in a developing country. Banking industry is an important institution in the promotion of economic growth and development. (Anifowose Oladotun, 2016)

Regional Rural Banks (RRBs)

RRBs are scheduled commercial banks (Government banks) operating at regional level in different States. They have been created with a view to serve primarily the rural areas with basic banking and financial services. On the other hand, RRBs may have branches set up for urban operations and their area of operation may include urban areas too. RRBs were set up in those regions where availability of institutional credit was found to be insufficient but potential for agricultural development was very high. However, the main focus of the RRBs is to provide loans to small and marginal farmers, landless laborers and village artisans. These loans are advanced for productive purposes.

Cooperative Credit Societies

Cooperative credit society is an association of members registered under State Co-operative Societies Act. Share capital is contributed by members. Credit society elects their chairman and board of directors. This society can accept deposit from members and give loans to members. Profit or loss shared among members (Gowindan Nampoothiri, 2017). Cooperatives are also the most important source of institution credit available to the farmer. In many of the Asian countries, the agricultural credit available through cooperatives accounts for four-fifth or more of the institutional agricultural credit. In China (Taiwan), the credit directly delivered by multipurpose cooperatives called farmer's associations, accounts for about one-third of total institutional credit and the bulk of the balance is distributed and recovered by these cooperatives as agents of various government bureau (Faridabad, 1967).

Self-Help Group

Self-help groups, also known as mutual help, mutual aid or support groups, are groups of people who provide mutual support for each other. In a self-help group, the members share common problem, often a common disease or addiction. Their mutual goal is to help each other to deal with, if possible to heal or to recover from, this problem (Kate S. Ahmadi 2016).

2.1.2 Non-Institutional Credit Sector

The local individual who provide the credit to the farmers are unorganized sources of agricultural credit. The rural farmers are dependent on the unorganized sector for their agricultural credit. About 60% agricultural credit comes from these unofficial sectors.

Commission Agents and Traders

For the purposes of productive against farmers' crop without completing legal formalities, traders and commission agents grant loans to agriculturists. It becomes necessary for farmers to buy input and sell outputs over them. The charges of interest rates on loan will be hefty rate and a commission on all the sales and purchases, making it unequal in nature.

Private Moneylenders

There are two types of money lenders such as agriculturist and professional money lenders. Agriculturist money lenders who combine their money lending jobs with farming and professional money lenders whose sole job in money lending. They grant loans with guarantee of movable and immovable credit with the collateral moveable credit with the security movable and immovable property.

Landlords

Land owners deliver short-terms loan or long-term loan to the farmers. Generally, farmers contribute standing crops and cattle as security to get short-term credit and farmers deliver land and houses as security to acquire long-term credit for farms. Mostly, small farmers and tenants rely on landlords for getting their production and day to day financial fulfilment.

Friends and Relatives

Small amount of agriculture credit are provided by friends and relatives of farmers for the purposes of meeting day to day needs and emergency requirements. They provide loan with or without interest and collateral.

2.2 Credit Accessibility to Farmers

Agricultural credit is described as banking finance for primary production, processing and trade of agricultural products, and the production and distribution of inputs. Poor farmers have very little chance to borrow from the formal sector because they rarely have collateral acceptable to banks. They may not have clear title deeds for the land they cultivate but even if they do, rural land markets may not function well enough for land to be considered a "bankable" asset. Smallholder farmers may have access to credit from Micro-credit institutes which do not have the collateral requirements. Micro-credit schemes are often associated with group lending where peer pressure is an effective substitute for collateral and group members may take action to prevent one member from defaulting (Kindness, &Gordon, 2001, p. 29).

There are different views regarding the involvement of governments in agricultural development. One view is that the involvement of the governments in the economy results in a danger of rent seeking and corruption. The stagnation of the economic growth and the increasing deficit of state budgets in this period led to the adoption of stabilization and structural adjustment plans. The adoption of the structural adjustment program was considered as a paradigm shift from the widely accepted idea.

After structural adjustment programs were implemented in many countries, non-governmental organizations provided micro-finance services in the rural areas to fill the gap caused by the abolishment of the agricultural credit previously provided by the government. The credit provided by the NGOs was evaluated as the loan periods were too short and the amount of the loan too small for agricultural investment. Therefore, farmers were unwilling to apply yield-enhancing technologies because they were afraid of risks such as drought, pest attacks and unstable prices (Aune, & Bationo, 2008, p. 120). Developed countries continued to subsidize the agriculture sector regardless of the imposition of structural adjustment programs in the developing countries.

2.3 Types of Credit

Agricultural credits can be classified based on purpose and time (repayment period). The development credit, production credit marketing credit and consumption credit are classified based on purpose of credit and based on the period for which the borrower require credit, it is divided into short-term, intermediate-term and long-term credits.

The development credit is provided for acquiring durable assets or for improving the existing assets. Under this credits is extended for purchase of land and land reclamation, purchase of farm machineries and implements, development of irrigation facilities, construction of farm structures, development of plantation and orchards and development of dairy, poultry, sheep/goat, fisheries, sericulture, etc.

The production credits is given for crop, production and amount is used for purchasing inputs and for paying wages. The marketing credit is essential to carry out the marketing functions and to get higher prices for the produce. The consumption credit is the credits required by the farmer to meet his family expenses.

Short-term credits play an important role in agricultural development through increasing small farm productivity and income of the farmers. Short-term loan is normally sanctioned at the start of the growing season. The amount of the loan disbursed depends upon the size of loan possession by the beneficiary. Loan maturity usually matches the length of agricultural production cycle (eg. 3 to 18 months).

Intermediate-term loans are used to finance depreciable assets such as machinery, equipment, breeding livestock and improvement. Repayment is for the period of 2 to 5 years. It can be repaid either in half yearly or annual installments. Long-term credit is advanced for periods more than 5 years and extends even unto twenty five years against mortgage of immovable property for undertaking development works such as sinking wells, purchase of tractor, and making permanent improvements in the farm. It has to be repaid in half-yearly or annual instalments.

2.4 Credit Utilization of Farmers

Loan utilization that provided by Financial Institutions on Farmers as follow: defining that financial service providers gain a better understanding of customers and measuring effectiveness on agriculture loan by studying only personal and farm attributes (age, education, family size, land size and livestock ownership), access to credit, training, multiple information communication methods and perceived economic return that providing agriculture credits with financial literacy and not providing other agriculture related package.

The main subheads of the input cost on farming as considered in the present study are purchase of seed/seedlings, manure and fertilizer insecticides, charge for irrigation water, hire charge for human labor and charge for hire cost of Tractor and harvesting machine. There are some information on loan utilization of farmer in which loan are not used for purchase of farming machinery and that loan amount is utilized for purchase of household property and to settle loan. Moreover, loan amount is consumed for purchase of farming machinery and to invest in other business.

There is an opportunity for an alternative source of income strategy because the demand for labor in the agricultural sector varies from peak to off-peak seasons. In addition to the seasonality of the required labor force, the labor absorptive ability of the agricultural sector declines over time. These are two of the reasons why the diversification of rural households is required. Income diversification is the

involvement of farmers in different income generating activities such as farm and off-farm to fulfil their household needs.

Off-farm employment helps farmers to get working capital and secure income to finance inputs in a credit constrained situation. There are many factors contributing to the diversification of income generating activities by farm households.

2.5 Influencing Factors on Farm Performance

The influencing factors on farm performance included market access, agricultural development and farm input usages, environmental factors and household characteristic of farms operators.

2.5.1 Market Access

As development proceeds, with resulting increased living standards and urbanization, the size and efficiency of the marketing system become more important. Good communication (roads, railroads, telephones, postal services, etc.) and storage infrastructure are crucial to a well-functioning marketing system. The availability and quality of rural roads, in particular, have a strong influence on marketing costs and on the willingness of farmers to adopt new technologies and sell any surplus production (Food and Agriculture Organization of the UN report 2014).

Modern storage facilities are important, to minimize rodent, insect and water damage while commodities are being held. Producers require market information to improve market efficiency and reduce transactions costs. Unequal access to information can give a competitive advantage to particular groups of farmers or traders who have more information. Therefore, access to information is of fundamental importance for agricultural development (FAO UN Report 2014).

The farm gate prices is forced primarily by three factors;

1. First, the price of rice is very much dependent on the seed variety that is grown.
2. Second, the technical rice quality has a major impact on the price. Differences in the technical quality are caused by moisture content of rice at harvest, related infections with fungi time of harvest and threshing techniques.
3. Finally, the location of the typical farm relative to markets has of course an impact on farm gate prices. Additional losses (both quantitative and qualitative) occurs post-harvest, especially during the milling process.

The agriculture benchmark partners in Southeast Asia stated that the rice value chain often needs to be improved in order to minimize harvest and post-harvest losses and enhance rice quality and thereby increasing revenues and profits of farms.

International rice markets are seen as volatile due to the thin nature of the market which is believed to be exacerbated by a low level of substitution between major rice export markets. In other words, this perceived lack of price transmission amongst international rice markets is believed to further thin out an already thin world rice market. Furthermore, the direction of price transmission suggest that Asian prices act as price leaders for North and South American prices. While it is not clear whether there is a price leader amongst the Asian export markets, Vietnam has the most extensive price relations with other export markets which would suggest that the Vietnamese rice export price is a more suitable world reference price than the Thai export price.

There are numerous varieties of rice which are consumed and traded; however, conventional indica varieties make up 85 per cent of world rice consumption and 80 per cent of world rice trade (Jayne, 1993; Dawe, 2008). However, Falcon and Monke (1980) expected indica prices between Asian and American export markets to be integrated and Dawe (2008) also expected these markets were strongly related throughout the 1980s. However, Dawe (2008) believes that American and Asia indica rice markets act more like two separate commodity markets which he argues can be explained by the fact that the US does not export rice to Asian markets (Adam John, 2014).

Total cost per ton is the lowest in Myanmar and Laos, followed by Vietnam. Though it is a medium-cost producer by global standards, Thailand's average cost of production (COP) is 50 percent higher than in Myanmar, and as much as double that of Vietnam. This is because this finding coincides with low farm gate prices for those farms which are low in cost of production. To the degree the low farm gate prices reflect quality issues the low cost of production is not an immediate advantage. The comparison of return to land indicates that the on-farm competitiveness of rice is already now a very relevant issue.

In the early 1960s, Myanmar was a major global rice-producing and exporting country, but international isolation after that time meant that little rice was exported for several decades. Recently, political change in Myanmar has opened the economy and rice exports have resumed. Myanmar has abundant land and water, as well as inexpensive labor, marking it a cost-competitive exporter. However, an inefficient

milling industry hurts the quality of the rice it produces and exports, while poor transportation infrastructure and export procedures increase delivery costs.

2.5.2 Farm Input Usages

Increased output per hectare and per worker is demanded in most developing countries for successful agriculture development. This agricultural growth depends in part on the availability and financing of new often manufactured inputs.

Seeds, fertilizers, irrigation, labor input, mechanical inputs, pesticides and advisability of input subsidies tend to be highly complementary inputs.

Governments must address a series of issues relate to production, distribution, pricing, financing, and regulation of inputs, and to the identification and encouragement of optimal on-farm input usage. To be more productive than traditional varieties, new varieties of wheat, rice, corn, and other food crops require more fertilizer and better water control than would be used under traditional practices (Kyaw Thu Myint EMPA, 2017).

Water and fertilizer tend to generate lush plant growth and an environment favorable to weeds and other pests, thus raising the profitability of pesticides as well. If this package of inputs in available to farmers together with the necessary financing and information on usage, the productivity of both land and labor can be improved.

Seed

Myanmar's seeds sector is far behind most other Asian countries. There are a lot of challenges in establishing a vibrant seeds industry while the climate and soil conditions for seed production in Myanmar are excellent (Embassy of the Kingdom of the Netherlands, Yangon, Ministry of Foreign Affairs, Oct 2015).

There is no Plant Variety Protection in Myanmar, so most seed companies currently opt for sales of imported seeds. There is growing demand for hybrid maize and (hybrid) vegetable seeds. A small number of international companies are already producing seeds in Myanmar. A huge influx of international companies is expected soon, once a pending new seed law to protect plant variety will be enacted.

Seed of high – yielding varieties is usually a relatively low-cost input. However, seed of superior varieties must be developed or identified, tested, produced and multiplied, monitored for quality, and distributed to farmers. The government often has a role to play in the development, testing, quality monitoring, and production of the basis seed. Private firm can be contained in the development of seeds and their

distribution of farmers. The exact roles of public and private bodies in a particular country may change as the seed industry develops.

Pesticides

Farmers often using pesticides highly profitable, as agricultural production intensifies through increased use of new seeds, fertilizer, and water. Sometimes these pesticides are applied as a preservative treatment and other times a major pest problem develops. Pesticides can have serious drawbacks. Some pesticides are poisonous to humans and animals and result in destroying in the short run or chronic health problems in the longer term.

Applications with improper equipment or inadequate clothing for protection make worse health problems. Chemical pollution can spread beyond the area where the pesticide is applied, with particularly harmful effects on fisheries. Some pesticides kill insects that are beneficial to agriculture. When pesticides are frequently applied over a period of time, the target insects, diseases, or weeds develop resistance to the chemicals, making increased pesticide amounts necessary to maintain the same level of effectiveness. Weed control is especially important to strengthened production in Africa where labor for weeding is less abundant than in other regions.

Fertilizer

Higher-producing varieties require additional fertilizer, particularly nitrogen, phosphate and potash. These nutrients can be obtained from natural fertility in the soil, animal and plant wastes, and leguminous plants that can fix nitrogen from the air. These natural sources often must be supplemented by chemical fertilizers to provide the necessary quantities and precise mixtures required. In developing countries, suitable high-yield grain varieties have not been developed. The remoteness and lack of infrastructure hinders the distribution of chemical fertilizer to farmers. In these areas, traditional varieties and practices may continue to dominate and incomes remain low or even decline as higher production in more-favored regions drive prices lower.

Water

Water irrigation significantly influences the number of crops grown per hectare per year, the inputs used, and hence production. Higher levels of fertilizer application require more and better-timed water input. Drainage is also important because few crops can stand excessive standing water. Development and management of irrigation

and drainage systems often require a combination of public and private initiatives. Government can seek to expand and modernize irrigation and drainage facilities and can design rules of water pricing to encourage economically sound water use. Farmers and villages themselves can develop smaller systems and necessary canals for distribution on farms along with rules for water distribution.

Labor Input

Relative to average labor cost it appears that already today this is a burning issue for the typical farms in Vietnam, Myanmar, and Cambodia. In all these cases the hourly return to labor is in the same range as current labor cost. This implies that the current farming structures and systems will have a rather hard time to compete on labor market in future. This assessment is based on the assumption that the industrial developments in these countries will lead to ongoing increases in wage rates.

Mechanical Inputs

Agriculture mechanism is frequently a heated subject. In large parts of the developing world, tilling, planting, cultivating, and harvesting are still done by hand, particularly in Sub-Saharan Africa and in hilly regions on other continents. In many areas of Asia and Latin America, animals are an important source of power. Even in countries where farming is more mechanized, power tillers and tractors are often restricted to tillage and a few other operations (Hans Binswanger, *Agricultural Mechanization: World Book Research* Jan 1986). The argument arises because machinery usually substitutes for labor or animals. Therefore, mechanization is most profitable in countries where land is abundant, labor is scarce, and capital is cheap; this situation would seem to exist in relatively few countries.

Highly productive cropping systems, whether on small or large farms, can often suffer from more precise planting depths and fertilizer placement, mechanically pumped irrigation water, mechanical threshing, transport, power spraying of pesticides, and tilling when timing is critical for multiple cropping. Even in areas where labor is usually scarce, shortages can occur in certain seasons which, if relieved through mechanization, could increase the overall demand for labor. Mechanization is unavoidable over time, but the type of mechanization should be appropriate given the relative endowments of land, labor and capital.

2.5.3 Environmental Factors

Environmental factors affect range plant growth. The three most conditions and influence that affect the life and development of an organism are climatic factor, biotic factor and edaphic factor (Cinfores Ltd, 2012).

Climatic Factors

Climate is the average weather condition of a place measured over a long period of time. The climatic factors include temperature, rainfall, sunlight, wind and relative humidity.

Temperature

Temperature is the degree of hotness or coldness of a place at a given time. It has effect on plant and animals which include:

1. It affects the distribution of plant and animal.
2. It is essential for the germinations of seeds.
3. It is necessary for photosynthesis.
4. It affects the growth of plant.
5. It also affects the maturity of crop that is ripening of fruits.

Rainfall

The rate of plants varies with the amount of water available and it is the major source of water for agriculture which also includes:

1. It help to dissolve soil nutrients.
2. Supplies drinking water for animals especially desert animals.
3. It is essential for the germination of seed.
4. It determines the different type of vegetation e.g. rainforest, desert, and savannah.
5. It is measured with a rain gauge.

Sunlight

The energy radiating from the sun is used by plant for their physiological growth and development, and they respond to different rate to light intensity and duration is called photoperiodism. Light is necessary for the maturity and growth of seeds, essential for the performance and production of poultry and productivity of crops. Absence of light leads to etiolating whereby leaves becomes pale and stem elongated.

Wind

Wind is an important factor that affects production due to its influence on seasons. It affects the level of rainfall and is essential for the dispersal of fruits and seeds. It is one of the agents of pollination especially in monocotyledonous plants.

Relative humidity

Relative humidity is the amount of moisture in the atmosphere. The following are the effects:

1. High relative humidity reduces evapo-transpiration.
2. It results in the formation of rain.
3. It affects the performance of crops and animals.
4. Low relative humidity can reduce temperature leading to coldness.

Biotic Factor

These are living organisms affecting agricultural production. They pose a threat of reduced crop yield and disease conditions in animals. They include parasites, predators, soil organisms, pests and diseases.

Edaphic Factors

Soil or edaphic factor is an important factor that affects agricultural production, all agricultural activities are carried out in soil. Human life is dependent on soil, so are also plants and animals for food which sustain life. The type of soil in an area determines the types and level of crop production in that area. There are components of soil that are important in agricultural production such as: texture, structure and PH of the soil. Soil texture refers to the proportion of sand, silt and clay particles in the soil while structure is to the arrangement of these particles in the soil. Areas with loose sandy soil are more likely to be less productive than areas with higher capacity to retain water which makes nutrients available to crops.

Although areas with very high capacity to retain water may also have their limitations e.g. water logging, they are however easier and less costly to manage than those that cannot retain water. Soil PH refers to the level of acidity of the soil, and influences to a great extent in agricultural production. This is a result of variations in responses of crops to the different PH levels. Most crops do well between the PH of 5.5 to 8. At a lower range, elements like aluminum, manganese, iron, etc. become present

in toxic quantities in the soil, while at a higher PH range, there is loss of nitrogen which is a key on primary element for plant growth (Cinfores Ltd, 2012).

2.5.4 Household Characteristics of Farmers

The household characteristics consist of many variables that affect the agricultural production of farm operators. Some of these variables are age, gender, education level, family size, landholding size and possession of oxen.

Gender

Gender refers to socially constructed roles and relationships of women and men in a given culture or location. In enhancing agricultural production and income, the full participation of men and women is very important. Women tend to be the major players in the farm labor force engaged in production, harvesting and processing activities (Jafry, & Sulaiman, 2013, p. 470).

It is also known that the majority of food is produced by women farmers and they are responsible for fulfilling the basic needs of the family. Studies have also indicated that women farmers are more naturally conscious compared to men farmers (Burton, 2013, p. 22). Women farmers are also challenged by the absence of capital, information and access to markets which prevents them from producing enough to fulfil the basic necessities. The scarcity of knowledge related to women's rights exposes them to land grabbing and the loss of their heritage (Camara et al., 2011, p. 146).

In Ethiopia, gender differences in economic production remain a challenge with the majority of women still facing discrimination. However, the revised Family Law of Ethiopia has improved the rights of women to manage common marital property along with their husbands (Hallward-Driemeier, & Gajigo, 2013).

Education

Research findings have designated the importance of education in agricultural production and income. The contribution of education to the growth of national income was recognized in the 1960s. To achieve agricultural development, the investment in production techniques and technology should be supported by a comparable investment in human capital (Schultz in Bingen et al., 2003, p. 407). This is because information and knowledge are fundamentals for farmers to adopt technology, access input, change ways of doing things and market their produce. Education is also supposed to promote economic growth by increasing the productive capability of farmers as well as reducing the customs that are contrary to growth such as traditional word-of-mouth communication methods (Asfaw, & Admassie, 2004, p. 216).

Farmer's age and Family Size

Agricultural production is influenced by other household characteristics such as the farm operator's age, family size and landholding size. The age of the household head is a proxy variable for the farming experience of farm operators.

Farmers are highly dependent on their previous knowledge of farm practices in cultivating different crops. Therefore, experienced farmers are expected to improve the productivity of their holdings. However, it is not without limit as older farmers lack the required physical strength on the farm and lower the probability of technology adoption. Land is the most critical natural resource for countries where the agricultural sector is the engine of the national economy.

Landholding Size

Farm operators with larger landholding sizes would have a better farm income if sufficient family labor was available. This leads to an increased demand for children who can work on the land. It is not possible to expand the landholding size without matching it with an increase in the size of the household. Hence, households with larger families face a challenge to feed each of the family members and this will have its own negative effect on the nutritional status of the family (Olayemi, 2012, p. 137).

Possession of Oxen

Historically, oxen have been acknowledged as the first draft animals to serve human beings, to cultivate land and pull heavy loads. The possession of oxen determines the farming ability of farm operators because if farmers do not have oxen they would be obliged to rent out their land to other farmers. In this case, farmers would enter into sharecropping. This further moderates the production and income of the household as the yield is shared with oxen owners. There are advantages associated with owning oxen. Oxen owners can cultivate and sow their land at the right time. This has a positive impact on the productivity of land. In addition, oxen could also be rented out on a daily payment basis to till the land for other households. Therefore, they may serve as a source of additional income for the owners. (Bryant, 2010, p. 360)

Agricultural Production Technologies

Agricultural production technologies include biological and chemical technologies. Specifically, these technologies include chemical fertilizers, selected seeds or High Yielding Varieties, irrigation and soil quality enhancing technologies. Farmers use these technologies in order to enhance the production and productivity of

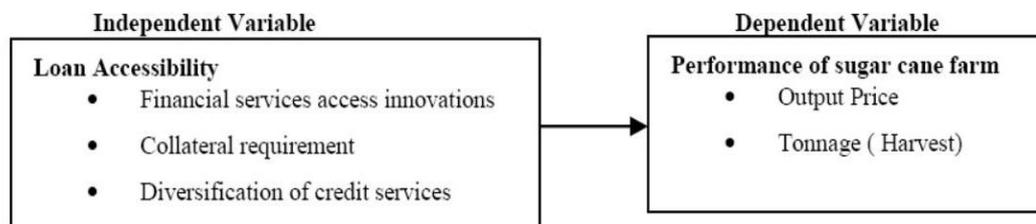
the land. It is also indicated that, for poor farmers, adoption of technology places new demands on their limited resource base (Kamruzzaman, & Takeya, 2008, p. 218).

2.6 Review on Previous Studies

There are several studies regarding to influencing factors on farms' performance and credit accessibility of farmers on agricultural sectors. This part would describe a review of some related previous studies.

Wanjawa (2017) explored contribution of agricultural loan accessibility to performance of small holder sugarcane farmers in Kakamega County, Kenya. The paper found that agricultural loans have significant effect on the performance of the farmers. The conceptual framework can be seen in Figure (2.1).

Figure (2.1) Conceptual Framework of Previous Study



Source: Wanjawa, D., Yugi, C. and Muli, W. (2017)

In Figure (2.1), agricultural loans have been used as independent variable under a construct-accessibility; dependent variable which is performance of sugar farm was conceptualized as pricing of the sugarcane and tonnage. The loan affects their farm produce since they cannot invest in getting good cane suckers, fertilizer as well as labor to weed their farms. In this research, accessibility of loan was operationalized in form of flexibility of loan delivery, diversification of the loans and the innovative financial delivery services.

Obiero (2013) didn't explore the credit accessibility, but identified the social economic factors affecting farm yield. The paper found that farmer's age, farmer's experience, household size, farmer's expense and farmer's education effect on farm yield. According to the result, there is a negative correlation between farmer's age and farmer's experience and farmer's education with farm yield. There is positive correlation between household size and maize yield. There is positive and significant correlation between farmer's expenses and maize yield.

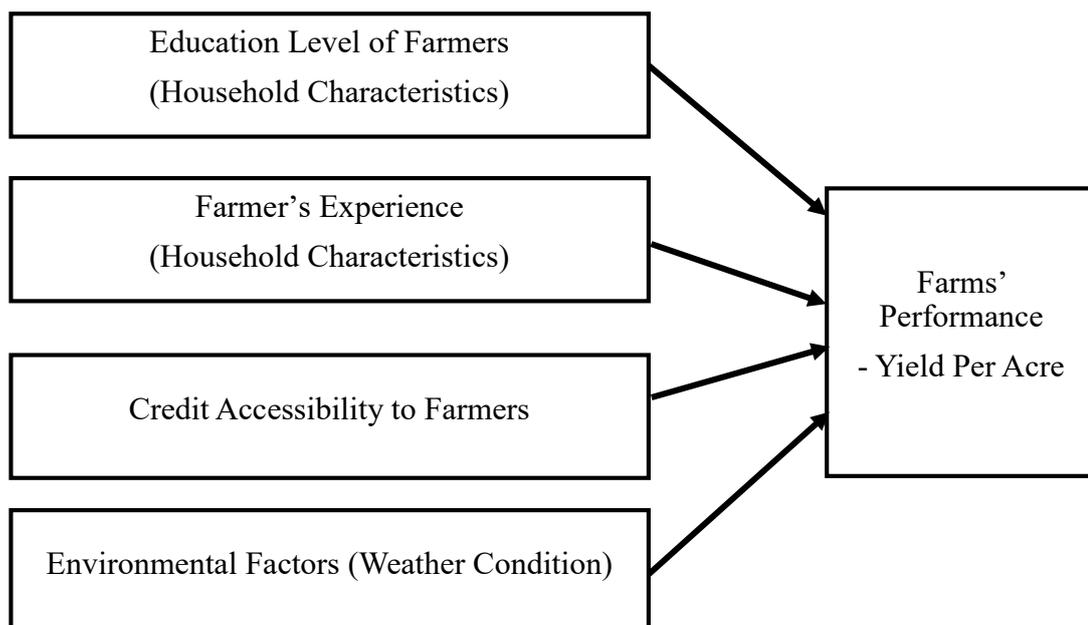
2.7 Conceptual Framework of the Study

The conceptual framework for the study is structured by considering the independent factors described above. They are influencing factors and agricultural credit accessibility which are assumed to determine its effects on farm performance.

As given in previous section, Obiero (2013) considered four independent variables such as farmer's age, farmer's experience, household size, farmer's expense and farmer's education effect on farm yield and found that among them, farmer's experience is significantly related with crop yield. Obiero (2013) didn't discover the credit accessibility but originate social economic factors which effect the farm yield. In addition, Wanjawa (2017) considered to explore the credit accessibility based on the four variables such as financial service access innovation, collateral requirement, and diversification of credit service assumed as the independent variables and farm as the dependent variable. The study found that credit accessibility affected on farm performance.

The conceptual framework for this proposed study is described as shown in Figure (2.2). According to this Figure, credit accessibility to farmers, education level of farmers, environmental farmers and farmers' experiences are assumed as the influencing factors on the farms' performance. To evaluate the farm performance, the paddy yield per acre is used to measure in the study.

Figure (2.2) Conceptual Framework of the Study



Source: Own Compilation

It is important that to improve the farm paddy yield per acre, the loan must be sufficient to cover the farming expenses, it should be received timely and environmental factors such soil factors and weather condition should be considered in this analysis. Therefore, to identify the credit accessibility of the farmers and the most influencing factors on farms' performance, the dimension such as education level of farmers, farmer's experience, credit accessibility to farmers and environmental factors are used, are identified as independent factors. For the household characteristics of the respondents, their age and number of farmers in the family, their farming experience, the cultivated acres, and the ownership of farm properties are put into consideration to evaluate their effects. For credit accessibility of farmers, location of financial institutions, procedures and processes of banking documentation, quality of services from financial institutions, interest rate, flexible loan repayment period, collateral requirement and banking services are considered to explore their effects. The climate factors, biotic factors and edaphic factors are counted to value their effects on farm yield.

CHAPTER 3
BACKGROUND STUDY OF AGRICULTURE CREDIT
IN BOGALE TOWNSHIP, AYEYARWADY REGION

In this chapter, the research will focus on background information of agricultural sector in Bogale Township. This chapter involves overviews on agricultural sector, agricultural finance in Myanmar, Financial Institutions in Myanmar, background information of Bogale Township and Financial Institution in Bogale Township.

3.1 Overview on Agriculture Sector in Myanmar

Myanmar's agricultural sector plays an important role in its current economic and social environment. Myanmar is endowed with rich and favorable natural agricultural resources, has a large rural and farming population, and is strategically positioned in the region to be a major agricultural provider. However, despite its relative comparative advantage in the production of agricultural goods, Myanmar has underperformed in comparison to its peers and neighboring countries over the last five decades, and rural poverty remains an issue. Myanmar's economy remains highly dependent on agriculture though, to support production, employment and foreign exchange revenue through exports, and will remain so for the foreseeable future. In addition to rural poverty, addressing agricultural productivity and the development of the agricultural sector are therefore key priority areas for the current government. (MAP 2015)

Myanmar has three principal agro ecological zones: the delta and coastal zone, the dry zone, and the hill regions (Haggblade et al. 2013). In the delta and coastal zone, the most densely populated, where monsoonal rainfall is plentiful and access to water easy, rice and fish production are predominant. The dry zone lies in a rain shadow, so that productive agriculture is principally in river valleys where a mix of rain-fed upland crops and paddy are produced. The hill regions have more tree and horticultural crops compared with the other regions and are suitable for less intensive farming. Agriculture can serve as effective backbone for Myanmar's development. The country has four key competitive advantages for agriculture such as abundant land, water, and labor resources; and proximity to major future food markets. Myanmar's water resources are considerable and are centered on four major rivers and their related systems.

There is very limited use of electronic payments due to the absence of electronic payments infrastructure, especially in rural areas where there is virtually no points of access for electronic payments. There is also low savings mobilization capability in rural areas, with few products catering to the needs of rural households, i.e. to save and withdraw small amounts regularly, conveniently and cheaply. Given the current limited branch infrastructure outside urban areas, this will not change without remote electronic access.

Mobile payments offer the most immediate solution to achieve agriculture growth. However, this will not obviate the need to extend branch infrastructure and build a network of agents to perform the encashment role. Pending the modernization of banking systems, decentralized group-based credit will remain the most efficient way to provide rural credit. (MAP 2015)

According to Ministry of Agriculture and Irrigation, Myanmar agriculture policies are described which are as follows,

- (1) To emphasize production and utilization of high yielding and good quality seeds.
- (2) To conduct training and education activities for farmers and extension staff to provide advanced agricultural techniques.
- (3) To implement research and development activities for sustainable agricultural development.
- (4) To encourage transformation from conventional to mechanized agriculture, production of crops appropriated with climate and extension of irrigated area.
- (5) To amend existing agricultural laws and regulations in line with the current situation.

The government of Myanmar has made good progress in bringing formal financial services to sections of society that commonly only have access to informal financial services. The enabling regulatory environment for MFIs and co-operatives is creating an important platform to extend outreach, especially to rural areas. Direct delivery by state institutions and, particularly MADB, has played a critical role in financial inclusion to date. MADB has improved delivery over the last 5 years and there is opportunity to continue harnessing this role while seeking to modernize state institutions to continue and sustain its role in the future.

3.2 Agricultural Finance in Myanmar

In the absence of secure tenure, Myanmar has faced vicious cycles that limit agricultural productivity. Without documentation of land use rights, access to capital has remained limited and is a commonly identified constraint to improved production by farmers. As a result of limited capital, input use remains constrained as farmers could not afford the up-front costs of fertilizer and other inputs (this is reflected in the second most identified constraint: fertilizer affordability). Moreover, in the absence of certainty about future ownership, other investments in enhanced productivity, such as boreholes for tube wells, enhanced land leveling and other improvements, are disincentive. (ADB report December 2015)

Myanmar has made much progress through the recent expansion of agricultural credit under the Myanmar Agricultural Development Bank and the Myanmar Livestock and Fisheries Development Bank (MLFDB) which offer subsidized credit rates to farmers. Credit is limited to MMK 100,000 (approximately \$100, as of 2014 average exchange rates/acre for rice in the case of the Myanmar Agricultural Development Bank and MMK 500,000/acre for aquaculture in the case of the Myanmar Livestock and Fisheries Development Bank, a small portion of actual production costs. In 2017, MADB has raised credit limit for farmers to MMK 150,000 (approximately \$150, as of 2017 average exchange rates/acre of rice) up to 10 acres of farm. With other credit mechanisms still in their infancy, and interest rates exceptionally high (reflecting high repayment risk), innovative approaches to financing such as warehouse receipt financing should be considered. (MADB Policy and Procedures)

The major rice-producing region is Ayeyarwady Region. It is the rice bowl of Myanmar. In 2017, Ayeyarwady Region is granted a total loan of MMK 489,580.47 million to plant rain, winter and pre-rain crops. Started from 2014 to 2018, MADB started disbursement of agricultural loans a total loan of MMK 104,031 million to more than 19,000 local farmers from 630 villages in Bogale Township, Ayeyarwady Region. Bago Region is the second rice producing area in Myanmar. In 2017, Bago Region is granted a total loan of MMK 350,264.56 million to plant rice, winter and pre-rain crops. (CSO 2017).

Many barriers prevent the efficient allocation of access to finance, such as lack of infrastructure, poor institutional capacity, profit-limiting policy constraints, poor quality of machinery equipment, lack of financial knowledge, and the dominance of state-owned banks with objectives other than profit. Myanmar also lacks other financial

offerings, such as formal remittance services, insurance markets, equipment rental, and grain storage (for later sales or to use as collateral), which may also contribute to the relative inefficiency of the agriculture sector. (Ei Thandar Lwin , June 2018)

JICA 2-step loan for MADB

With support from JICA-funding, MADB will be able to finance medium-term investments in agricultural machinery. According to the terms stipulated by JICA, these loans need to be collateralized, repayment capacity needs to be proven and a 30% cash deposit is required. Loans for machinery and value chain development are capped at MMK 50 million (approximately US\$ 38.00) per borrow group. Total value of the programme is around US \$ 138 million. (Special Diagnostic Report, Jan 2018)

Value chain financing (Yoma Bank)

Across many agricultural value chains in Myanmar (e.g. rice, corn), it appears to be fairly common for traders and suppliers to finance production-related inputs and activities. Starting from 2017, one of the Myanmar's private banks, YOMA Bank has started releasing value chain finance related products, such as stock finance, input finance. Estimated value of the programme is around US \$ 17 million. (Special Diagnostic Report, Jan 2018)

Hire-purchase programme (Yoma Bank/LIFT)

The programme covers hire-purchase programme to finance equipment, saving mobilization individual development accounts and unsecured lending. The new program cuts the down payment on a hire purchase agreement for agricultural machinery from 30% to 10%, and extends the repayment period from one year to three years. The Livelihoods and Food Security Trust Fund has contributed US \$ 11 million to the financing scheme for farm machinery purchases operated by Yoma Bank. By mid-2017, Yoma Bank finances 3,953 units of equipment at the value of approximately US \$ 70 million. (Special Diagnostic Report, Jan 2018)

Myanmar Apex Bank (MAB)

MAB allows farmers to have access to its bank loans by (Special Diagnostic Report, Jan 2018)their certificate of ownership of the farmland (Form-7) as collateral. According to MAB, in 2015, the bank lent MMK 596 million at an interest rate of 13% per annum to 275 farmers in Danubyu Township, Ayeyarwady Region. It is the first private commercial bank, which extends loans to farmers for a period of up to three years, including hire purchase for machinery. The bank implements its projects with the coordination of Myanmar Rice Federation. (Special Diagnostic Report, Jan 2018)

3.3 Financial Institutions for Agricultural Credit in Myanmar

There are both state and non-state sectors which derives the provision of finance in rural areas of Myanmar and these sectors are composed of formal institutions such as state-owned banks, private banks, MFIs and NGOs and informal institutions such as merchants, community organizations, family and friends.

3.3.1 Myanmar Agricultural Development Bank

Myanmar Agricultural Development Bank (MADB) was established in June 1953 by the Government of Myanmar to support the development of agriculture, livestock and rural enterprises in Myanmar. MADB's mission to effectively support the development of agricultural, livestock and rural enterprises in Myanmar by providing banking services is clearly stated under the Myanmar Agricultural and Development Bank Law of 1990. The objectives of MADB are as follows.

1. To provide loans for the development of agricultural, livestock and rural socio-economic enterprises in a simple procedure
2. To promote rural banking
3. To encourage saving habits
4. To support socio-economic development in rural areas
5. To cultivate a habit of using banking services
6. To develop banking business.

MADB adopts the policy that no loans are to be written off and all loans are recoverable. The repayment periods are scheduled to coincide with the income flow of the borrower's businesses. The divisional managers and township branch managers are also responsible for full recovery of all loans with due interest. According to the MADB law un-discharged loans may be recovered as if they were arrears of loan revenue. (Rabo Bank Special Diagnostic Report, Jan 2018)

Loan Program

MADB has two types of program including Seasonal Loan and Term Loan. The Seasonal Loan targets crop production, whereas the Term Loan aims at procurement of farming tool and equipment such as working animal and agricultural machinery. Details of the programs are as follows.

Table (3.1) Seasonal Loan Program by MADB

Item	Seasonal Loan			Term Loan
	Monsoon (Apr-Aug)	Winter (Sep-Dec)	Pre- monsoon (Jan-Feb)	
Purpose	Crop Production	Crop Production	Crop Production	Procurement of Farming Tool, Equipment
Loan Term	1 Year	1 Year	1 Year	3-4 Year
Interest Rate	8%/Year	8%/Year	8%/Year	8%/Year
Mortgage, Guaranty	Form (7) Certificate	Form (7) Certificate	Form (7) Certificate	Real Estate (Land, Building)
Total Lending (2017)	1402 Billion Kyat	213 Billion Kyat	164 Billion Kyat	13 Billion Kyat
Grace Period	1 Crop Season	1 Crop Season	1 Crop Season	1 Year
Loan Limit	150,000 Kyat/ Acre (Maximum 10 acre)	150,000 Kyat/ Acre (Maximum 10 acre)	150,000 Kyat/ Acre (Maximum 10 acre)	Individual Assessment by MADB

Source: JICA MADB Survey (2017)

Eligible borrowers are the one who has land use right issued by land Record Department of MOAI. Illegal farmers who cultivate in forest areas cannot receive their financial services. Also, farmers in remote areas including Kachin State and North Shan State are difficult to borrow money, and have to depend on such informal money renders as local brokers and input suppliers. To increase loan amount to agriculture sector, the new Farm Land Law (March 2012) allows banks receive land use right as mortgage. However, most banks target urban population and it must be taken more time that rural farmers can receive their financial services. (JICA Survey 2013)

Loan Guarantees

Before 2014, most of MADB's loans (99.9) percent required a joint guarantee of borrowers instead of collateral. Individual farmers must join a group 2 to 3 members and collectively guarantee each individual loan. Nowadays, MADB allows farmers to have access to its farmer loans by acquiring original Form (7) certificate which has been created with the enactment of the Farmland Law in 2012 by the Ministry of Agriculture and Irrigation (MOAI). Tea-processing and coffee plantation loans are guaranteed by the Government under its special projects.

3.3.2 Other Financial Institutions of Agriculture Sector

Co-operative associations, rural development department, microfinance institutions, and private money lender in rural area are included in other financial institutions of agriculture sector.

Co-operative Associations

Co-operatives in Myanmar have a legacy dating back to the early 1900s and have historically been seen as tool of the government to assert their control (Ferguson 2013). However, the GoM sees cooperatives as a tool to help improve socio-economic conditions and microfinance as the primary method to fulfill this objective. According to government officials, there are plans to open a cooperative with microfinance services in every village in Myanmar (Ferguson 2013).

In 2016, loan totaling K 500 billion are to be parceled out to the nation's states and regions according to the amount of the rice they intend to grow and their respective population size. The bulk of money, which is being drawn from a \$400 million loan from China's Exim Bank, will go to the country's largest paddy-producing area. Bago Region tops the list and receives K 84.66 billion worth of loans. Ayeyarwady Region receives K 80.73 billion and Sagaing Region will get K 71.90 billion. (CSO 2016)

Rural Development Department

Mya Sein Yaung Project was started in FY 2014-2015 in Myanmar. It lend loan to rural people for rural development. It was operated Ministry of Agricultural, Livestock and Irrigation and Development of Rural Development. Its objectives are improving socio-economic development and decrease rural poverty, operating self-help livestock and cover nutrient, according to organization agreement, increase money operate in villages demand and improving rural people ability. In FY 2014-2015, it was implemented 14 Regions, 70 Districts, and 288 townships and 1450 villages in Myanmar. 3000 village was fulfilled in FY 2015-2016. In 2016-2017, project was increased depending upon organization's funds to village (9,930). Interest rate is from 6% to 18% per annual according to village committee's agreement. (Ei Thandar Lwin 2018)

Microfinance Institutions

Microfinance scheme is relatively easier for farmers to access, since the institutional finance require mortgage including real estate and deposit.³² Before Microfinance Law (2011), MFIs had been an informal sector but they are formal organization after the law. However, those organizations which hold license issued by Microfinance Supervisory Enterprise (MSE) are only 118, and cooperatives which account for more than 50% of license holders, operate basically in urban areas.

According to the household survey conducted by LIFT, 80% of surveyed household borrows money, but beneficiary of microcredit is only 16%. The rests are 42% borrow from family or friends, 31% from local money lenders. Reason of borrowing money is buying food or emergency needs such as disease for poor households, whereas rich household contract a debt for procurement of farm inputs or investment. (Livelihoods and Food Security Trust Fund (LIFT), 2012)

(1) UNDP

Microfinance project was first introduced by Human Development Initiative (HDI) by UNDP in 1997. Under microfinance project of the HDI, international NGOs including EDA, Grameen Trust, GRET and PACT provide credit service. From March 2006, UNDP entered into contract with only PACT, which manage microfinance at local level, whereas UNDP provides source of credit and conducts budget management. Target areas of the project are 26 Townships in Delta, Central Dry Zone and Shan, and the project is operated by 4 branches in 1 TS (totally 104 branches). Number of beneficiaries are 400,000, with loan amount of 60 to 65 million US\$. PACT reports their project activities to UNDP periodically. (Microfinance Industry Report, 2010)

(2) PACT Myanmar

In addition to the Microfinance Program (MFP) collaborated with UNDP, PACT established “PACT Global Microfinance Fund (PGMF)” in 2003. Financial sources of the Fund are USAID, DFID and LIFT (UNOPS), and number of beneficiary is 670 thousand including 98% of women, with 730 lending and 141 million US\$ disbursement. Target areas are 26 Townships in Central Dry Zone and Delta region, and 20 TS are also received from microcredit support from MFP of UNDP.

According to PACT, around 40% of client is farmers, and rests are consisted by 40% of non-agriculture worker including livestock breeders, and 20% of workers in service sector. Detail scheme of MFP and PGMF are not so different, and repayment

rate of both are 99.8% due to good design of scheme, culture of Burmese and contribution of project staff. Following table shows microfinance program of PACT.

Private Money Render in Rural Area

According to the development study on Sustainable Agricultural and Rural Development for Poverty Reduction Programme in the Central Dry Zone, implemented by JICA from 2006 to 2010, 64% of farm household and 58% of non-farm household borrow money from others, mostly from local broker or relatives. The reasons of debt includes procurement of farm inputs, food for consumption, medical treatment, and education. (JICA Survey, Dec 2013)

In rural area, farmers traditionally borrow money from local brokers. Under the traditional money rending scheme, farmers have disadvantage, for example, farmers borrow 1 basket of seed before planting, and return 2 baskets of seed after harvest. The system has been practiced for long period in rural area, and most farmers do not have any alternatives since access to institutional credit is difficult for them. (JICA Survey, Dec 2013)

3.4 Background Description of Bogale Township

This section represents the background description of Bogale Township such as geographic and demographic conditions of Bogale Township. Geographic background of Bogale Township is presented with topography and climate situation of the region. Demographic factor of Bogale Township are allocated by the number of population, occupation and education status according to annual report of Myanmar Population and Housing Census.

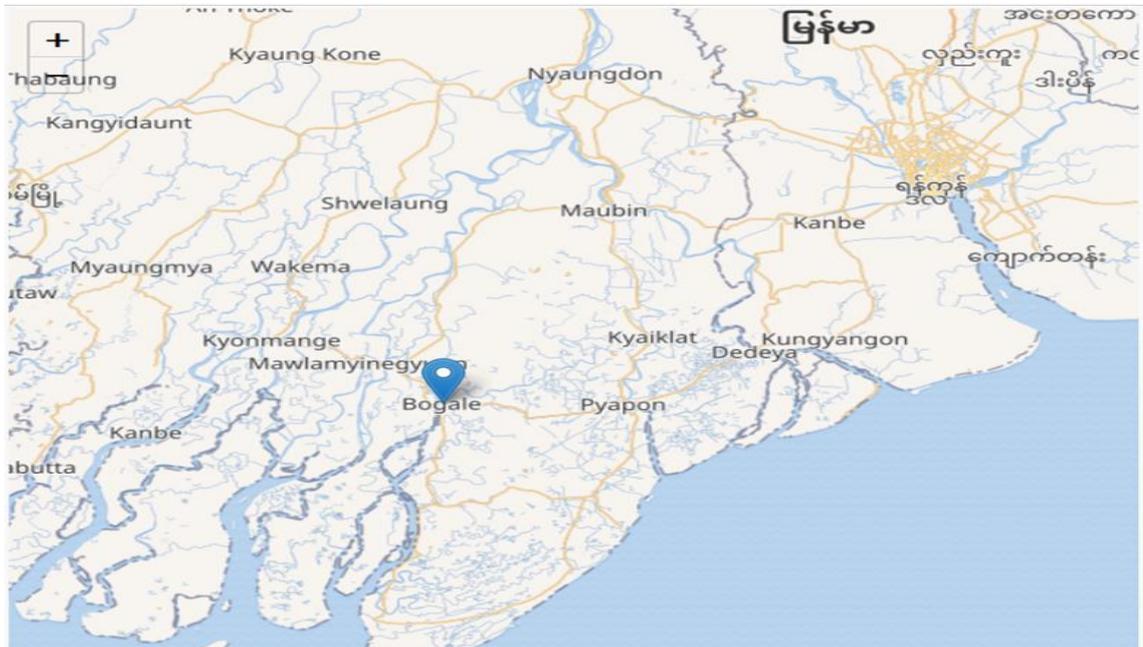
3.4.1. Geographic Condition of Bogale Township

Bogale Township is situated in the Ayeyarwady Region of Myanmar country. It is located on the south-western part of Myanmar on the mainland section of the country. It is between 15° x 40' and 16° x 35' N latitude and 95° x 15' and 95° x 35' E longitude. It is 38.02 miles long from North to the South and 33.15 miles wide from East to the West. The total area extent of Bogale Township is 2,250.40 km². There are 10 wards in the city and 71 groups of villages in the Bogale Township. (Bogale Township Report, MIMU Oct 2017)

It is bounded by Pyapon Township in the East, Amar Township in the South, Laputta Township and Malamyinegyung Township in the West. It can be reached by

both water transportation and by land. It is situated 8.2 feet above the sea level. Figure (3.1) shows the Location of the Township.

Figure (3.1) Bogale Township Map



Source: Google Map

Bogale Township is within the region of tropical monsoon climate. The highest temperature is 40°C and 19° is the lowest temperature. The wet season is from June to September and the dry season is from October to May. In 2015, average temperature was 40°C for Bogale Township. In 2016 and 2017, average temperature was 39°C. In 2016, average annual rainfall of Bogale Township is 157.23 inches. In 2017, average annual rainfall is 106.42 inches. In 2016, the annual rainy day is 120 days, in 2017, the annual rainy day is 113 days in Bogale Township. It is located near to the coastal region and it is affected by natural disaster such as storm by every years. Bogale Township got hit by storm one time in 2008, two times in 2009, one time in 2011, one Hsunami storm in 2004 and there have been enormous damages in socio and psychological factors. (Bogale Township Report, MIMU Oct 2017)

3.4.2. Demographic Condition of Bogale Township

Population of Bogale Township increased annually indicating the growth of Bogale Township. According to 2017 Myanmar Population and Housing Census, its population is 322,655 people consisting of 159,296 males and 163,369 females. In the urban areas, total population is 41,508 people, 275,620 residents located in rural areas.

The majority of the people in the Township live in rural areas with only (13.4%) living in urban areas.

In Bogale Township, 49.0 per cent of the employed persons aged 15-64 are skilled agricultural, forestry and fishery workers and is the highest proportion, followed by 23.3 per cent in elementary occupations. The proportion of employed persons working in the industry of “Agriculture, forestry and fishing” is the highest with 66.0 per cent. The second highest industry is “Wholesale and retail trade; repair of motor vehicles and motorcycles” at 8.1 per cent. There are 72.5 per cent of males and 53.0 per cent of females working in “Agriculture, forestry and fishing” industry.

The literacy rate of those aged 15 and over in Bogale Township is 93.0 per cent. School attendance in Bogale Township drops after age 12 for both males and females. The unemployment rate for those aged 15-64 in Bogale Township is 3.0 per cent. There is not much difference between males and females with unemployment rate for males (2.8%) and for females (3.3%). The unemployment rate for young females aged 15-24 is 8.8 per cent.

In Bogale area, the main earing of the villagers is farming about 32,746 of households (nearly 44%) involve in the agriculture sector. Therefore, agriculture sector is an important sector of the Bogale Township. The main cultivate crop is paddy of which the total areas is 323,885 acres. There are 499 school and these schools are 11 high school, 19 middle schools and 469 primary school in Bogale Township.

3.5 Financial Institutions in Bogale Township

The agricultural credit institutions are Myanmar Agricultural Development Bank (MADB), Mya Sein Yaung Project, Co-operatives associations, private money renders in rural area, UNDP and PACT Myanmar which are under microfinance institution.

Myanmar Agricultural Development Bank

In Bogale Township, MADB started on July 1976. MADB offers the seasonal crop production loan and the term loan to farmers. Farmers have borrowed two types of Seasonal loan: monsoon loan and winter loan. Approximately seventy groups of villages are granted a total loan of K 16,421.50 million (monsoon loan K 15,549.70 million and winter loan K 871.80 million) in 2014 and total loan of K 19,061.10 million (monsoon loan K 13,327.00 million and winter loan K 5,734.10 million) in 2015. Seasonal loan is increased to K 31,224.60 million in 2016. They are shown in Table (3.2), winter loan amount increased annually from 2014 to 2016. However, both

monsoon and winter loan decreased to approximately K 4,050 million in 2017 due to policy changes and bad loan procedures. (MADB Bogale Branch, 2018)

Table (3.2) Seasonal Loan Condition in Bogale Township

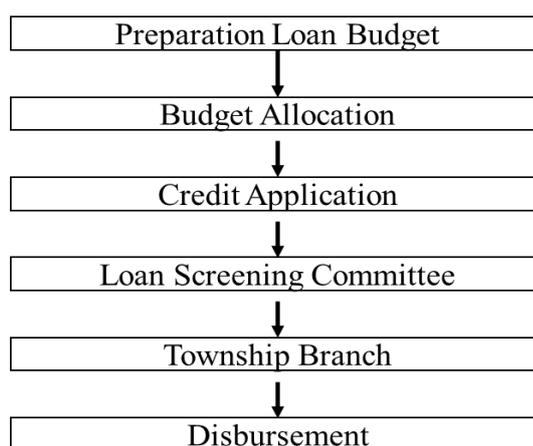
Myanmar Agriculture and Development Bank (Bogale Branch)							
Farmer Loan (2014-2018)							
No	Financial Year	Season	Budgeted Fund (MMK in Million)	Group of Villages	No. of Farmers	No. of Acres	Loan Amount (MMK in Million)
1	2014	Monsoon	15,628.30	69	20,459.00	155,497.00	15,549.70
		Winter	871.90	56	13,569.00	80,718.00	871.80
2	2015	Monsoon	13,345.60	71	17,186.00	133,270.00	13,327.00
		Winter	5,749.30	56	8,929.00	57,341.00	5,734.10
3	2016	Monsoon	21,889.95	71	18,786.00	145,721.00	21,858.15
		Winter	9,387.75	56	9,913.00	62,443.00	9,366.45
4	2017	Monsoon	17,846.70	75	14,453.00	118,604.00	17,790.60
		Winter	5,424.00	56	5,281.00	35,703.00	5,356.95
5	2018	Monsoon	13,888.20	76	11,012.00	91,695.00	13,754.25
		Winter	-	0	-	-	-
Total Outstanding			104,031.70		119,588.00	880,992.00	103,609.00

Source: MADB in Bogale Township

Credit Processes and Credit Application Procedures of MADB

In the general credit approval process of MADB and credit application process of farmers is described by following steps and credit process of MADB flow chart are described in Figure(3.2).

Figure (3.2) Credit Process of MADB



Source: Special Diagnostic Report, Jan 2018

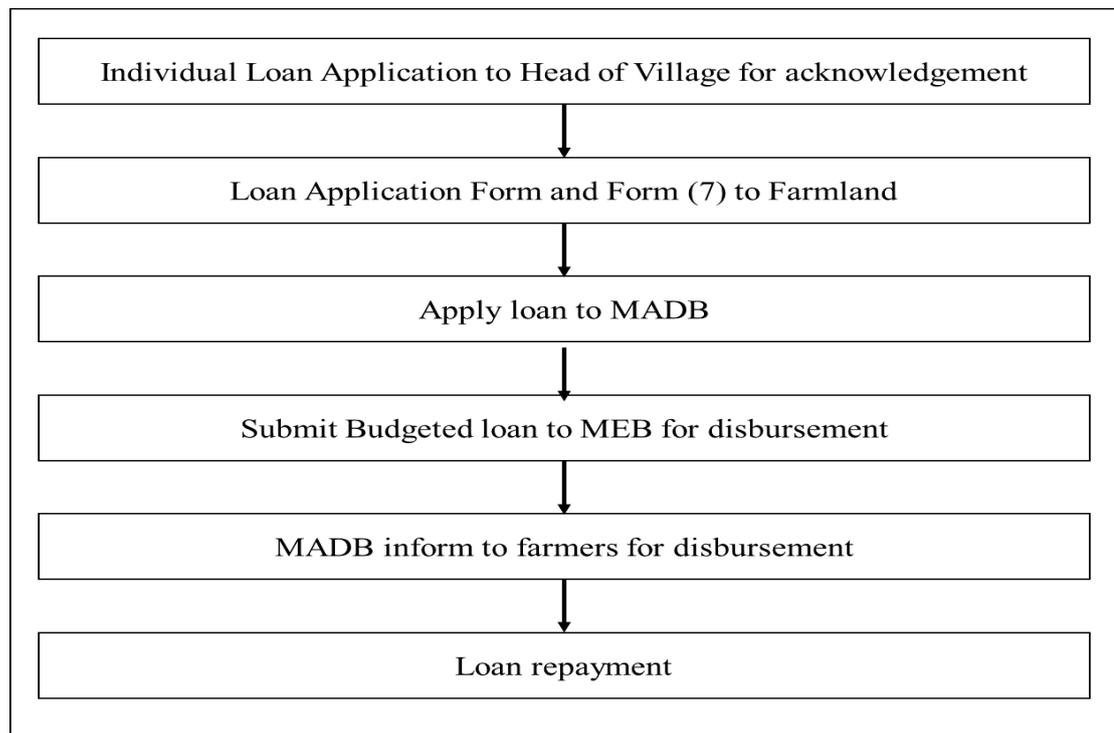
According to Figure (3.2), the credit process of MADB are describe as follow.

1. MADB prepare loan budget according to seasonal loan period.
2. MADB allocate budget to meet with farmers' requirements.

3. MADB accept credit application from each group of villages.
4. Loan screening committee from MADB analyzes details application for further process.
5. When loan screening committee approve for loan budget and application form, they distributes to township branches for disbursement.

In the credit application process, farmers have to apply the following stages to get agriculture loan from MADB and flow chart of credit application process are figured in Figure (3.3).

Figure (3.3) Credit Application Process for Farmers



Source: Survey Interview with MADB, Bogale Branch (2018)

The credit application process for farmers in Bogale Township have to do as per following procedures.

1. Individual farmer submit loan application and Form (7) to representative of farmers together with inclusive of Village head's signature.
2. Farmers' representative submit loan application form and Form (7) to Department of Farmland for acknowledgement of land.
3. Farmers' representative submit approved loan application by Farmland and Form (7) to MADB
4. MADB submit budgeted loan amount to MEB for disbursement

5. MADB inform to farmers for disbursement after getting fund from MEB and will keep Form (7) till full repayment period and individual farmers have to come to MADB township branch for disbursement.
6. Farmers have to pay back full repayment of loan amount to MADB before next seasonal loan taken.

Co-operative Associations

In Bogale Township, the Co-operatives lend loan with the government grant. It refers from Central Bank to Central Co-operative. Co-operatives have three programs including agriculture, promote of farm and provide seeds. Loan amount differs depending on saving amount and time of membership. Interest rate is 1.5 percent. Financial co-operatives collect the loan payments daily and the loan duration is 6 months (Co-operative Association in Bogale Township, 2018).

Rural Development Department

Livestock and Irrigation and Rural Development Department under Ministry of Agriculture has operated Mya Sein Yaung Project in Bogale Township since the year 2014-2015. Mya Sein Yaung lends loan service to rural areas for the purpose of rural development. According to application of the organization, only organization members have to take loan by Mya Sein Yaung. The interest rate is from 6% to 18% per annual. (Branches of Livestock and Irrigation and Rural Development Department in Bogale Township 2018).

Private Money Render in Bogale Township

Interest rate of the private rendering including local brokers and relatives is basically quite higher than the institutional financial scheme. For example, interest rate was 3% per month if farmer has gold for mortgage, but if not, farmer have to borrow with 5% to 16% of monthly interest rate. However, access to those private render is better for rural peoples. As a result, there is a case that farmers living in a climatically unstable region such as central dry zone have to give up their land in above their head in deep water.

CHAPTER 4

ANALYSIS OF AGRICULTURE CREDIT ACCESSIBILITY AND THE INFLUENCING FACTORS ON FARMS' PERFORMANCE

This chapter presents agricultural credit accessibility of farmer and the influencing factors on farms' performance in Bogale Township. The analysis is based on empirical data collected from five group of villages in Bogale Township. There are five main parts in this chapter. They are survey design, background characteristics of respondents, credit accessibility of farmers and influencing factors on farms' performance.

4.1. Research Design

This study is conducted with the objective of identifying farmers' accessibility to agricultural credit and the influencing factors on farms' performance in Bogale Township. There are (71) group of villages in Bogale Township. Among them 71 group of villages in farming, out of them five group of villages were randomly selected from Bogale Township which are Nyi Naung Wa, Thit Phyu Chaung, Ma Gu, Ma Lott and Hi Si group of villages. Nyi Naung Wa, Ma Gu and Ma Lott are situated in the North-West of Bogale Township and Thit Phyu Chaung and Hi Si are located in South-East of Bogale Township which are far from 4-3 miles away from Bogale Township. A total farmers' households are 353, 800 and 540 for Nyi Naung Wa, Ma Gu and Ma Lott respectively. Thit Phyu Chaung and Hi Si have 630 and 372 farmers' household respectively. Major jobs of these five villages are cultivation of paddy in monsoon and winter season. Among them total household, about 6% of farmers are randomly selected in five villages. These are described in Table (4.1).

Table (4.1) Sample Size of Respondents

Group of Village	No. of Farming Household	Sample Size of farmers household
Nyi Naung Wa	353	20
Thit Phyu Chaung	630	35
Magu	800	45
MaLot	540	30
Hi Si	372	20
Total	2695	150

Source: Bogale Township Committee

4.2. Background Characteristics of Respondents

This first section in the study analyses the background characteristics of the borrowing farmers. The characteristics of respondents are divided into two: demographic characteristics and economic characteristics.

4.2.1. Demographic Characteristics of Respondents

Demographic profile of gender was collected from the 150 farmers from five villages form Bogale Township. Table 4.2 showed that most of the respondents are males because the nature of the job is suitable for male. 23.33% of the respondents are females and 76.67% of them are males.

Table (4.2) Demographic Characteristics of Respondents

Demographic Characteristics	No. of Respondents	Percentage
Gender		
Male	115	76.67
Female	35	23.33
Age		
Under 25	3	2
26 to 45	51	34
46 to 65	76	50.67
66 to 85	20	13.33
Education Status		
Basic School	68	45
Middle Shcool	66	44
High School	15	10
Graduate	1	1
Size of Household		
2-4	79	52.67
5-7	65	43.33
8-10	6	4

Source: Survey Data (2018)

With the demographic factor of age, this study classify into four groups such as under 25 year, between 26 to 45 years, between 46 to 65 years, and between 66 to 85 years. In percentage term, there are two percent, thirty-four percent, fifty-one percent and thirteen percent respectively. Therefore, the most respondents are the age between 46 to 65 years in Table 4.2.

According to demographic profile of education status, most of the respondents are literate whereas nearly 45% of farmers are primary and 44% of respondents are with

middle education level. In the rest of the farmers 10% of farmers are with high school level in accordance with Table 4.2.

For household size, 52.67 percent of the household size of farmers is 2 to 4 family members and 43.33 percent of respondents have 5 to 7 family members and the rest of 4% have 8 to 10 family members in line with Table 4.2.

4.2.2. Farming Characteristics of Respondents

Table 4.3 presented statistic data for farming characteristics such as duration of farming and farming arces in Bogale Township.

Table (4.3) Farming Characteristics of Respondents

Farming Characteristics	No. of Respondents	Percentage
Duration of Farming (Year)		
Less than 10	11	7.33
11 to 20	44	29.33
21 to 30	41	27.33
31 to 40	34	22.67
More than 40	20	13.34
Total	150	100
Farming Arce		
1-5 Acre	50	33.33
6-10 Acre	63	42
11-20 Acre	27	18
21-30 Acre	8	5.33
>30 Acre	2	1.34
Total	150	100

Source: Survey Data (2018)

Regarding the experience of farming, 29.33 percent, 27.33 percent and 22.67 percent of duration of farming year are fallen in within 11 to 20 years, 21 to 30 years and 31 to 40 years respectively. More than 40 years experiences of farming years are with 13.33 percent and 7.33 percent of farmers have less than 10 years farming experience in farming areas. Approximately 42 percent of respondents have 6 to 10 acres of farming acres and 33.33 percent have less than 5 acres of farming acres. The 21 to 30 acres of farms are owned by nearly 5 percent of respondents and within 11 to 20 acres of farming acres are related to 18 % of respondents. According to geographic factor of Bogale Township, all of the respondents mainly focus on farming in paddy for both monsoon and winter seasons.

4.2.3. Economic Profile of Respondents

Concerning the economic condition, their source of earning, annual household income and type of properties (whereas living ownership and business ownership), cultivated acre and yield per acre are included in economic characteristics.

Annual Household Income

Annual household income of farmer is minimum range from MMK 1,500,000 maximum up to above MMK 7,500,000. Table (4.4) shows the respondents' annual household income status.

Table (4.4) Annual Household Income of Respondents

Annual Household Income (MMK in Million)	No. of Respondents	Percentage
1.5-2.4	38	25.33
2.5-3.4	9	6.00
3.5-4.4	49	32.67
4.5-5.4	24	16.00
5.5-6.4	21	14.00
6.5-7.5	5	3.33
>7.5	4	2.67
Total	150	100.00

Source: Survey Data (2018)

Consistent with Table (4.4) annual household income of farmer is from 3.5 to 4.4 million kyats as over 45 percent of total respondents. Annual income of respondents more than 7.5 million kyats are the smallest percent and second highest percentage of annual household income of respondents are from 1.5 to 2.4 million kyats as over 35% of total respondents. Twenty-four and twenty-one percent of total respondents are in line with between 4.5-5.4 million kyats and 5.5-6.4 million kyats respectively.

Main Source of Earning

Main source of earning of respondents are classified as paddy farming, other small business and doing both paddy farming and small shops.

Table (4.5) Respondents' Source of Earning

Source of Earning	No. of Respondents	Percentage
Paddy Farming	146	97.33
Other Small Business	1	0.67
Paddy Farming & Small Shops	3	2.00
Total	150	100

Source: Survey Data (2018)

Table (4.5) describes that almost all of farmers' households responded that paddy farming is their major source of earning. The remaining are other income from small shops and small business.

Types of Properties

Types of properties are identified living ownership and farming ownership. Living ownership include living house, TV, Motor Cycle, Car or Trolley. Farming ownership consist of tractor, reaper, water pump, others machines. These shown in Table (4.6).

Table (4.6) Type of Properties Ownership

Ownership	No. of Respondents	Percentage
Living Properties		
One property (Home, TV, Cycle, Car/Trolley)	62	41.33
Two Properties (Any two of property)	53	35.33
Three Properties (Any three of property)	30	20.00
All living properties	5	3.34
Farming Properties		
One property (Tractor, Reaper, Water pump, Others)	66	43.99
Two Properties (Any two of property)	37	24.66
All Farm Properties	16	10.68
None of Farming properties	31	20.67

Source: Survey Data (2018)

According to above table (4.6), those living properties and farming properties are divided into four groups. Nearly 50% of farmers have an owned living house, TV, cycle and car/trolley and around 35% of total respondents have any two of living properties. However, only 5% of total respondents have all home properties. All farmers have their own farmlands.

In farming properties, nearly 31% of farmers don't have farming properties although they possessed some oxen and buffalos for their farming business. Almost 11% of total respondents have all farm properties for farming. In the percentage of 44% in total farmers have tractors, reaper, water pump and other farming machinery. As of result of changing industrial from farming by using oxen to farming by using machinery, a few farmers owned cows and buffalos for their farming. Nowadays, 65% of total respondents hires farming machinery from machinery owners or trying to buy machinery using installment method from machinery importers or sellers.

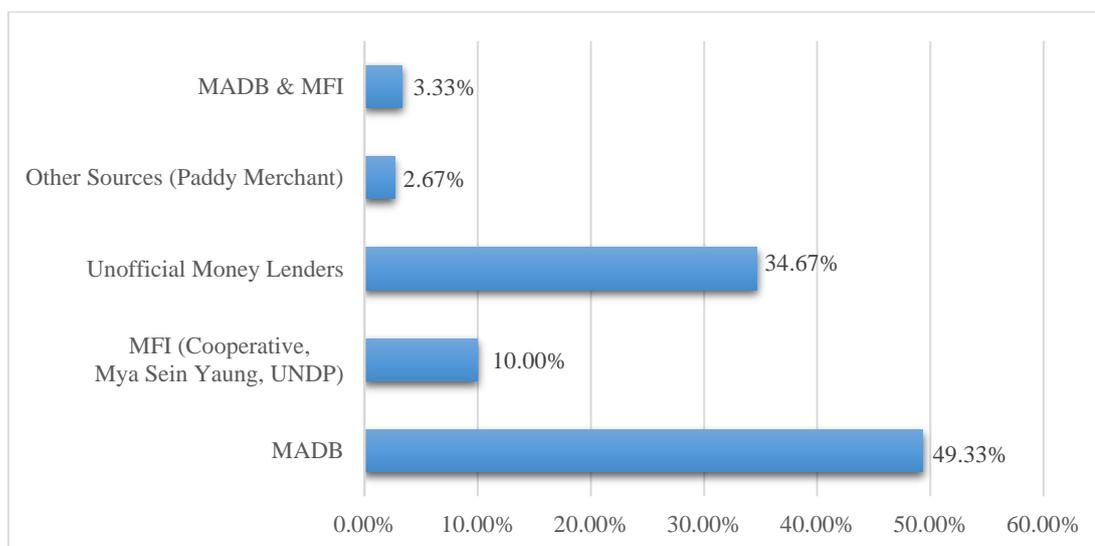
4.3. Credit Accessibility of Respondents

This analysis of the credit accessibility for farmers includes sources of finance, year of connection with bank, period of loan received from financial institutions, loan coverage percent, utilization of loan amount and constraints for procurement of agricultural credit.

Sources of Finance

In this study area, farmers may borrow various financial institutions. These are MADB, MFI such as (co-operative, Mya Sein Yaung project, UNDP), unofficial money lenders, and other sources such as paddy merchants. According to table (4.11), almost 50% of respondents borrowed from MADB and 35% of respondents took from unofficial money lenders. Moreover, 10% of total respondents have a loan of microfinance finance institutions and less than 5% of respondents relies on both MADB and MFIs.

Figure (4.1) Sources of Finance

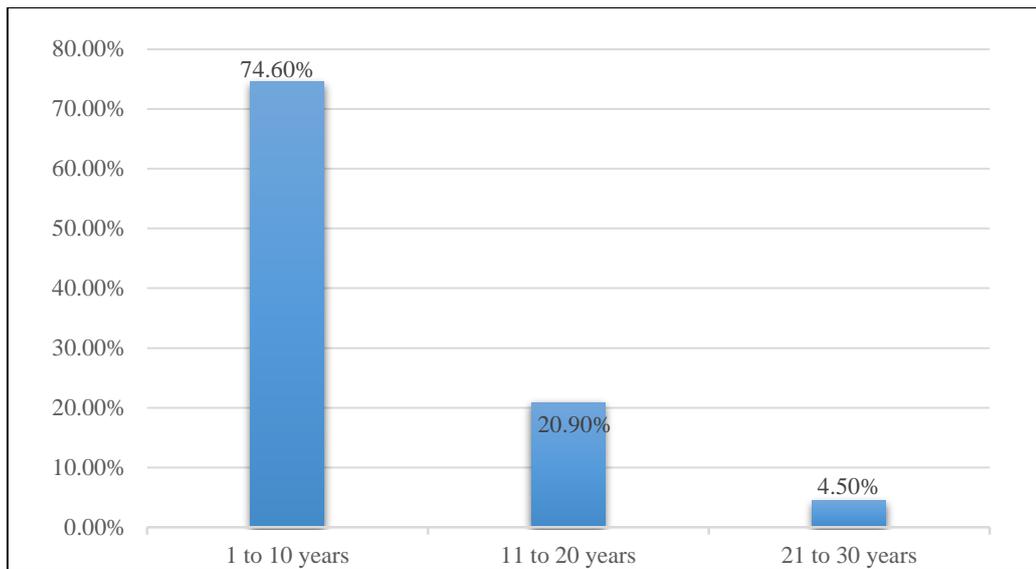


Source: Survey Data (2018)

Year of Connection with MADB

Year of connection with MADB includes three categories. They are 1 to 10 years, 11 to 20 years and 21 to 30 years. Farmers need to save at least 10,000 kyats in their saving account as a member of MADB bank. The following figure (4.2) described detail percentage in year of connection with MADB.

Figure (4.2) Year of Connection with MADB

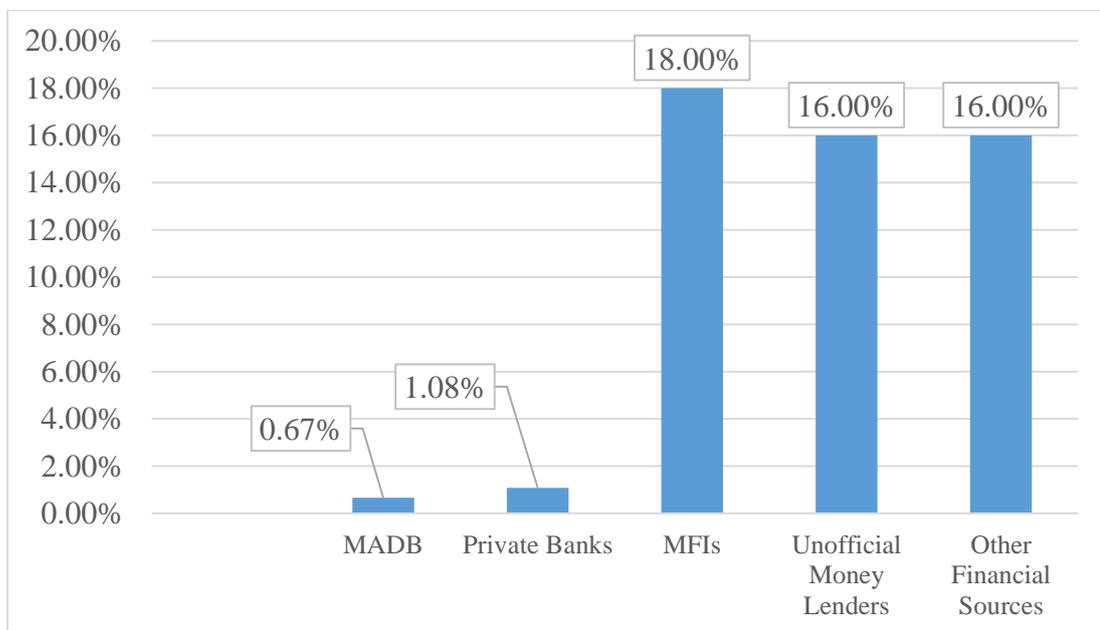


Source: Survey Data (2018)

Interest rates of Financial Institutions

The respondents were asked whether they used to pay back highest interest payment to financial institutions by using their farms' income within the period of 2014-2017. Figure (4.3) shows the findings.

Figure (4.3) Interest rates of Financial Institutions (Monthly)



Source: Survey Data (2018)

The data shows that during 2014-17, interest rates to unofficial money lenders and other financial sources are highest interest rates for agriculture finance. Their interest rates are ranged from 5% to 16% and maximum interest rates are at 16% per

month. Lowest interest rates for agriculture credit is 8% per annum from MADB and 13% per annum from private banks. However, all respondents are not familiar with private banks for agriculture credits and they never used private banks for their finance.

Table (4.7) Financial Institutions' Credit Services

Financial Institutions	Interest Rate(%)	Time Consumption		Collateral Requirement	
		On Time	Not On Time	With	Without
MADB	8% p.a	4.70%	95.30%	100.00%	0.00%
Private Banks	13% p.a	0.00%	100.00%	100.00%	0.00%
MFI (Cooperative, Mya Sein Yaung, UNDP)	6% - 18% p.a	76.00%	24.00%	35.00%	65.00%
Unofficial Money Lenders	5% - 16% monthly	82.00%	18.00%	30.00%	70.00%
Other Financial Sources	5% - 16% monthly	75.30%	24.70%	34.00%	66.00%

Source: Survey Data (2018)

According to Table (4.7), even though interest rates of unofficial money lenders are highest interest rates, respondents used to borrow from unofficial money lenders for financing due to time consumption and without having to provide collateral requirement.

Period of loan received from MADB

According to survey data, most of respondent replied that after farming as more than 80% of respondents. Only approximately 15% of respondent answered that farming period of loan received from MADB.

Loan Coverage Percent

All farmers answered that MADB loan amount not cover their farming. Table (4.8) shows that half of respondents answered 50 % sufficiency. It is followed by over one-third of respondents cover 70 percent. Only 1% of respondent replied 30 percent.

Table (4.8) Loan Coverage Percent

Loan Coverage Percent	No. of Respondents	Percentage
30	2	1.00
40	6	3.90
50	71	46.10
60	13	9.80
70	58	39.20
Total	150	100

Source: Survey Data (2018)

4.4. Influencing Factors on Farm Performance

The influencing factor on farm performance of farmers contains paddy yield per acre, demographic factors, social and psychological factors, environmental factors and background information of farmers and relationship between independent variables and paddy yield per acre for both summer and rainy. This analysis counted only on 2017 paddy yield per acre (for both seasons). Table (4.9) describes paddy yield per acre during 2014 to 2017 for both seasons.

Table (4.9) Paddy Yield per Acre of Respondents

Yield/ Acre	2014		2015		2016		2017	
	Number	Unit (%)						
Paddy (Rain)								
20-30 Bushels	20	13.33	32	21.33	40	26.67	32	21.33
30-40 Bushels	63	42.00	57	38.00	34	22.67	43	28.67
40-50 Bushels	67	44.67	61	40.67	76	50.67	75	50.00
Paddy (Summer)								
80-90 Bushels	110	73.33	101	67.33	85	56.67	75	50.00
90-100 Bushels	39	26.00	45	30.00	50	33.33	50	33.33
> 100 Bushels	1	0.67	4	2.67	15	10.00	25	16.67

Source: Survey Data (2018)

Paddy (rain) yield per acre of respondents are within the range between 20 to 50 bushels per season and paddy (summer) yield per acre of respondents are vary between 80 to 100 bushels per season. Table shows paddy yield per acre of respondents. During 2014 to 2017, more than 50% of respondents produced 40 to 50 bushels in paddy yield per acre for rainy season. In summer season, paddy yield per acre of almost 70% of respondents produced 80 to 90 bushels. Around 030% of total respondents produced 90 to 100 bushels in paddy yield per acre for summer season. The table (ii) in Appendix 2 shows that summer paddy yield per acre for more than 100 bushels are significantly increased from 0.67% in 2014 to 16.67% in 2017 due to the development of farms' input usages and farming techniques.

The four main influencing factors are credit accessibility to farmers, education level of farmers, environmental factors and farmers' experiences on farming. In this analysis these four factors are described by correlation and linear regression between influencing factors and farm yield (paddy yield per acre).

Correlation between the Influencing Factors and the Farm Yield

Table (4.10) shows the correlation between influencing factors and farm yield per acre for rainy season.

Table (4.10) Correlation between the influencing factors and the farm yield

Influencing Factors on Farm Performance	Paddy (Rainy) Yield/Acre	Paddy (Summer) Yield/Acre
Credit Accessibility to Famers	0.837**	0.877**
Education Level of Farmers	0.787**	0.759**
Environmental Factors (Weather Condition)	-0.848**	-0.927**
Farming Experience	0.959**	0.835**

Source: Survey Data (2018)

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

The results show that there is strongly positive and significant correlation of 0.837 between credit accessibility to farmers and rainy paddy yield per acre as well as 0.877 for summer paddy yield per acre. This mean that there is strong relationship between two variable which means that changes in one variable are strongly correlated with changes in second variable. Moreover, there is strongly positive correlation of 0.787 between education level of farmers and rainy paddy yield and 0.759 with summer paddy yield. Education level is the indicator of farming technique in this study for productivity of farm yield. This mean that there is positive relationship between farming technique and rainy paddy yield.

In additional, the correlation between farming experience and farm yield, there are both strongly positive correlation of 0.959 and 0.835 between farmers' experience and paddy yield for rainy and summer season respectively. Farmers' experience was used as an indicator of farming experience that farmers know how to control the productivity of farm yield. This mean that there is positive correlation between farming experience and farm yield.

However, there is a negative correlation of -0.848 and -0.927 between environmental factors and farm yield rainy paddy and summer paddy respectively. Environmental factors was used as an indicator of weather condition that destroy the farm unexpectedly. This means there are strongly negatively correlation between weather condition and the farm yield. This means that changes in one variable are strongly negatively correlated with changes in second variable. It means that when there

is uncontrollable environmental affect occurred, farm’s yield can be significantly changes in opposite direction.

Furthermore, comparing paddy yield per acre between summer and rainy, famers have paddy yield/acre in summer than in rainy because the weather condition such as flooding, storm are not controllable factors in rainy seasons.

Regression Analysis for Influencing Factors on Farm’s Performance

In this section analyzes the influencing factors namely education level of farmers, environmental factors, farming experience and credit accessibility to farmers on farm’s performance. The linear regression model is applied to analyses the influencing factors and farm performance for both rainy and summer paddy yield per acre. The dependent variable paddy yield per acre is explained by four independent variables (education level of farmers, environmental factors, farming experience, credit accessibility to farmers). The output from linear regression model is described in Table (4.11) and (4.12) respectively.

Table (4.11) Regression Result of Influencing Factors on Paddy Yield (Rainy)

Influencing Factors on Paddy Rainy Yield	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.193	.253		-.763	.447
Education Level of Farmers	-.022	.064	-.017	-.337	.736
Environmental Factors (Weather Condition)	.115	.042	.172	2.738	.004
Farming Experience	.696	.038	1.040	18.103	.000
Credit Accessibility to Famers	.075	.045	.102	1.639	.003
n=150 R ² = .925, Adjusted R ² = .922, F=444.356 (p value = 0.000)					

Source: Survey Data (2018)

As shown in Table (4.11), the value of adjusted R² is .925 that reveals 92.5% of total variation in paddy yield (rainy) per acre are explained by four variables; education level of farmers, environmental factors, farming experience, credit accessibility to farmers. These results suggest that the four variables have significantly explained 92.5% of the variance in paddy yield per acre. The value of F-test, the overall significance of the models, came out highly significant at 1% level. It can be clearly

seen that all the coefficients such as environment factors, farming experience and credit accessibility in the models are significant at 1% level on paddy yield (rainy) per acre.

Furthermore, the value of standard coefficients for farming experience 1.040 is highest among variables. It can be said that farming experience is greatest influence among variable on paddy yield (rainy) per acre.

Table (4.12) Regression Result of Influencing Factors on Paddy Yield (Summer)

Influencing Factors on Paddy Summer Yield	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.775	.277		10.028	.000
Education Level of Farmers	-.213	.071	-.191	-2.986	.003
Environmental Factors (Weather Condition)	-.468	.046	-.794	-10.091	.000
Farming Experience	-.051	.043	-.087	-1.203	.231
Credit Accessibility to Famers	.266	.052	.414	5.131	.000
n=150 R ² = .939, Adjusted R ² = .881, F=267.836 (p value = 0.000)					

Source: Survey Data (2018)

As shown in Table (4.12), the value of adjusted R² is .939 that reveals 93.9% of total variation in paddy yield (summer) per acre are explained by four variables; education level of farmers, environmental factors, farming experience, credit accessibility to farmers. These results suggest that the four variables have significantly explained 93.9% of the variance in paddy yield per acre. The value of F-test, the overall significance of the models, came out highly significant at 1% level. It can be clearly seen that all the coefficients such as education level of farmers, environment factors and credit accessibility in the models are significant at 1% level on paddy yield (summer) per acre.

According to the standard error for the unstandardized beta (B) of education level -0.213 means that every one unit increase in that education level, the farm yield will decrease by 0.213 units and every one unit decrease in environmental factors unstandardized beta (B) -0.468, the farm yield will increase by 0.468 units. Furthermore, the value of standard coefficients for credit accessibility to farmers 0.414 is highest among variables. It can be said that credit accessibility is greatest influence among variable on paddy yield (summer) per acre.

CHAPTER 5

CONCLUSION

This chapter describes conclusion of the study areas of influencing factors on farm performance. This chapter contain findings and recommendations and needs for further research of the study.

5.1. Summary of Findings

Agriculture plays an important role in reducing poverty in Myanmar. Myanmar economy stand with a contribution of about 38% of Myanmar's GDP and 23% in exports in fiscal year 2016-2017. For the strengthening of rural economy and improving agricultural productivity, agricultural loan has always been an essential sector in developing countries. MADB provide agricultural loan of MMK 1.6 trillion to farmers for monsoon, winter and pre-monsoon in 2016-2017. On the other side, development loan has granted MMK 3.6 billion in 2016-2017. To complete in line with MADB's objective the operational guidelines are adequate supply of credit to the client, to provide credit timely, to seek full recovery of loans, to enable farmers for investment through saving, to help to become debt-free farmers and to make bank self-replying.

According to the study, on background characteristics of respondents, the most farmers fall within the age 46-65 years old. More than half of farmers are primary and middle education level. The household size of the respondents is from 2 to 8 members. Average numbers of farmers is 2 farmers. Duration of farming experience is from 11 to 20 years and their main source of earning is farming. Their living standard is above average level possessing owned home, motorcycle and almost they owned farmland and cows. The cultivated acre is 30 acres maximum and 1 acre minimum. Average paddy yield per acre is around about 60 bushels per acre for rainy season and 100 bushels per acre for summer season.

Regarding with credit accessibility, all farmers do not have saving account with MADB. The maximum year the loan farmers connects with the bank is 30 years and the minimum year is 1 year. Moreover, 150 of farmers' main source of finance are MADB. The amount of loan given by MADB depends on the cultivate acre that the farmers possessed. All farmers answered that they didn't have sufficient loan amount from financial organization. Almost of respondent replied that loan received after farming from MADB. Most of the farmer replied that it is easy to get loan and 25% of respondent answered that it is difficult to get loan. All farmers wait half of day to get

loan. In these study areas, 10 miles is the greatest distance from group of villages to MADB.

According to correlation between the influencing factors which include credit accessibility to farmers, education level of farmers, farmers' experience and farm yield are strongly positive correlation each variables. There is strongly negative correlation between environmental factors and farm yield which mean that changes in one variable are strongly negatively correlated with changes in second variable. As a result from regression analysis, education level of farmers, environmental factors, farming experience, credit accessibility to farmers are statistically significant with paddy yield per acre for both rainy and summer season. The farming experience is the highest among variables on paddy yield per acre in rainy season and the credit accessibility to farmers is the greatest among variables on paddy yield per acre in summer season.

5.2 Recommendations and Suggestions

In the selected study area, according to MADB, all farmers will get their respective loan for next farming season only when each borrower member of the village repays the loan they get before. Therefore, all farmers do not get loan on time from MADB because some borrowers are often late to repay their loan. MADB keep form no. (7) which is the evidence of possessing of farmland when each farmers take loan from MADB. Before end of 2015, MADB only kept copy of Form (7). However, in 2016, MADB keep original form and farmers could not able to finance from other sources to repay bank's loan. Moreover, some borrowers could not repay old loan to get new loan and they leave their outstanding balance at the bank as usual. MADB will charge yearly interest rates to farmers if farmers could not repay within seasonal period. Even though MADB has the cheapest interest rates system for farmers', MADB is not the first priority place to get loan due to additional yearly interest rates charges system. Thus this credit system has a fundamental weakness.

Farmers do not have their own farmland do not get loan from some organizations. Therefore, they don't use adequate quality seeds, reliable fertilizer and pesticides, etc. Financial organization should assist to improve their social-economic. A few farmers find it difficult getting credit from some organization. This procedure should be simplified and made farmer friendly. Due to the farmers' education background, they faced with some difficulties in transition period from traditional farming techniques to industrialize or modern farming techniques sector. Most of the farmers have to buy machines or equipment to replace in oxen or cows for farming.

However, they try to understand the machines, they could not fully understand and control those machines as usual. Farmers' need to find finance to buy those machines. At that time, MADB could not provide sufficient amount of loan for farmers. In agricultural finance, the cooperative of private banks are required. Therefore, agriculture sector should support both public and private organization to get sufficient amount of loan for farmers.

All of the farmers requires to acknowledge about the advanced techniques to maintain their farmlands such as soil, environmental, fertilizers. Nowadays, various types of fertilizers and pesticides are used by farmers in their farming. Using fertilizers and pesticides do help for increasing productivity in farming however the farmland could be damaged by using these materials. Farmers have to know how to maintain their own farmland after using these kinds of farm input usages. Nevertheless, they do not have valuable knowledge to maintain the farm. Currently, Myanmar agriculture sector needs the knowledge and infrastructure especially in the rural areas. Farmer need to know modern farming technique and information on the global supply and demand conditions. The government should instruct modern agricultural techniques, support modern agricultural machine to rural farmers. The government should encourage participate and provide incentives for farmers to save and recycle the funds.

5.3 Needs for further Research

This research only focused on influencing factors on farms' performance in Bogale Township. The study area covers only Bogale Township. Thus, the result for the study may not reflect the overall situation in Myanmar. Only paddy crops have been taken into consideration. This study could not be specifically explored farmer's loan usage for farming. Prices of paddy product and their benefits are lacking in this study. It is due to time constraints to conduct more are in survey as well as to collect more randomly selected farmers. Therefore, if further study can be conducted on more sample size and whole Myanmar areas.

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Questionnaire for Farmers
Influencing Factors on Farms' Performance in Bogale Township

Village Name.....

Part (A)

Demographic Factor

A. Respondent Profile

- 1 Name of RespondentGender(M/F).....
- 2 Name of Household Head Relationship
- 3 Age
 - <25 (.....)
 - 26-45 (.....)
 - 46-65 (.....)
 - 66-85 (.....)
- 4 Education Status
 - Basic School (.....)
 - Middle School (.....)
 - High School (.....)
 - Under-graduate (.....)
 - Graduate (.....)
- 5 Marital Status - Single/ Married
- 6 Total no. of Household (.....)
- 7 No. of year working in farms
- 8 No. of year working in paddy farms
- 9 Farm Tenorial Status (Owner() / Share Tenant())
(A) 1-5 Acres (B) 5-10 Acres (C) 10-20 Acres (D) 20-50 Acres (E) Above 50 Acres
- 10 Ownership in Home
(A) Living House (B) TV (C) Motorcycle (D) Car/ Trolley
- 11 Ownership for Farming and Other Business
(A) Tractor (B) Reaper (C) Water Pump (D) Others Machine/tools
(No of Machine)
- 12 Types of Crops
(A) Paddy (Rain) (B) Paddy (Summer) (C) Bean (D) Maize (E) Others

Choose as per below

1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree

Part (B)

Social Factor

13. When you apply to take loan from banks or other financial institution, which kind of impacts are influencing on your loan based on the following facts?

- | | | | | | | |
|---|------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| A | Friends | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| B | Family Members | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| C | Service from Bank staff's referral | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| D | Village Administrator | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

Part (C)

Psychological Factors

14. When you apply to take loan from banks or other financial institution, which kind of impacts are influencing on your loan based on the following facts?

- | | | | | | | |
|---|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| A | Satisfying due to image or good will of bank or other financial institutional | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| B | Willingness to take loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| C | Due to good services of Financial Institution | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| D | Satisfying due to safety of loan system from Financial Institution | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| E | Thinking that the procedure of taking loan is not complicated | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

Part (D)

Credit Characteristics

15. When you apply to take loan from banks or other financial institution, which kind of impacts are influencing on your loan based on the following facts?

- | | | | | | | |
|---|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| A | Financial Institutional are located in nearby the villages | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| B | Quickness of procedures and process for documentation | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| C | Good service quality from staff of Financial Institutional | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| D | Cost saving due to low interest rate | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| E | Flexible loan repayment period | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

F Not require to mortgage for unmovable assets 1 2 3 4 5

G Bank services is better than other financial institution
1 2 3 4 5

II. Credit Accessibility

16 Where do you borrow from loan first? (Please answer 1-5)

A MADB (.....)

B Private Bank (.....)

C MFI(Cooperative, Mya Sein Yaung, UNDP) (.....)

D Unofficial Money Lenders (.....)

E Other Sources (Paddy Merchant) (.....)

17 How much did you borrow within last 5 years?

No.	Financial Institution	Loan Amount (MMK)				
		2014	2015	2016	2017	2018
1	MADB					
2	Private Banks					
3	MFI					
4	Unofficial Money Lenders					
5	Others					

18 Do you have to provide collateral for loan in financial institution?

No.	Financial Institution	With Collateral	Without Collateral
1	MADB		
2	Private Banks		
3	MFI		
4	Unofficial Money Lenders		
5	Others		

19 Repayment Period

No.	Financial Institution	Repayment Period				
		3M	6M	9M	12 M	
1	MADB					
2	Private Banks					
3	MFI					
4	Unofficial Money Lenders					
5	Others					

25 Farming Input Used for Cultivation per acre (Last year)

Item	Unit Used Per Acre	Quantity	Cost Per Acre	Quality	
				Normal	Good
Seed					
Natural Fertilizer					
Fertilizer					
Pesticides					
Labor Charges					
Farming Machinery Rental Fees					
Transportation					
Meal Allowance					
Others					

26 Last Year Crops (.....)

27 Any changes in types of crops Yes ()/No () ?
If Yes, impact of yield % () or Other Reasons ()

28 Utilization of loan (Per Acre)

Item	Unit Used Per Acre	Quantity	Cost Per Acre	Quality	
				Normal	Good
Seed					
Natural Fertilizer					
Fertilizer					
Pesticides					
Labor Charges					
Farming Machinery Rental Fees					
Transportation					
Meal Allowance					
Others					

29 Loan is sufficient or not?
(A)100%-80% (B)80%-60% (C)60%-40% (D)40%-20%

30 How to find income if loan is not enough to do business? (Loan retaken from other)

31 Where did you get loan information?
Newspaper (.....)
Pamphlet (.....)
Radio (.....)
Friends/ Relatives (.....)
Village Administrator (.....)
Other farmers (.....)
Face to face announcement from bank's staff (.....)

Environmental Factor

- 32 Is there worst weather condition or natural disaster? (Yes/No)
 (A) Rainless (B) Flooding (C) Pests Factor
 (D) Storm (E) Soil Factor
- 33 How many time did farm destroy by weather or natural disaster? (.....)
- 34 How to solve the problem if repayment period and that uncontrolled condition are met in one time?
 (A) Technology support by government (.....)
 (B) Help from relatives (.....)
 (C) Taking loan from other financial institution (.....)
 (D) Requesting to extend loan repayment period (.....)
 (E) Other – Without payback (.....)
- 35 Financial and Paddy Price Market Knowledge
- | | | | | | |
|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| (A) Always know to keep financial record | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (B) Always keep in touch with paddy market | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (C) Success in selling seasonal crops | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (D) Always keep in touch with Paddy Merchant | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
- 36 Utilization of Income
- | | | | | | |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| (A) Buying household usages | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (B) Buying gold and precious metal | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (C) Reinvesting in farming | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (D) Saving as cash at home | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (E) Saving money at bank | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (F) Lending out with interest to others | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| (G) Loan repayment | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
- 37 Impact of Loan on Social and Economic
 (Social Impact)
- | | | | | | | |
|---|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 1 | Can spend more money in education after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 2 | Can spend more money in health after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 3 | Can spend more money in house renovation after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 4 | Can spend more money in buying housing property after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
- (Economic Impact)
- | | | | | | | |
|---|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 1 | Increase in farm ownership after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 2 | Increase in farm equipment machinery after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 3 | Increase in farming other crops after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 4 | Increase in using technologies after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 5 | Using loan to pay back to other loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 6 | Can buy good quality of seed after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 7 | Can buy more pesticides and fertilizers after getting loan | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

SUGGESTIONS TO IMPROVE ACCESS TO CREDIT

38 Please write your own any expectation on this township's loan program

39 If you have any further suggestion, you can write down in here.

