

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

**CREDIT ACCESSIBILITY AND THE EFFECTIVENESS OF
LOAN ON FAR PERFORMANCE**

(A Case Study of WAKEMA TOWNSHIP, AYEYARWADY REGION)

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(MBF-4th BATCH)

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AYEYARWADY REGION)**

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ABSTRACT

The purpose of this study is to examine the relationship between credit accessibility and the effectiveness of Loan on Farm Performance in Wakema Township, Ayeyarwady Division. Both of the primary and secondary data were used in this study. There are 125 village tracts in Wakema township and random sample of 83 active agricultural farmers was obtained from 5 village tracts which represent 10% of farmers from those 5 village tracts. Face to face interview was applied with the help of structured questionnaires. Correlation and regression models were used to test whether the performance of agricultural farm is affected by credit accessibility and also if there is any relationship between the two. There is a significant positive correlation between credit accessibility with the farm yield and farm income per acre but formal low interest loan is not enough during farming seasons. Thus, credit accessibility is the most important factor for farm's performance and need government support to get enough loan amount during farming season with low interest rates. Farmers also need the supply of certified paddy seeds, enough agricultural research and knowledge sharing about fertilizer use, crop diversification to maximize profit, and also need the quality of agricultural mechanization to improve country's economy.

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LIST OF ABBREVIATIONS

A Bank	Ayeyarwaddy Farmers Development Bank
ADB	Asia Development Bank
CBM	Central Bank of Myanmar
CSO	Central Statistical Organization
CSO	Central Statistical Organization
EUR	Euro Dollar
EUR	Euro Dollar
GDP	Gross Domestic Product
GDP	Gross Domestic Product
INGO	International Non-Governmental Organization
INGO	International Non-Governmental Organization
MAB	Myanmar Apex Bank
MADB	Myanmar Agricultural Development Bank
MEB	Myanmar Economic Bank
MFI	Microfinance Institutions
MIA	Myanmar Industries Association
MIMMU	Myanmar Information Management Unit
MMI	Myanmar Investment
MMK	Myanmar Kyat
MRF	Myanmar Rice Federation
MRSC	Rice Specialized Companies
NGO	Non-Governmental Organization

CHAPTER I

INTRODUCTION

Agricultural credit accessibility and loan effectiveness is important to boost country's economic growth for developing country like Myanmar because seventy percent of the country's economy depends on the agricultural sector, and the modernization of the agriculture sector is a critical element for poverty alleviation and prosperity of the country. Agricultural financing is one of the most important factors to develop rural areas in developing countries like Myanmar. Therefore, agricultural credit should not be considered in isolation but as part of an integrated process of economic development and social betterment applied in such a way that rural populations share in the results. Efficient systems of agricultural credit are necessary if agricultural make its contribution in national improvement.

It is important for farmers to get agricultural credit by means of enough loan amount with low interest rates because farmers need to improve their farm performance and increase productivity by employing techniques such as the use of fertilizers, spraying their crops against pests and diseases, training labor, quality seeds and machinery. These investment need should not be financial burden and constraints to the farmers. To elimination the farmer's financial constraints to invest in farm activities, increasing productivity and improving technologies, farmers need the agricultural credit by enough amount with low interest rates. To develop the above performance, firms need a loan which the loan accessibility and effectiveness are the important factors for the agricultural sector in Myanmar.

Accessibility of Agricultural credit by farms were set by lending institutions and, in doing so, affect the performance achieved by firms. Financial institutions' lending policies often determine the access problem: when credit terms and provision of supplementary be rejected (Guirkerger, 2006). Therefore, the performance of the firms cannot be considered in terms of profitability and productivity alone but must also take into account the fact that farm's access to credit and how effectiveness of these loan would play a vital role in their performance.

The accessibility of formal credit is still fairly constrained and not enough makes the farmers to turn more expensive and unreliable informal credit sources whose interest rates are normally higher. In Myanmar, government have to play a

large part in formulating development programs such as the role of agricultural credit in overall national plans and programs to support the agriculture sector. Among the government institutions supporting the agriculture sector, the Myanmar Agricultural Development Bank (MADB) plays an important role. MADB is state owned and the successor to the State Agricultural Bank (SAB) established in 1953, which latterly became the Myanmar Agricultural Bank (MADB) in 1976. In 2018, it has a countrywide network of 14 regional offices, 208 branches which provides short term and long-term credit to over 2 million farmers. During 2014/15, MADB provides 71% of total agricultural loan from all sources of financial institutions and it is the largest portion of agricultural loan provider in the country.

Myanmar is an agricultural country and estimated that agriculture sector represents 35 to 40 percent of gross domestic product (GDP) (THE WORLD BANK GROUP, 2014, Myanmar Agricultural Development Bank: Initial Assessment and Restructuring Options) and over seventy percent of the population survives by farming agriculture and it is also a major source of income in Myanmar. It is also estimated that agriculture products generate 25 to 30 percent of total export earnings and it's important to the country's economy. So, the performance of agriculture is an important agenda for Myanmar to improve country's economy and alleviation of poverty.

Myanmar's agricultural potential is massive given the country's rich natural resources and favorable geographical location. Myanmar's diverse topography, climates, water resources, and eco-system offer farmers the opportunity to produce wide range of agricultural products. As water availability becomes scarce in various part of the world, particularly in neighboring China and India, Myanmar's water resources offer a significant agricultural competitive advantage. Myanmar's unusually fertile soils and abundant water source are legendary in Southeast Asia. It is even said that Myanmar has the most favorable agricultural conditions in all of Asia. Almost anything can be grown in the country, from fruits to vegetables, from rice to pulses. Country's strategic location between the two enormous regional markets of India and China, easy access to markets in the Association of Southeast Asia Nations (ASEAN), makes the opportunity to develop the agricultural sector and improve poverty alleviation that leads to the prosperity of Myanmar.

1.1 Rationale of the Study

According to the Euro Chamber's Agriculture Guide 2018, Myanmar mainly produces rice, beans and pulses, sesame oil, crops, rubber and agriculture products. These productions mainly come from Ayeyarwady, Sagaing, Bago, Magway and Mandalay regions. According to 2016/17, Ministry of Agriculture, Livestock and Irrigation report, Ayeyarwady Division is the highest agricultural productivity among fifteen States and Divisions. In Ayeyarwady Division, paddy production is the highest productive crop which produce 28% of Myanmar paddy production three years continuously until 2016/17 (Myanmar Crop Production and Productivity Report, 2011/12 to 2016/17, Ministry of Agriculture, Livestock and Irrigation Report).

In Agricultural loan cluster, 30% of Union Agricultural seasonality loans are related to Ayeyarwady Division and according to agricultural loan by crop, paddy crop represents approximately 90% of total crop (Myanmar Crop Production and Productivity Report, 2016/2017, Ministry of Agriculture, Livestock and Irrigation Report). This study focused on agricultural loan accessibility of paddy crop in Wakema Township, Myaung Mya District, Ayeyarwady Division and the loan effectiveness on farm performance. In Wakema, plantation for paddy crop is 213,216 Acres and which represents 41% of Myaung Mya District's paddy production area. According to Ministry of Agriculture, Livestock and Irrigation, planning department_2016/17, Wakema is the largest rice production in Myaung Mya District.

Among the government institutions supporting the agriculture sector, the Myanmar Agriculture Development Bank (MADB) plays a key role. MADB is the largest provider of credit to rural household engaged in agricultural activities and funds over 2 million farmer households at subsidized interest rates of 8.5 percent per year. However, it can only issue MMK150,000 per acre of paddy, for up to 10 acres. Farmers normally get agricultural loan from MADB if they own the farmlands Form 7, the official land ownership record or other immovable properties which must be equal with their loan amounts (Chan Mya Htwe, 7 June'18, New laws to be drafted for agricultural loans, Myanmar Times).

The Government of Myanmar has aimed at supporting smallholder farmers by providing loans through MADB at subsidized interest rates of 8.5%. As shown in table (1.1), in 2012 the lending interest rate dramatically dropped from 13.0 to 8.5 percent per year, while the interest rate for retail deposits remained unchanged at 8.0

percent. As a result, the interest rate margin for MADB has narrowed drastically. Table (1.1) shows the annual interest rates and margin of MADB loan.

Table (1.1) Annual Interest Rates and Margin of MADB

Period	Loan Interest Rates (%)	Retail Deposit Interest Rates (%)	Interest Margin (%)
April - December 1998	21	12	9
January - March 1999	18	12	6
April 1999 - March 2000	17	10	7
April 2000 - March 2006	15	9	6
April 2006 - August 2011	17	12	5
September - December 2011	15	10	5
January - March 2012	13	8	5
March 2012 -2013	8.5	8	-0.5

Source: MADB and mission team's calculation (THE WORLD BANK GROUP, 2014, Myanmar Agricultural Development Bank: Initial Assessment and Restructuring Options)

Myanmar microfinance institutions also offer farmers small loans at interest rates as low as 30 percent per year, but many farmers also obtain financing through informal lenders, whose rates are normally high (THE WORLD BANK GROUP, 2014, Myanmar Agricultural Development Bank: Initial Assessment and Restructuring Options). Microfinance organizations lend the agricultural loan to the farmers who really do the farming and they do not need to present the ownership of the farm land.

Credit accessibility is important for the farmers and to enhance credit accessibility, MADB revised the farmers' loan system from the current group-based lending system to an individual based system. So that farmers can provide their own guarantees. In new system, if a farmer successfully pays off his loans, he can apply for a fresh loan. In Old System, the problem is that if one farmer in a group is unable to repay his loan, the others hold off from repaying as well as they are worried that they would not be able to get loans again. The old system is complicated and farmers are regularly in conflict with each other due to this system of lending. Changing to a system of paying loans individually should have been done much earlier (Daw Khin

Nan Myint, Deputy General Manager of MADB, 1 MAY'18, MADB revises loan system to farmers, enabling more to receive funds, MYANMAR TIMES).

MADB has provided loans for 50 years to farmers but the sector has not grown by much. The only way agriculture would grow is for MADB to become a real development bank that supports the entire supply chain, including farmers, factories and traders. For agricultural sector development, private banks should be allowed to participate and MADB alone providing loans to farmers of a few crops is not enough. For agricultural sector development, it will be faster if the private sector is involved (U Kyaw Win, Union Minister for Planning and Finance, 11 April'18, Yoma Bank, Maha Agriculture support lending to microfinance, Myanmar Times). Recently, most farms get the agricultural loan from MADB, microfinance such as Mya Sein Yaung, Good Brothers, Maha Agriculture Public Co., and other informal high interest loan. According to the Euro Chamber's Agriculture Guide 2018, the agricultural sector has the potential for rapid growth if farmers are provided with better access to capital, quality seeds, improved infrastructure and modern technology.

1.2 Objectives of the Study

The main objectives of the study are as follows:

- To identify the accessibility of agricultural loan to farmers in Wakema Township
- To analyse the effectiveness of agricultural loan on farm performance.

1.3 Scope and Method of the Study

This study focused on Descriptive Statistics Research Methods and Pearson Correlation Analysis is used to analyse the Credit Accessibility and Effectiveness of Agriculture Loan on Farm performance in Wakema Township, Ayeyarwady Division. Face to face interview was applied with the help of structured questionnaires. Two-stage random sampling method was used. For first stage sampling, a sample of 5 village tracts (4%) of village tracts would be selected from 126 village tracts and for second stage sampling, a sample of 83 farmers households (10%) of respondents from selected five village tracts. In Wakema, there are 126 village tracts which includes 581 villages. Before collecting the data, conducted with village head, financial institutions, government officers from Ministry of agriculture, livestock and irrigation. Respective journals, websites, research papers and literatures which are relevant to

this thesis were used as a Secondary Data well. Both Primary and Secondary sources of data were used in this study. Major type of information is used in primary data by survey. Pilot survey of over sixty farmers households in Pathein and Phyar Pon Township, Ayeyarwady Division have been conducted in May 2018.

1.4 Organization of the Study

This study is organized into five chapters. Chapter one presents about the introduction, objective of the study, scope and method of the study and organization of the study. Chapter two presents literature review on agricultural loan. Chapter three presents the background information of agricultural loan in Wakema Township, Ayeyarwady Division. Analysis on credit accessibility and effectiveness of loan on farm performance in Wakema Township, Ayeyarwady Division presents in Chapter four. Chapter 5 is conclusion of this paper and findings, suggestions and recommendations are shown in this chapter.

CHAPTER II

THEORETICAL BACKGROUND

This chapter provides the literature review concerning the theories and research finding from previous studies. There are the role of agricultural credit, credit terms, the accessibility of credit, measuring the performance of farms, previous study and conceptual framework of the study.

2.1 The Role of Agricultural Credit

Agricultural credit plays an important role in agricultural development. Agricultural household models suggest that farm credit is not only necessitated by the limitations of self-finance, but also by uncertainty pertaining to the level of output and the time lag between inputs and output (De Janvry and Sadoulet, 1995). Agricultural financing is one of the most important factors to develop rural areas in developing countries. Payment of bank credit is a way of financing. In fact, facilitation of access to credit can raise amount of productive investment.

Credit has a crucial role for elimination of farmer's financial constraints to invest in farm activities, increasing productivity and improving technologies. Generally, credit accessibility is important for improvement of quality and quantity of farm products. so that it can increase farmer's income and avoid from rural migration. On the other hand, some policy makers believe that payment of credit with low interest rate to farmers can support them against some results of development policies that threat their welfare (Ghorbani, 2005). Therefore, with limited access to credit, the budget balance becomes a constraint, where expenditures have to remain less or equal to the sum of revenues during the period, accumulated savings and credit availability. Hence, credit constraint limits the optimum production or consumption choices (De Janvry and Sadoulet, 1995). In other words, if a producer faces an infinite supply of liquidity at a given price, the production decisions will be independent of consumption decisions. When credit is rationed, some borrowers cannot obtain the amount of credit they desire at the prevailing interest rate, nor can they secure more credit by offering to pay a higher interest rate. In such circumstances, liquidity can become a binding constraint on many farmers'

operations. Facing such a situation, households have to choose how to invest and what inputs to buy, depending on the level of credit they receive.

One of the financial institutes has an important role in financing agriculture sector is agricultural bank. This bank can direct agricultural credit flow such that helps general economic policies of government. So, duty of agricultural bank is financing of farmers and related industries and participation in activities that private sector can't invest in it. In fact, access to credit for farmers is accompanied with some problems (Ghorbani, 2005).

In Myanmar, MADB is currently the largest financial institution serving the rural areas and financing agriculture activities. Since its creation, MADB has played an important economic and social role by providing loans to a large segment of low-income households engaged in agricultural activities. Every year MADB disburses a large volume of short-term loans to farmers both during the monsoon and the winter agricultural seasons.

2.2 Credit Accessibility

Credit generally refers to the ability of a person or organization to borrow money, as well as the arrangements that are made for repaying the loan and the terms of the repayment schedule. In agricultural sector, agricultural credit refers to short term, intermediate term loan and long-term credit.

Short-term agricultural credit is for covering a seasonal shortage of money for farm expenses such as plowing, harvesting, irrigation and fuel, cost of inputs, for small tools and for animal feeds and veterinary medicines. Intermediate term loan are used to finance depreciable assets such as machinery, equipment, breeding livestock and improvement. Long-term agricultural credit is aimed at increasing the fixed assets of farm.

In Poland, loans for forming fixed capital are granted for a period of up to 30 years and more. In Bulgaria, the periods are timed so that the loans are paid at about the time the fixed capital is completely worn out. Agricultural credit is characterized by low interest rates in the other socialist nations, as it is in the USSR. In Czechoslovakia, 1.5 percent per annum is the charge for using credit for construction and for the purchase of machinery; in Hungary the rate is 1 percent. The banks of the socialist nations also provide preferential agricultural credit to individual peasant farms (in Poland, for example, farms can receive agricultural credit for 20 to 40 years

at a rate of 1–3 percent per annum). In most of the foreign socialist nations, agricultural crediting is carried out by the state banks of issue; in Poland and the German Democratic Republic it is done by special banks.

‘Credit accessibility’ refers to the ease or difficulty of acquiring credit by borrowers for purposes such as to enhance business performance (Salahuddin, 2006). In order to ensure continuity and realized success, SMEs need to acquire the necessary financial resources/credit to allow them to invest now so that they will obtain income in the future (Audretsch, 2002). Acquisition of such credit is difficult for the SMEs because of high rates of interest on lending, and this has constrained private sector demand for the credit and limited their progress (Kikonyogo, 2000). Access to credit also reduces the opportunity costs of capital-intensive assets relative to family labor, thus increasing labor-profitability and raising labor productivity, a crucial factor for development, especially in many African countries (Delgado 1995; Zeller et al. 1997). The accessibility of credit is still fairly constrained, and particularly access to formal credit for small and medium farmers. These forces constrained borrowers to turn to more expensive and unreliable informal credit sources (Okurut et. 2004). ‘Credit accessibility’ was measured in terms of the demand and supply of credit and the frequency of borrowing. In this framework, the supply and demand curves represent, respectively, the amount the lender is willing to lend and the amount the borrower is willing to borrow at exogenously given interest rates (Freixas and Rochet 1997, Chakra-borty 2006). ‘Performance’ of agricultural cooperative was measured in terms of profitability, and productivity (Bhattacharya and Thakor. 1998).

In developing countries, commercial banks constitute the majority of formal lenders, yet access to these institutions is restricted to a small portion of the population who can meet their stringent requirements. Access to financial services by small holders is normally seen as one of the constraints limiting their benefits from credit facilities (Gockel et. 2002). This is reflected in the institutions’ strict lending policies, displayed in the form of collateral requirement, repayment period, first account operating requirement and maximum loan amounts. Consequently, access to credit is restricted to a small proportion of the population who can overcome significant barriers to credit such as high minimum balance for account opening, onerous collateral requirements and a long and costly bureaucratic process (Okurut, 2004). For those SMEs with acceptable “credit histories” and sufficient collateral, access to bank credit appears to be satisfactory according the lending institutions.

For start-ups, micro-enterprises, entrepreneurs from previously disadvantaged communities or any other group with limited collateral or weak (or limited) credit histories, access is more limited (Falkena et al, 2009). This may indicate a need for greater institutional variety, increased innovation and a greater emphasis on mentoring. Credit terms influence credit accessibility, and access to credit improves the performance of agricultural cooperatives and ‘Credit terms’ are the minimum conditions set by lending institutions to which borrowers must adhere in order to qualify for loan (Bohnstedt, 2000). Kissinger (2002) notes that credit terms have been the key in the determination of capital requirements of SMEs as set by bank. Normally, due to the possibility of default and lack of effective contract enforcement mechanisms, lenders have additional incentives to restrict the supply of credit, even if they have more than enough to meet a given demand and the borrower is willing to pay a high interest rate (Avery 1981; Stiglitz and Weiss 1981).

It has, however, been found that large long-term loans have a comparative advantage over small loans because long term loans not only increase an enterprise’s capital base considerably but also give the enterprise longer grace and repayment (credit) periods, which have been found to support business growth (Myers, 1997). It is posted that credit terms influence credit accessibility, and access to credit improves the performance of agricultural cooperatives, all other factors remaining constant. ‘Credit terms’ was measured in terms of interest rate, grace period, and repayment period (Salahudin, 2004; Kakuru, 2007).

2.3 Farms Performance

‘Performance’ of agricultural cooperative was measured in terms of profit, and productivity (Bhattacharya and Thakor. 1998). Performance can be measured in two ways which are productivity and profit.

Productivity: Increases in agricultural productivity lead also to agricultural growth and can help to alleviate poverty in poor and developing countries, where agriculture often employs the greatest portion of the population. As farms become more productive, the wages earned by those who work in agriculture increase. At the same time, food prices decrease and food supplies become more stable. Labourers therefore have more money to spend on food as well as other products. This also leads to agricultural growth. People see that there is a greater opportunity to earn their living by farming and are attracted to agriculture either as owners of farms themselves or as

labourers. Agricultural productivity is becoming increasingly important as the world population continues to grow.

Profitability: To determine the profitability of the farm, net farm income is calculated at the end of each growing season. This calculation is used to determine how much money the farm generated after all expenses have been paid. The three profitability indicators used are – gross margin, net margin, and labor productivity:

- i. Gross margin is gross revenue less costs excluding family labor. The gross margin is essentially the income accruing to a household that owns the land it tills: returns to family (and permanent) labor employed on the farm, returns to land, and returns to management skills.
- ii. Net margin is gross revenue less total costs or, equivalently, gross margin less the imputed value of family (and permanent) labor. It is essentially farm profit after assuring payment to own family labor at market wage rates, i.e., the returns to land and management skills.
- iii. Labor productivity is computed by dividing gross revenue net of input costs by the number of days of labor spent on farm production regardless of the source (family, hired, or permanent). This indicator gives an idea of how productive farm labor is in growing a particular crop. Labor productivity tends to be high when large amounts of capital (e.g., machines) are used, when high quality land is used, or when skillful farm managers are employed. Labor productivity is crucial for achieving high standards of living, and tends to be higher in rich countries relative to poor countries.

2.4 Previous Studies

Figure (2.1) presents a model of credit terms, credit accessibility and performance of agricultural cooperatives. The model describes credit terms as the independent variable, credit accessibility as a mediating variable and the performance of agriculture cooperatives as the dependent variable. Yet studies show that improvement in rural credit encourages improved resource allocation. Loans also allow farmers to make better allowance for risks associated with the nature of the agricultural production such seasonality issues. They are also enabled to afford larger investments (Stevens et al, 2001). In addition, access to credit is an important instrument for improving the welfare of the poor directly (consumption smoothing that reduces their

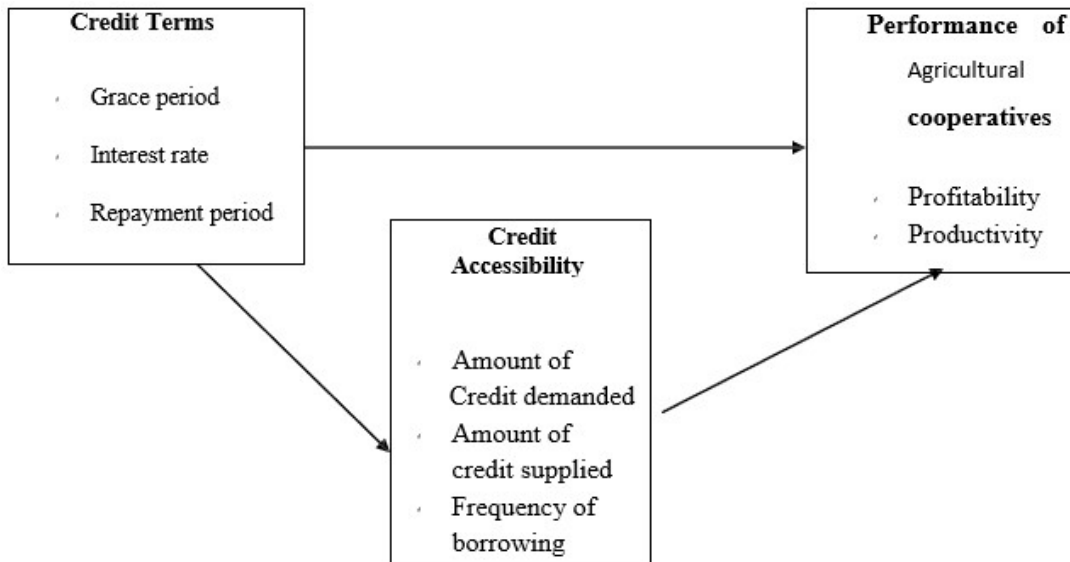
vulnerability to short term income shocks) and for enhancing the productive capacity through financing investments (Binswanger and Khandker, 1995).

Over the last decade, Rwanda has produced about 140,000 liters of milk, an average consumption of 13 liters per year per head of population. The World Health Organization recommends drinking over 200 liters per year (Independent, 2009). Anecdotal evidence such as this highlights the insufficiency of the agricultural sector to meet the demand for output in various products lines - dairy products and coffee being among the most under- produced (Mazimpaka, 2009; BNR, 2008). Farmers' productivity and profitability have continued to decline drastically (Plan for Modernization of Agriculture, 2000). There is, therefore, a need to understand factors that affect agricultural performance and the measures that can be adopted to overcome them.

The objective of the study is to identify, analyze and critically examine different factors that affect performance of agricultural cooperative in Rwanda targeting the southern province. This study aims to provide two important contributions to the field of Finance and Banking with respect to the level of credit accessibility for agricultural cooperatives in Rwanda.

In general, the study looked at credit terms, credit accessibility and performance of agricultural cooperatives. It was observed that there was a significant positive relationship between the study variables. It is therefore evident that the combination of credit terms and credit accessibility has an impact on the performance of agricultural cooperatives in Rwanda. It was also established that farmers have the desire to get credit to boost the business but every time they try to apply their applications are rejected. Secondly, they are discouraged by the unattractive credit terms or lending policies. In the end the capital used is self-generated, which minimizes their ability to invest/venture into business opportunities and adapt to changing and uncertain environments, hence lowering the performance of agriculture.

Figure (2.1) Conceptual Framework Showing Credit Terms, Credit Accessibility and Performance of Agricultural Farm



Source: Adopted from the Models of Kakuru (2007), Chakra borty (2006), Salahudin (2004), Freixas and Rochet 1997, and Bhattacharya and Thakor (1998)

The findings revealed that access to credit was generally low; this is because most of the agricultural cooperatives could hardly qualify on the terms and or criteria set by the lending institutions not forgetting that the credit limits set are reviewed only periodically. This concurs with the argument of Bataa Ganbold (2008) that if the credit limit is reviewed periodically and tendencies towards slow or prompt payments are found, then that can be used to revise the credit limit set. Whereas access to credit in reality may not be the only determining factor, inaccessibility of external finance is a major impediment to business performance.

Even though the results indicated that there is a linear association between credit terms and performance of agricultural cooperatives, it should be noted that credit terms do not matter to borrowers; it is credit accessibility that matters. This Implies that once credit is available agricultural cooperative farmers will be willing to come for it no matter the terms imposed on them. The findings revealed a positive and significant relationship between credit terms, credit accessibility and the performance of agricultural cooperatives; the two independent variables explain about 17.6% of the performance of agricultural cooperatives. The study reveals that credit accessibility is the most significant determinant of the performance of agricultural cooperatives. To

attain a higher performance level of agricultural cooperatives, better mechanism for accessing credit must be put in place and credit terms/lending policies must be simplified/revised.

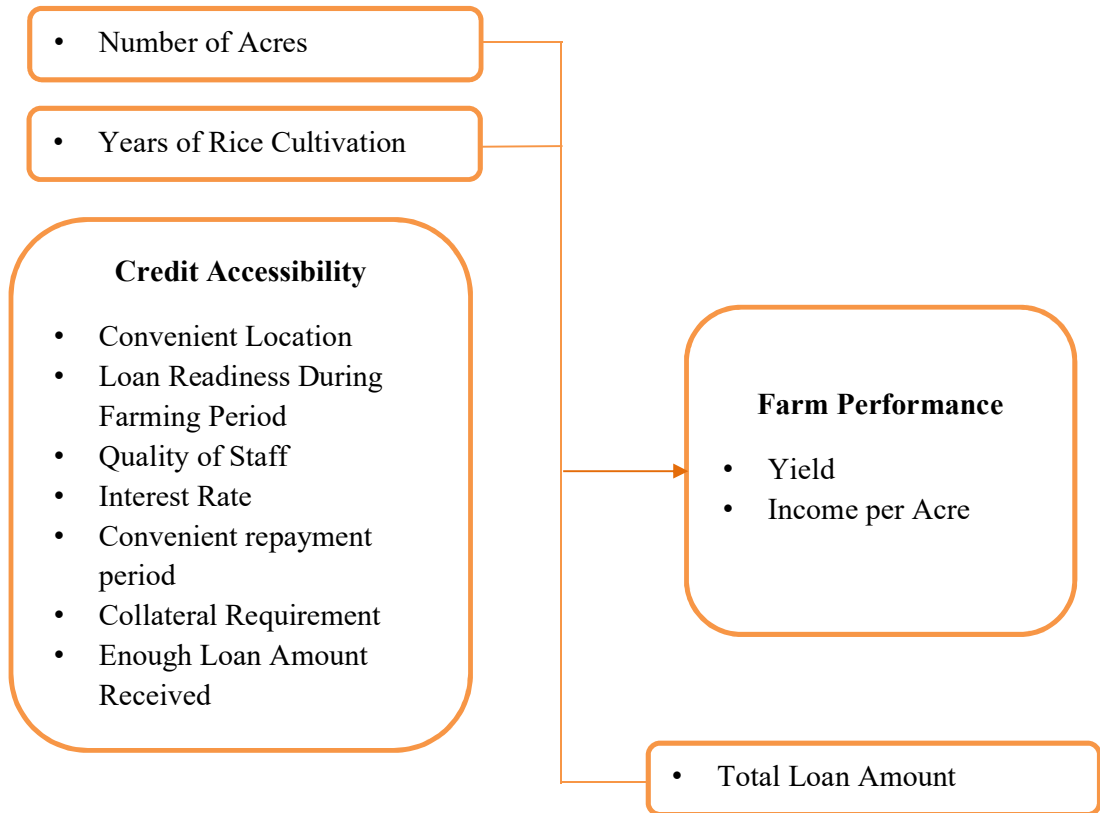
2.5 Conceptual Framework of the Study

The conceptual framework for the study is constructed by considering independent factors of Number of Acres, Years of Rice Cultivation, Credit Accessibility, Total Loan Amount which are assumed to determine its effects on farm performance.

As presented in previous study, Credit Terms was measured by grace period, interest rate and repayment period. Credit Accessibility was measured by three factors which are amount of credit demanded, amount of credit supplied and frequency of borrowing. Performance of Agricultural Cooperatives was measured by profitability and productivity. The findings revealed that access to credit was low due to hardly qualify on the terms and or criteria set by the agricultural cooperatives. The findings revealed a positive and significant relationship between credit terms, credit accessibility and the performance of agricultural cooperatives and credit accessibility is the most significant determinant of the performance of agricultural cooperatives.

The conceptual framework for this proposed study is constructed as shown in figure (2.2). According to figure, the characteristics of Credit Accessibility by farmers are measured by convenient location, loan readiness during farming period, quality of service of financial institution's staff, low interest rates/cost of borrowing, convenient repayment period, requirements for immovable property as collateral and enough loan amount received. The performance of farm is a dependent variable and evaluate the farm performance is measured in two ways with farm yield and farm income per acre. To determine the income of the farm, it is calculated at the end of each growing season. This calculation is used to determine how much money the farm generates at market price.

Figure (2.2) Conceptual Framework of the Study



Source: Adopted from Previous Study

In this study, the performance of farm is a dependent variable and evaluate the farm performance is measured in two ways with farm yield and farm income per acre. Farm yield is measured in number of baskets produced by an acre. To determine the income of the farm, it is calculated at the end of each growing season. This calculation is used to determine how much money the farm generates at market price.

CHAPTER III

THE BACKGROUND STUDY OF AGRICULTURAL LOAN IN WAKEMA TOWNSHIP

This chapter describes the background overview of Wakema Township and the background study of agricultural loan in Wakema Township. This chapter includes geographic location and demographic background of Wakema Township, Overview of Agricultural Sector, Myanmar Agricultural Public Expenditure Review, Key financial Institutions in Agricultural Sector, and Financial Institutions in Wakema Township,

3.1 Overview of Agricultural Sector in Myanmar

Myanmar's potential for rapid growth and development is enormous after decades of isolation, Myanmar is actively re-engaging with the global economy and base on rich natural resources, abundant labor and strategic location make the country an attractive destination for foreign investment. In 2017-18, Myanmar's agriculture exports hit \$2.8 billion in value, up \$171 million compared to 2016-17, according to the Ministry of Commerce (U Kyaw Win, Union Minister for Planning and Finance, 11 April'18, Yoma Bank, Maha Agriculture support lending to microfinance, Myanmar Times)).

Myanmar's agriculture sector and rural economy is likely to respond rapidly to economic reforms, thus providing significant economic gains. However, while the potential for significant production and productivity gains in agriculture and the natural resources sectors is immense. In order to develop agricultural sector and building on the formulation of the Agricultural Development Policy (2016), MOALI with the support of the Agriculture and Rural Development Coordination Group has been preparing a Five-Year Agricultural Development Strategy (ADS) and a corresponding Investment Plan (IP). According to the Euro Chamber's Agriculture Guide 2018, the agricultural sector has the potential for rapid growth if farmers are provided with better access to capital, quality seeds, improved infrastructure and modern technology. Myanmar mainly produces rice, beans and pulses, sesame, oil crops and rubber. Agriculture products mainly come from Ayeyarwady, Sagaing, Bago, Magway and Mandalay regions.

Agriculture is the most important sector for the country’s economy, and rice is the main crop for the majority of the population as staple food of daily consumption and as earning source of foreign exchange. Rice is the most important cereal in terms of food security here as it supplies more than half of the calories consumed by the national population. Hence scaling up rice production is a priority for country’s economy and alleviate the poverty (The Myanmar Times, 6 February 2018). According to Department of Agricultural Land, Management and Statistics, average paddy land used in Ayeyarwady Region is average 32% of the whole Myanmar paddy land usage during the year between 2000 – 2001 to year 2015 – 2016.

Table (3.1) shows the Land Utilization for Paddy in Ayeyarwady Region compare with the whole Myanmar Countrywide.

Table (3.1) Land Utilization of Paddy for Ayeyarwady Region Vs the whole Myanmar

Year	Paddy Land in Myanmar (Acres)	Paddy Land in Ayeyarwaddy Region (Acres)	% of Paddy Land in Ayeyarwaddy Region
2000-2001	14,358,000	4,925,028	34
2005-2006	15,329,000	5,000,031	33
2010-2011	15,997,000	4,997,884	31
2011-2012	15,747,000	4,778,159	30
2012-2013	15,599,000	4,837,484	31
2013-2014	15,548,000	4,900,872	32
2014-2015	15,629,000	4,980,146	32
2015-2016	15,658,000	5,026,831	32

Source: General Administrative Office, Wakema Township (2017)

3.2 MYANMAR AGRICULTURAL PUBLIC EXPENDITURE REVIEW

According to World Bank report, June 2017 of MYANMAR AGRICULTURAL PUBLIC EXPENDITURE REVIEW, Table (3.2) shows the agriculture sector growth in Myanmar averaged 2.5 percent during 2009/10 - 2016/17. This compares to only half of the growth rate in neighboring China and Thailand at the same stage of their economic development and less than one-third of nonagricultural growth in Myanmar. This low agricultural growth is one of the main

reasons for slow poverty reduction, high malnutrition, and job insecurity in many parts of Myanmar.

Table (3.2) Agricultural Grow (%) comparison with Other Sectors

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Agriculture	-0.7	1.7	3.6	2.8	3.4	4.3
Industry	10.2	8.0	11.4	12.1	8.7	4.5
Services	8.5	12.0	10.3	9.1	9.1	9.5
Total	5.6	7.3	8.4	8.0	7.3	6.5

Source: MOPF, WB staff estimates

The Union government consistently increased public spending on agriculture, prioritizing it over other programs during the review period. The Union budget for agriculture, including the Presidential budget, grew from 268 billion Kyats to 619 billion Kyats. Together with the Regional and State budgets, the MADB's interest rate subsidy, and donor funds to the MOALI, total agricultural spending in 2016/17 was 790 billion Kyats, an equivalent of \$667 million, a threefold increase from 268 billion Kyats in 2009/10, an equivalent of \$267 million.

Agriculture remains an important sector in Myanmar's economy and the sector still accounted for 29 percent of gross domestic product (GDP) and 50 percent of the total labor force which shown in Table (3.3).

Table (3.3) Myanmar's Agriculture GDP in National Accounts

	2005/06	2010/11	2015/16
Agriculture in % of GDP	47	37	29
Agricultural labor force in % of total	65	52	50
Agri-food exports in % of total merchandise exports	9	25	30

Source: Ministry of Planning and Finance (MOPF), World Bank (WB) staff estimates

Global experience indicates that at its current stage of development Myanmar needs to focus on farm productivity and diversification before it can leap into value chain development and penetration of more sophisticated export markets. An increase in crop yields, a shift to higher-value crops, and an increase in fishery and livestock

production to be major drivers of the agricultural growth in the medium run (LIFT and World Bank 2016; NESAC 2016).

Key Financial Institutions in Agricultural Sector

Despite its potential, Myanmar's agriculture sector has insufficient financing and to close the financing gap in rural areas, strong financial institutions are needed to provide financial products effectively.

These consist of MADB, commercial (private) banks, and nonbanks. To more effectively serve the rural population, commercial banks should make a downward expansion to small and SME agribusinesses with smaller loans, while MADB and other formal institutions should undertake an upward expansion with bigger loans.

Myanma Agricultural Development Bank (MADB): Banks have the most potential to effectively finance Myanmar's agriculture. Currently, Myanmar has 10 state-owned banks, including MADB, and 14 private banks licensed by the Central Bank of Myanmar (CBM). MADB is the only state-owned bank financing the agriculture sector. MADB's mission is clearly stated in its law (article 5), which requires MADB to "support the development of agriculture, livestock, and rural socioeconomic enterprises in the country by providing banking services." The MADB is only able to provide loans to cover the cost of some crops and is insufficient to support the entire industry. Therefore, the government will encourage private banks' involvement for the development of the sector. Currently, loans are being offered to SMEs sector by state-owned SME Development Bank. Only a very small amount is given by local private banks (The Myanmar Times, 7 June 2018).

Despite the high volume of loans disbursed by MADB every year, MADB's loan portfolio is heavily concentrated on a single type of client (farmers) and finances the production of only a limited number of crops and commodities nationwide, such as paddy, groundnut, sesame, beans, cotton, and corn. Among these crops the concentration is heavily on one commodity (paddy). MADB finances only up to 10 acres per farmer. MADB does not finance large farmers engaged in commercial agriculture or other agribusiness firms and also does not serve traders, exporters, transport firms, warehouses, equipment sellers, and other type of firms along the agricultural value chains. Loans are the main financial product offered by MADB to its clients. MADB offers two types of loans to its customers nationwide: the seasonal crop production loan and the term loan (THE WORLD BANK GROUP, 2014,

Myanmar Agricultural Development Bank: Initial Assessment and Restructuring Options). Table (3.4) shows the types of loan offered by MADB.

Table (3.4) Type of Loans Offered by MADB

Seasonal Crop Production Loan	Term Loan
<p>Monsoon Loan (Less than 1 year)</p> <p>(a) Paddy</p> <p>(b) Groundnut</p> <p>(c) Sesame</p> <p>(d) Beans</p> <p>(e) Long staple cotton</p> <p>(f) Corn</p> <p>Winter loan (less than 1 year)</p> <p>(a) Paddy</p> <p>(b) Groundnut</p> <p>(c) Sesame</p> <p>(d) Beans</p> <p>(e) Long staple cotton</p> <p>(f) Corn</p> <p>(g) Mustard</p> <p>Pre-Monsoon Loan (Less than 1 year)</p> <p>(h) Paddy</p> <p>(a) Beans</p>	<p>Short-Term Loan (1-3 years)</p> <p>(a) Solar salt production</p> <p>(b) Sugarcane plantation</p> <p>(c) Tea processing</p> <p>(d) Coffee plantation</p> <p>(e) Citronella grass</p> <p>Farm Machinery Loan (more than 3 years)</p> <p>Special Project Loan (more than 3 years)</p>

Source: MADB

Private Banks: Apart from MADB, no other financial institutions offer significant agricultural financing in Myanmar. Some formerly state-owned banks were corporatized into public entities. For example, the former Livestock and Fishery Bank became Global Treasure Bank, and Rural Development Bank corporatized as a public company. Nonetheless, all are commercial banks without ample operation for agribusinesses and the agriculture sector. Private commercial banks currently provide commercial loans, but their validation systems, collateral requirement, interest rates, and loan terms are not designed for farmers and agribusinesses. The risk management

system for the agriculture sector has not developed properly either. Credit risk (due to lack of collateral and of a collateral registry system), production risk, marketing risk, and price risk are all anticipated by private banks in lending to the agriculture sector.

Private banks have no information about borrowers to measure their creditworthiness, especially their credit score. No mechanism exists to liquidate land user right (Form 7) taking as collateral, which is the most common asset of farmers for defaulted loans. And the profit margin is narrow, with a small return on equity between the 13 percent interest rate and the 8 percent deposit rate, and inflation around 10 percent. Commercial banks are careful with agricultural lending due to covariant risk in agricultural price and production. The operating costs of providing credit are high given the number of small loans dispersed widely across the country. Their strength is in having an established banking network across Myanmar, and a sufficient loan to deposit ratio (liquidity). On the other hand, opportunity exists to leverage their existing clients with agricultural exposure, considering agricultural commodities and receivables as collateral with the right investment and technical support.

Nonbank Financial Institutions (Microfinancing by MFIs and Cooperatives): In the nonbank category, MFIs and cooperative societies play an important role in closing the financing gap by replacing unregulated moneylenders. MFIs and cooperative societies' advantage are in providing financial and education services to low-income families and individuals at their doorsteps. They can directly interact and maintain social relation with them for financing, financial and business education, counseling and capacity building.

The strength of MFIs and cooperative societies, if functioning well, is that they directly interact and maintain friendly relations with their clients for education, health, and social support, especially in financial and business education, counseling, and capacity building on family money management.

1) Cooperatives Associations

Cooperative movement was firstly introduced into Myanmar in 1904-1905. Central Cooperative Society Ltd., was established in January 1975 and was restructured on March 29, 2002, in accordance with the 1992 Cooperative Society Law. The military government restored cooperatives' basic functions in the early 1990s. The idea of cooperatives was significantly emphasized in the previous government's signature initiative on poverty reduction and rural development.

COC currently operates agricultural financing from two different sources offunding.

- i) \$400 million from China EXIM Bank to provide loans to farm cooperatives
- ii) 100 million from Daedong Industrial Co. to finance the medium-term credit for Daedong agricultural machinery.

i) The Micro Capital Loan

The China Exim Bank Loan commenced its disbursement on December 19, 2013 as the settlement of Loan agreement between 2 nations, the Republic of the Union of Myanmar and the People’s Republic of China, was initiated in the year 2013/2014 by the government’s sovereign guarantee.

Cooperatives Unions in the state and region took the activities of providing the loan disbursement to cooperative societies with repayment for once per 6 months so as to reach their members by cooperative ways.

ii) Daedong Agricultural Machinery Reinforcement of Myanmar Agricultural Workplace

The State laid down the Scheme for rural development and poverty alleviation with the aim of transformation to mechanized farming for cooperative agricultural sector in the country. Initially, The Republic of Korea, Daedong Industry Co., Ltd., and Ministry of Cooperatives of Myanmar conducted the signing ceremony of sale and purchase agreement to buy Daedong agricultural machinery equivalent to USD 100 million on 13.11.2014 in Nay Pyi Daw. To support the agricultural sector, Daedong agriculture machineries which are imported by the loan of the Republic of Korea started the distribution by CCS to farmers on 14.12.2014. The total repaying period is (7) years hire purchase system including grace period (1) year and repayment period (6) years for Daedong agricultural machinery.

And then, Daedong Industry Co., Ltd. supplied a few kinds of agricultural machineries which include the total (6723) numbers of power tiller, tractor, combine harvester, out of which the number of 2970 machineries could be sold out on 17.7.2016. And some parts and accessories include the total number of 1321 units of rotavator, disc plough, disc harrow and front dozer have been sold on 17.7.2016.

2) Microfinance Institutions

Microfinance was operationalized in 2011 with enactment of the Myanmar Microfinance Law. Under the law, any legal organization, company, NGO, or association can apply for a business license. More than 100 organizations registered in the first year. Since then, microfinance has been adapted and nurtured by regulators and is now a strong cornerstone in rebuilding the country's financial system.

To foster healthy growth of the microfinance sector. Rules and regulations stipulating improvements include Ministry of Finance and Revenue (No. 277/2011) and Directives from Microfinance Supervisory Committee (Directive 1/2011, 2/2011, 1/2014). The latest policy reforms of Financial Regulatory Department (Directive 1/2016) demand better qualification of MFIs, a higher paid-up capital requirement, a requirement of two consecutive years of profitability, and stricter regulations on management and internal control. The directive also permits more products such as micro-insurance, higher-purchase, and remittance transfers. Above all, MFIs are requested and encouraged by regulators to operate more in rural areas, particularly in the agriculture sector.

Currently, around 167 MFIs are operating in 15 regions and states, 217 townships, 1,818 quarters, 5,182 village tracks, and 14,556 villages, serving 2.23 million clients with 1,583 billion Kyats in loan disbursement and 96 billion Kyats in outstanding deposits. The total paid-up capital of the whole sector is 139 billion Kyats. Microfinancing favors the empowerment of women for their role in family and business. For direct impact, microfinancing enhances job opportunities for local youth, providing job experience and technological enhancement. Most importantly, MFIs can replace informal moneylenders and protect the poor from the downward spiral of indebtedness. Along with policy development, MFIs are improving their products and capacity to increase coverage of good service.

3.3 Background Description of Wakema Township

The background description of Wakema Township presents geographic and demographic conditions of Wakema Township. Geographic background of Wakema Township is presented with topography and climate situation of the region. Demographic factor of Wakema Township is allocated by the number of population, occupation and education status according to annual report of Myanmar population and Housing Census.

3.3.1 Geographic Location of Wakema Township

Wakema Township is a township of Myaung Mya District in the Ayeyarwady Division of Myanmar. The township is connected to the Einme Township across the Kyungon Bridge on the Pyanmalot River. Ayeyarwady Region, also known as the Delta region, is a coastal region between the Bay of Bengal to the west, and the Andaman Sea to the east. The Ayeyarwady Delta fans out from the limit of tidal influence at Myan Aung to the Bay of Bengal and Andaman Sea. The delta region is densely populated, and plays a dominant role in the cultivation of rice on rich alluvial soils as low as just 3 meters above sea level, although it also includes a large number of fishing communities in a vast area full of rivers and streams. It is mainly populated by farming and fishing communities in several villages besides market towns, mostly located along the main rivers.

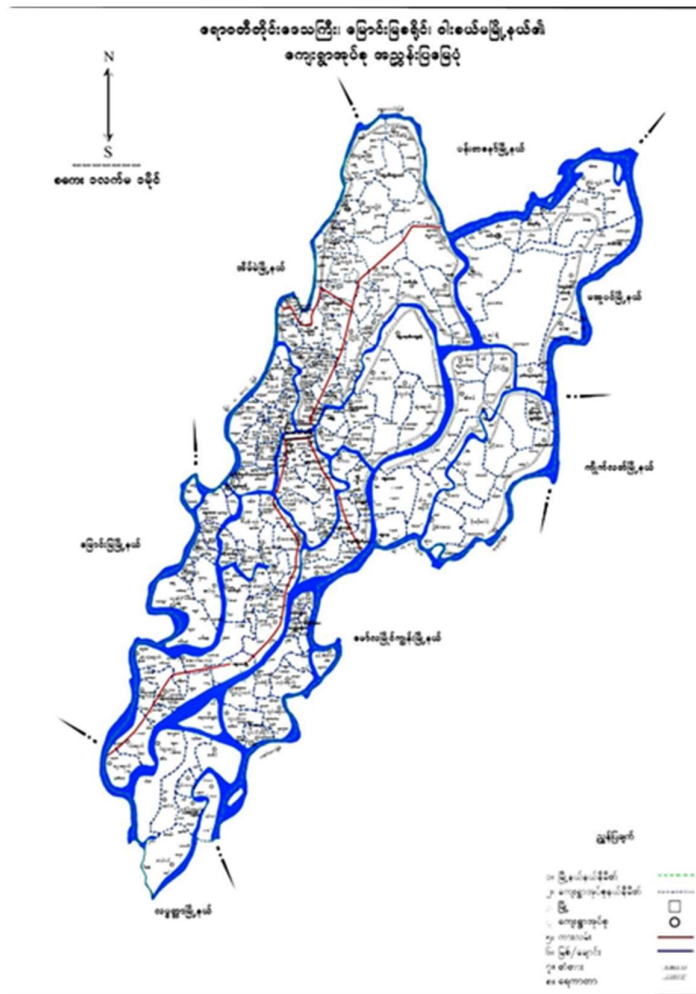
On 2 May 2008, the delta suffered a major disaster, devastated by Cyclone Nargis, which reportedly killed 84,537 people with 53,836 people missing, and left about 2.4 million affected. Total damage and loss is approximately 11.7 trillion Kyats, i.e. 4.1 billion US\$ (Ministry of Social Welfare, Relief and Resettlement, 2012).

Wakema township is one of the 26 townships in Ayeyarwady Region and the region, also known as the Delta region, is a coastal region between the Bay of Bengal to the west, and the Andaman Sea to the east. The capital city is Patheingyi. Sharing a border with Rakhine, Bago, and Yangon, covering a total of 35,964 km². Ayeyarwady is one of the Myanmar's most populated state after Yangon and Mandalay region, with an estimated population of 6.32 million (2011 HMIS data) and population density of 176 people per square kilometer. Ayeyarwady is the region with the greatest percentage of people living in rural areas (88%) relative to urban areas (12%) living in urban areas. This area was the severely affected by Cyclone Nargis in 2008.

Wakema township is located in South West of Myanmar country. It is between 16° 16' and 16° 50' N latitude and 95° 1' and 95° 30' E longitude. It is 29.5 miles long from the East to the West and 36.5 miles long from the North to the South. Total area of Wakema Township is 459.524 square miles.

It is bounded by Ma U Bin and Kyaik Lat township in the east, Myaung Mya and Laputta township in the West, Mawmalyine Kyon in the South and Panta Naw and Einme Township in the North. Figure (3.1) shows the location of Wakema Township.

Figure (3.1) Wakema Township Map



Source: General Administrative Office, Wakema Township (2017)

There are fourteen wards, One Hundred and Twenty-Six village tracts and five hundred and eighty-five villages in Wakema Township.

Wakema Township has 312,973 acres of paddy land for 2015-2016, according to the General Administrative Office, Wakema Township. So, Wakema Township contribute 6.23% to Ayeyarwady Region’s paddy land and 2% to the whole country of land utilization to paddy. In Wakema Township, 16.0 per cent of households use improved sources of drinking water (tap water/piped, tube well, borehole, protected well/spring and bottled water/water purifier) compared to other townships in Ayeyarwaddy Region, it belongs to the (0-32) per cent group and it is also lower than the Union average (69.5%). Some 72.9 per cent of the households use water from river/stream/canal and 10.3 per cent use water from pool/pond/lake some 84.0 per cent

of the households use water from unimproved sources. In rural areas, 86.6 per cent of the households use water from unimproved sources for drinking water.

Annual rainfall in this region is approximately 2,573 mm (101.3 in), with a highest temperature of 38°C (100.4°F) in summer and 20°C (68°F) in winter season. Most of the rain falls during the monsoons between mid-May and mid-November. It is cool and dry from mid-October to mid-February when temperatures begin to rise with pre-monsoon squalls in April and early May. Wakema Township is located five feet above sea level and most of the areas are flooded in monsoon season. Table (3.5) shows the annual rainfall and the temperature from year 2011 to year 2017.

Table (3.5) Yearly Rainfall and Temperature in Wakema Township

Year	Rainfall		Temperature (°C)	
	Raining Days	Total Rain Falls	Summer Season Highest	Raining Season Lowest
	2011	124	91.17	31
2012	115	94.86	31	26
2013	123	99.18	30	26
2014	124	109.01	31	26
2015	109	111.22	32	20
2016	117	114.32	38	20
2017	107	89.35	36	20

Source: General Administrative Office, Wakema Township (2017)

3.3.2 Demographic Background of Wakema Township

According to 2014 Myanmar Population and Housing Census Report, total population of Wakema Township is 289,106 and among this, there are more females than males with 95 males per 100 females. The majority of the people in the Township live in rural areas with only (7.7%) living in urban areas. The population density of Wakema Township is 243 persons per square kilometer. There are 4.2 persons living in each household in Wakema Township. This is slightly lower than the Union average.

The proportion of productive working population between 15 to 64 years of age in Wakema Township is 64.1 per cent. The proportion of children aged 14 and below together with the proportion of the elderly aged 65 and over are less than the

proportion of the working age group population. Fewer proportions of children and elderly reduce the dependency of those age groups on the working age population. Figure (3.2) shows the Population by Broad Age Group in Wakema Township.

The population in 10-14 age groups is considerably large in Wakema Township. The birth rate has been noticeably declining in Wakema Township since the last 5 years. The population has markedly declined from age group 15-19 onwards. Compared to Union level, there is a smaller percentage of working age group 15-64 population in Wakema Township. Starting from age group 20-24, there are less males than females in all age groups.

School attendance in Wakema Township drops after age 12 for both males and females. Compared to the Union, the school attendance of males in Wakema Township is slightly lower than that of the Union after age 12 onwards. Figure (3.2) shows school attendance by age, Union, Ayeyarwady Region and Wakema Township. The literacy rate of those aged 15 and over in Wakema Township is 90.8 per cent. It is lower than the literacy rate of Ayeyawaddy Region (93.8%) but higher than the Union (89.5%). Female literacy rate is 88.5 per cent and for the males it is 93.4 per cent. The literacy rate for youth aged 15-24 is 94.3 per cent with 94.0 per cent for females and 94.6 per cent for males.

Fifteen per cent of the population aged 25 and over have never been to school. Of the rural population aged 25 and over, 15.7 per cent have never been to school. There are 12.4 per cent of males aged 25 and over who have never attended school as against 17.4 per cent for females. Among those aged 25 and over, 29.0 per cent has completed primary school (grade 5) and only 4.3 per cent has completed university/college education. In Wakema Township, 61.3 per cent of the employed persons aged 15-64 are skilled agricultural, forestry and fishery workers and is the highest proportion, followed by 16.7 per cent in elementary occupations. Analysis by sex shows that 64.9 per cent of males and 55.6 per cent of females are skilled agricultural, forestry and fishery workers. In Ayeyarwaddy Region, 47.5 per cent are skilled agricultural, forestry and fishery workers and 23.6 per cent are in elementary occupations.

According to 2014 Myanmar Population and Housing Census Report, in Wakema Township, the proportion of employed persons working in the industry of “Agriculture, forestry and fishing” is the highest with 73.2 per cent. The second highest industry is “Wholesale and retail trade; repair of motor vehicles and

motorcycles” at 7.5 per cent. There are 77.2 per cent of males and 66.7 per cent of females working in “Agriculture, forestry and fishing” industry. Table (3.6) shows the individual income for Wakema Township.

Table (3.6) Individual Income for Wakema Township

Year	2013-14	2014-15	2015-16	2016-17
Individual Income	795,392	852,031	996,976	1,023,127

Source: General Administrative Office, Wakema Township

In Ayeyarwady Region, there are 64.7 per cent of employed population working in “Agriculture, forestry and fishing” industry and 7.9 per cent in “Wholesale and retail trade; repair of motor vehicles and motorcycles” industry. Compare with Region, Wakema Township has more portion of employed per working in the industry of “Agriculture, forestry and fishing”.

There are four types of seedlings in raining season which are Paw San, Nga Kwe, Hnan Kar and Ma Naw Thu Kha and two types of seedlings in winter season which are Thee Htat Yin and Ma Naw Thu Kha which most of the respondents in this study have been cultivating.

3.3.3 Financial Institutions in Wakema Township

Wakema Township is one of the most paddy production area in Myanmar and almost all financial institutions support the Ayeyarwaddy Region, including Wakema Township. According to 2014 Myanmar Population and Housing Census Report, four banks support agricultural credit including one government bank and three private banks.

MADB Bank: MADB is the only one state bank which support mainly to paddy production among other agricultural sectors. Table (3.7) shows the Agricultural Loan distribution by Crops.

Table (3.7) MADB Agricultural Loan Distribution by Crops, Value in Kyat Millions

Crop	2000-01	2005-06	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Grand Total	12,124.19	34,390.27	190,679.89	352,721.75	557,846.54	1,158,728.58	1,167,485.44	1,091,404.88
Cereals	9,524.87	29,365.34	157,536.51	312,697.86	508,499.59	1,039,152.54	1,051,028.00	994,051.10
Paddy	9,524.87	29,292.06	156,494.46	311,530.22	507,130.31	1,035,840.50	1,047,681.70	993,009.80
Wheat	-	-	-	-	-	-	-	-
Maize	-	73.28	1,042.05	1,167.64	1,369.28	3,311.94	3,346.30	1,041.30
Oil Seeds	1,526.25	3,363.40	17,508.79	19,452.83	21,451.75	43,219.68	42,345.68	36,777.40
Groundnut	996.93	1,752.42	7,101.94	7,623.56	9,039.59	17,145.10	15,867.66	12,953.66
Sesamum	524.83	1,562.13	10,059.67	11,400.85	11,906.29	24,962.32	25,205.40	22,639.90
Sunflower	-	-	-	-	-	-	-	-
Mustard	4.49	48.85	347.18	428.42	505.87	1,112.26	1,272.20	1,183.84
Condiments	-	-	-	-	-	-	-	-
Chilies	-	-	-	-	-	-	-	-
Onions	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	-	-
Tobacco	-	-	-	-	-	-	-	-
Fibers	362.80	319.09	1,405.39	1,599.74	1,486.33	2,348.44	1,780.90	1,440.44
Cotton	362.80	319.09	1,405.39	1,599.74	1,486.33	2,348.44	1,780.90	1,440.44
Others	710.27	1,342.44	14,229.20	18,971.32	26,408.87	59,674.32	57,250.28	51,853.14
Potato	-	-	-	-	-	-	-	-
Sugarcane	55.51	-	-	-	-	14,333.60	15,081.00	7,282.80
Jute	-	-	-	-	-	-	-	-
Paddy Loan (%)	78.56%	85.18%	82.07%	88.32%	90.91%	89.39%	89.74%	90.98%

Source: MADB Bank

MADB offers the Seasonal Crop Production Loan and the Term loan to farmers. There are three seasonal loan which is less than one year of loan periods are Winter loan, Monsoon Loan and Premonsoon Loan. According to Wakema Administrative Office, MADB provides two seasonal loan which are winter loan and monsoon loan. Seasonal loans distributed for paddy crop is presents in Table (3.8) for three years from 2015 to 2017. Farmers from one hundred and twenty village tracks are granted a total loan of K 14,980.00 million (monsoon loan K 15,549.70 million and winter loan K 8,883.60 million) in 2015 and total loan of K 34,722.80 million (monsoon loan K 23,001.00 million and winter loan K 13,719.80 million) in 2016. and K 31,649.80 million in 2017 (monsoon loan K 19,314.30 million and winter loan K 12,335.50 million).

**Table (3.8) MADB Loan Distribution by Season in Wakema Township,
Value in Kyat Millions**

Year	2015		2016		2017	
	Winter	Monsoon	Winter	Monsoon	Winter	Monsoon
Loan Amount	8,883.60	14,980.00	13,719.80	23,001.00	12,335.50	19,314.30
Farmers	19,946	24,881	20,589	25,507	18,607	21,389

Source: MADB Bank

Private Banks: There are three private banks which support credit to agricultural sector in Wakema Township. They are CB Bank, Tun Foundation Bank and Myanmar Yadana Bank.

Cooperatives: There are 197 cooperatives in Wakema Township, according to General Administrative Office, Wakema Township. The main purpose is to avoid from borrowing the high interest rate by rural people, they can stand on their own in the next (4) or (5) years and operate the business with their own finance as self-reliance or self-sufficiency stage to the sustainable development of the cooperative societies. Cooperatives has three programs including agriculture, promote agrarian and provide seeds. Loan amount differs depending on saving amount and time of membership. Interest rate is 1.5 percent. Financial cooperatives collect the loan payment on daily and the loan duration is 6 months (Cooperative Association in Wakema, 2018).

Microfinances Institutions: There are four microfinance institutions in Wakema Township which are PACT Microfinance, Chan Myae Microfinance, Vision Fund and Fulson Myanmar Microfinance. They provide agricultural loan to farmers with 30% interest rates per annum.

CHAPTER IV

ANALYSIS OF AGRICULTURAL CREDIT ACCESSIBILITY AND ITS EFFECTIVENESS ON FARM PERFORMANCE

This chapter presents credit accessibility and the effectiveness of agricultural loan on farm performance in Wakema Township. This analysis is based on empirical data collected from five villages from Wakema Township. There are five main parts in this chapter. They are survey design, background characteristics of respondents, credit terms, credit accessibility of farmers and farm performance.

4.1 Research Design

This study is conducted with the objective of identifying farmer's accessibility to agricultural loan and the effect on farm performance in Wakema Township. There are 19 wards, 125 village tracts in Wakema township. Among them, 5 village tracts (4%) of village tracts were randomly selected from Wakema Township which are Kyone Ka Naung, Htaw Ka Nut, Yae Lein, Kyon Sein and Me Za Li. Among them total farmers households of nearly 83 (10%) of borrowing farmers household are randomly selected. The distribution of total and sample farmers household is given in Table (4.1). Stratified random sampling techniques are used to select the respondents in the study area.

$$n_i = (N_i / N) * n$$

Where

- n_i is the sample in i^{th} village,
- N_i is the population of beneficiary farmers household in i^{th} village,
- n is sample size and
- N is the total population of farmers household in all sample villages.

Table (4.1) Sample Respondents in the Study

Village Tracts	No. of Farmers Household	Sample Farmers Household
Kyone Ka Naung	217	22
Htaw Ka Nut	67	7
Yae Lein	256	26
Kyon Sein	150	15
Me Za Li	134	13
Total	824	83

Source: Survey Data (2018)

In table (4.1), 22 sampled farmers household in Kyone Ka Naung, 7 sampled farmers household in Htaw Ka Nut, 26 sampled farmers household in Yae Lein, 15 sampled farmers household in Kyon Sein and 13 sampled farmers households in Me Za Li are selected as study sample by SRS. Therefore, the total sample size is 83 farmers household that are borrowing money from formal or informal organization and main earnings of these five villages are cultivation of paddy in monsoon and summer season and some are from plantation of beans and pulses in summer season in this study.

After identifying the required sample size, two methods of data collection are in generated to collect data, primary and secondary method. In this section, the primary data are collected by observation method, questionnaire and interview method. 83 sets of questionnaires distributed are return from the sampled farmers and the data is processed via SPSS version 22. The purpose is to ensure the data are in the standard of quality. The process includes checking, editing, coding and transcribing. Initially, the researchers check and review each questionnaire to verify its completeness and incomplete questionnaire will be discarded. The total of the response rate was 100 percent. After receiving the raw data, the next step was to input the data in software to get the frequencies, the software used for input the data is SPSS version 22.

4.2 Background Characteristics of Respondents

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

4.2.1 Demographic Characteristics of Respondents

Demographic characteristics of respondents are firstly analyzed. They are gender, age, education level, household size, and years of farming. The following Table (4.2) shows the data.

Table (4.2) Demographic Characteristics of Respondents

Gender	Numbers of Respondent	Percentage
Male	56	67
Female	27	33
Total	83	100
Age (Years)		
≤25	1	1
26 – 45	24	29
46 – 65	50	60
66 –85	8	10
Total	83	100
Education Level		
Primary	55	66
Middle	20	24
High	6	7
Graduate	2	3
Total	83	100
Household Size		
1 – 3	22	27
4 – 6	49	59
Over 6	12	14
Total	83	100
Farm Experience		
Under 10 Years	9	11
10 – 19 Years	9	11
20 – 29 Years	26	31
Over 30 Years	39	47
Total	83	100

Source: Survey Data (2018)

4.2.2 Economic Profile of Respondents

Regarding the economic condition, all of the respondents are involved. These characteristics are their source of earning, annual household income, cultivated acre and yield per acre.

(a) Average Yearly Income of Respondents

Yearly average income of respondent from their business is broadly divided into five levels. Table (4.3) shows the distribution of income level of respondents on yearly basic.

Table (4.3) Average Yearly Income of Respondents

Yearly Income (Kyat)	Number of Respondent	Percent
Under 3,000,000	31	38
3,000,001 – 6,000,000	31	38
6,000,001 – 9,000,000	12	14
9,000,001 – 12,000,000	2	2
Over 12,000,000	7	8
Total	83	100

Source: Survey Data (2018)

According to Table (4.8), 38% of both residents got income level of under 30 lakhs and 30 to 60 lakhs respectively. 14% represent the third most income level of 60 to 90 lakhs. The least 2% represent income level of 90 to 120 lakhs and 8% represent the highest income level of over 120 lakhs per annum.

(b) Main Sources of Income of Respondents

Main Source of earnings from respondents are classified as farming, crops, livestock, farm labour, rental for harvest facilities, and small-scale business.

Table (4.4) Main Source of Income of Respondents

Income Sources	First Priority		Second Priority		Third Priority	
	Number of Respondents	%	Number of Respondents	%	Number of Respondents	%
Farming Rice	78	94	6	7		
Crop			34	41		
Livestock			1	1		
Farm Labor	5	6	6	7	1	1
Rental Harvest Facilities					3	4
Small Scale Business			4	5	2	2

Source: Survey Data (2018)

Table (4.4) shows almost all of the answered represents that farming is their major source of income priority with 94% of the total respondents. The second most is crops cultivation which represents 41%. The main source of income from few farmers are farm labor and small-scale business. Therefore, main sources of income for the farmers in Wakema township is farming and cultivation crop.

(c) Farm Experience of Respondents

When randomly selected respondents are asked about years of rice cultivation, results are shown in the following Table (4.5).

Table (4.5) Farm Experience of Respondents

Years of Rice Cultivation	Number of Respondents	Percent
Under 10 Years	9	11
10 -19 Years	14	17
20 -29 Years	27	32
30 and Over 30 Years	33	40
Total	83	100

Source: Survey Data (2018)

According to the results, most of the respondents are rice cultivation over thirty years with 40% of the total sample residents. 32% cultivate between farm experience over 20 years and 17% cultivate rice between 10 to 19 years. Only 11% cultivate rice less than 10 years.

Majority of farmers over 72% have farming experience more than 20 years with rice cultivation.

(d) Cultivation Acres of Respondents

When respondents are asked about acres of rice cultivation, results are shown in the following Table (4.6).

Table (4.6) Cultivation Acres of Respondents

Acres of Rice Cultivation	Number of Respondents	Percent
Under 5 Acres	51	61
5 – 9 Acres	19	23
10 – 19 Acres	12	15
20 and Above Acres	1	1
Total	83	100

Source: Survey Data (2018)

According to the results, 61% of respondents are cultivation less than 5 acres, 23% cultivate between 5 to 9 acres, 14.5% cultivate between 10 to 19 acres and only 1% cultivate over 20 acres. Therefore, it can be concluded that majority of respondents cultivated rice was less than 5 acres.

(e) Paddy and Other Crops Production

In this study, farm performance can be measured by amount of rice and other crops production. Rice production are divided by two seasons: raining season and summer season according to the respond of farmers. The number of respondents by amount of rice production are presented in Table (4.12) by raining season and summer season.

Table (4.7) Paddy and Other Crops Production

Yield (Bushels)	Raining Season		Summer Season		Yield (Bushels)	Summer Season	
	Number of Respondents	%	Number of Respondents	%		Number of Respondents	%
Under 200	32	39	18	22	Under 50	17	21
201 - 400	21	25	17	21	51 -100	9	11
401 – 600	19	23	12	13	101-150	5	6
Over 600	11	13	8	10	Over 150	2	2
Total	83	100	55	66	Total	33	40

Source: Survey Data (2018)

According to the results, all respondents cultivate rice in raining season and the highest amount of rice production was under 200 bushels which represents 39% of total respondents.

In summer season, some of respondents cultivate rice and some cultivate beans and pulses. The highest percentage of respondents who cultivate rice in summer season is 21% whose production was less than 200 bushels. In summer, some cultivate beans and pulses. The highest percentage of respondents is 21% which produce beans and pulses less than 50 bushels.

4.3 Credit Accessibility of Respondents

(a) Credit Accessibility by Respondents

This section presents the convenient location, loan readiness during farming period, quality of financial institution staff, low interest rate, convenient repayment period, required collateral, enough loan amount received. Respondents' opinions are asked with Likert Scale questions for credit accessibility of Formal and Informal Financial Institutions

- i. Convenient Location of Financial Institution: Is the possibility of farmers to get loan which the location is convenient enough for them.
- ii. Loan Readiness during Farming Period: Is it possibility for farmers to get loan during their farming period.

- iii. Quality of Service of Financial Institution Staff: Is the staff from financial institutions are qualified enough to do the agricultural credit accessibility process
- iv. Low Interest Rate: Is it a possibility for farmers to get loan with low interest rate.
- v. Convenient Repayment Period: Is it loan repayment period is convenient enough for farmers to repay back to the relevant financial institutions.
- vi. Requirement of Immovable Property as Collateral: Is it availability for farmers to give immovable property as collateral.
- vii. Enough Loan Amount Received: Is it possibility for farmers to get enough loan amount received.

Descriptive statistics are used to summarize data in a meaningful in this study. The mean or average is probably that most commonly used method of describing central tendency. Table (4.8) shows the factors of credit accessibility.

Table (4.8) Credit Accessibility from Formal and Informal Lenders

No.	Item	Mean	Std. Deviation
1	Convenient location of Financial Institution	2.67	1.04
2	Loan Readiness during Farming Period	3.66	1.37
3	Quality of Service of Financial Institution Staff	4.01	1.03
4	Low Interest Rate	4.47	1.70
5	Convenient Repayment Period	3.49	0.69
6	Requirement of Immovable Property as Collateral	3.19	0.55
7	Enough Loan Amount Received	3.60	0.76
	Overall Mean	3.59	

Source: Survey Data (2018)

According to the Table (4.8), overall mean value shows how possibility of getting loan which affect the credit accessibility is 3.59. It shows that all of the focus respondents consider it is easily accessible to get loan for farming. Among these, the highest mean value of low interest rate is 4.47. It can be clearly seen that it is the most possible item which farmers can get lower interest rate from their credit sources. The mean value of convenient location of financial institution is 2.67 which is lowest

among other items. It means that the location of financial services is least possibility factors to compare with other items for credit accessibility. All items mean score have range between 2.67 to 4.47.

(b) Loan Coverage from Formal Financial Institutions

This section identifies the finding from survey on credit accessibility of farmers which was measured in terms of the demand and supply of credit at given interest rates. Interest rates from formal lenders such as MADB and MFI was much lower compare with informal lenders.

Table (4.9) shows the adequate loan amount received from formal lenders from the respondents.

Table (4.9) Loan Coverage from Formal Financial Institutions

Loan Coverage at Low Interest Rate	Number of Residents	Percent
Enough	21	25
Not Enough	62	75
Total	83	100.0

Source: Survey Data (2018)

According to the results, 75% of respondents do not get adequate loan amount with low interest rates from formal lenders. Only 25% received enough loan amount for their cultivation.

(c) Loan Readiness from Formal and Informal Financial Institutions

This analysis of respondents answered loan readiness from formal and informal Financial Institutions. Formal Financial Institutions are government bank (MADB), private banks and MFI with lower interest rates compare with informal private money lenders. The results are shown in Table (4.10).

Table (4.10) Loan Readiness from Formal and Informal Lenders

Loan Readiness	Gov & Private Bank		MFI		Informal Lenders	
	Number of Residents	Percent	Number of Residents	Percent	Number of Residents	Percent
During Farming Period	12	15	16	19	49	59
After Farming Period	71	85	67	81	34	41
Total	83	100	83	100	83	100

Source: Survey Data (2018)

According to the above results, most of the farmers, 85% of total respondents cannot receive the agricultural loan during farming period with low interest rates from government and private banks. Only 15% received the loan during farming period from government and private banks.

Other formal lenders are MFI organizations and 81% of total respondents cannot receive required loan during the farming period. Only 19% of respondents received loan during farming period with lower interest rates from MFI.

According to above survey, 59% of total respondents received loan during the farming period from informal lenders and 41% cannot received the loan during farming period.

(d) Frequency of Borrowing

Most of the farmers borrow mainly from MADB twice a year as an agricultural seasonal loan and they used to get from MADB when they start doing the agricultural business. If MADB loan amount is not enough for their cultivation, farmers borrow from other formal lenders as MFI and cooperatives. They choose the last option to get loan from informal lenders as the interest rates are too high. The highest frequency of borrowing is from formal lenders such as MADB and MFI and least frequency of borrowing are form informal lenders.

4.4 Farm Performance

Farm performance can be measured in two ways, they are farm yield and farm income. Table (4.11) shows the paddy yield per acre for of respondents are within the range between 40 to more than 90 bushels. This section analyses paddy yield per acre.

Table (4.11) Paddy Yield per Acre of Respondents

Paddy Yield per Acre (Bushels)	No. of Respondents	Percent
< = 40	23	28
41 - 50	19	23
51 - 60	7	8
61 - 70	14	17
71 - 80	13	16
> 80	7	8
Total	83	100

Source: Survey data

Table (4.11) examines average paddy yield per acre. Nearly 16% of respondents produce 71 to 80 bushels per acre. 17% of farmers produce 61 to 70 bushels per acre. At least, only 8% of respondents produce 51 to 60 and 71 to 80 bushels per acre. As the research survey, majority of farmers produce less than 40 bushels per acre.

4.4.1 Correlation Between Credit Accessibility and Farm Yield

Farm performance can be measured in two ways, they are productivity and farm income. Figure (4.12) shows the correlation between Credit Accessibility and Farm productivity.

Figure (4.12) Correlation between Credit Accessibility and Farm Yield

		Credit Accessibility	Farm Yield
Credit Accessibility	Pearson Correlation	1	.853**
	Sig. (2-tailed)	0	0
	N	83	83
Farm Yield	Pearson Correlation	.853**	1
	Sig. (2-tailed)	0	0
	N	83	83

Source: Survey Result, 2018 (SPSS Output)

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

This means that there is a strong relationship between two variables. This means that changes in one variable are strongly correlated with changes in the second variable. Pearson's r is 0.853. For this reason, it can conclude that there is a strong relationship between credit accessibility and average farm's yield for last four years.

4.4.2 Correlation Between Credit Accessibility and Farm Average Income

Farm performance can be measured in two ways, they are productivity and farm's income. Figure (4.13) shows the correlation between Credit Accessibility and Farm's Average Income.

Figure (4.13) Correlation between Credit Accessibility and Farm Income per Acre

		Credit Accessibility	Farm Yield
Credit Accessibility	Pearson Correlation	1	.841**
	Sig. (2-tailed)	0	0
	N	83	83
Farm Yield	Pearson Correlation	.841**	1
	Sig. (2-tailed)	0	0
	N	83	83

Source: Survey Result, 2018 (SPSS Output)

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

This means that there is a strong relationship between two variables. This means that changes in one variable are strongly correlated with changes in the second variable. Pearson's r is 0.841. For this reason, it can conclude that there is a strong relationship between credit accessibility and farm income per acre.

4.4.3 Regression Analysis

Regression Analysis on Income per Acre

In this study, regression analysis is applied in order to analyze the effect on farm income per acre. The dependent variables income per acres explained by four independent variables (credit accessibility, cultivation acre, years of paddy cultivation and loan amount). According to Table (4.14), analysis of variance was used to test the significance of the regression model as pertains to differences in means of the dependent and independent variables as shown on Table (4.14) below, The $F=127.398$ was positive and significant at $P=0.000 < 0.05$. Thus, the regression model is statistically significant at 1% level.

Table (4.14) Regression Results for Farm Income per Acre

Model	Unstandardized Coefficients		Unstandardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-10115.91	69141.68		-0.146	0.8840
Number of Acre	-1099.067	2966.59	-0.015	-0.370	0.7120
Years of Cultivation	6074.28	1678.58	0.322	3.619	0.0010
Credit Accessibility	139181.87	24974.51	0.381	5.573	0.0000
Loan Amount	90.082	0.018	0.318	4.547	0.0000
n = 83, R2 = .862, Adjusted R2 = .86, F = 127.398, (p value = 0.000)					

Source: Survey Data

As shown in Table (4.14), the value of adjusted R^2 is .86 that reveals 86% of total variation in farm income are explained by four factors; number of acres, years of paddy cultivation, credit accessibility and loan amount. These results suggest that the three variables have significantly explained 86% of the variance in farm income per acre except number of acres. 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 years of cultivation, credit accessibility and loan amount in the models are significant at 1% level on farm performance,

Regression Analysis on Farm Yield

In this study, regression analysis is applied in order to analyze the effect on farm yield. The dependent variables yield explained by four independent variables (credit accessibility, cultivation acre, years of paddy cultivation and loan amount).

According to Table (4.15), analysis of variance was used to test the significance of the regression model as pertains to differences in means of the dependent and independent variables as shown on Table (4.15) below, The $F = 85.654$ was positive and significant at $P = 0.000 < 0.05$. Thus, the regression model is statistically significant at 1%.

Table (4.15) Regression Results for Farm Yield

Model	Unstandardized Coefficients		Unstandardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	12.581	1.976		6.366	0.0000
Number of Acre	-0.089	0.514	-0.009	-0.173	0.8630
Years of Cultivation	0.999	0.291	0.367	3.435	0.0010
Credit Accessibility	25.710	4.326	0.487	5.944	0.0000
Loan Amount	0.000004249	0	0.114	1.355	0.1790
n =132, R2 =.809, Adjusted R2 = .799, F = 82.6, (p value = 0.000)					

Source: Survey Data

As shown in Table (4.14), the value of adjusted R^2 is .799 that reveals 79.9% of total variation in farm yield explained by four factors; number of acres, years of paddy cultivation, credit accessibility and loan amount. These results suggest that the four variables have significantly explained 79.9%. of the variance in farm yield except for number of acres and loan amount. 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 years of cultivation, credit accessibility in the models are significant at 1% level on farm performance.

CHAPTER V

CONCLUSION

This chapter describes conclusion of the study areas of credit accessibility and effect of agricultural loan among farmers. This chapter contains findings, recommendations and need for further research of the study.

5.1 Findings

Myanmar is an agriculturally based country and country's rich natural resources favorable the opportunity to produce wide range of agricultural products. Agricultural is a major source of income in Myanmar which represents 35 to 40 percent of gross domestic product accounts for 25pc-30pc of total export earnings and employs 70 pc of the labour force. So, the country's economy depends heavily on the agricultural sector.

To develop the agricultural sector by raising agriculture productivity and new market penetration other than neighboring countries will improve poverty alleviation and that will lead to the prosperity of Myanmar. By doing so, the sector needs a lot of government support to support farmers with better access to enough capital with low interest rates during before farming period, quality seeds, improved infrastructure and modern technology.

In this study, farmers can access agricultural loan easily from formal and informal lenders which represents credit accessibility of 3.59, shows that all of the focus respondents consider it is easily accessible to get loan for farming. But formal lenders like MADB and MFI, farmers cannot get enough loan amount for their cultivation. The study shows that 74.7% of respondents do not get adequate loan amount with low interest rates from formal lenders.

MADB issues loan of 150,000 MMK per acre up to maximum 10 acres with subsidize interest rates of 8.5% to farmers. Farmers need to present form 7 which is the ownership of the land to get that MADB loan. But the MADB loan is not enough for most of the farmers and mostly it received after farming period. In this study, 85.5% of total respondents cannot receive the agricultural loan during farming period with low interest rates from government and private banks. That's the reason that farmers need to get informal loan from private money lenders, merchants and landlords

under extremely burdensome conditions during farming period. The cost of loan is high whether interest or by way of indirect charges which makes the financial burden to farmers.

Currently, agricultural sector growth in Myanmar averaged 2.5 percent during 2009/10 – 1016/17. This compares to only half of the growth rate in neighboring China and Thailand and less than one-third of nonagricultural growth in Myanmar. This low agricultural growth is one of the main reasons for slow poverty reduction.

Low agricultural productivity is the result of multiple factors apart from enough loan received from formal lenders, such as insufficient supply of certified paddy seeds, not enough agricultural research and farmers' poor knowledge about fertilizer use, lack of attention to crop diversification to maximize profit, and low in the extent and quality of agricultural mechanization in Myanmar.

The supply of certified paddy seeds is estimated to meet not more than 1 percent of the potential demand. In this study, all of the farmers use their own saved seeds, which is not a good rice seeds makes the productivity to become low.

According to the study, farmers do not get soil tests for their farms and they do not know the conditions of their soils, how to manage them, or what fertilizers to use, how much fertilizer quantity and quality required for those soils. There is no agricultural research and extension programs are in place to help farmers address these issues. Fertilizers can be of poor-quality, sometimes even fake, and together with poor-quality seeds result in low yields. The farmers normally increase the fertilizers year by year intend to increase yield. Despite the higher yields triggered by this higher use of fertilizers, high fertilizer users cost more and obtained profits below those of low fertilizer users. So, the higher use of fertilizers did not always result in higher profits.

According to the agricultural income from studied respondents, farmers who choose to cultivate beans and pulses in winter season get more income compared with cultivation of paddy in winter season. In this study, 39.8% of farmers choose to cultivate beans and pulses in winter season. In addition, farmers who have other business such as farming for other crops, farm labor and small-scale business get more income than farming for paddy only.

Farmers in general do not have the access to long-term capital, preventing investments in agricultural machinery and other productive assets at least for the large farms, for whom owning machinery can make economic sense. In this study, for the

use of agricultural mechanism, the farmers use the harvesting machine during the harvesting season mainly because, lack of labors in the village and also high labor cost compared with using the machinery. They do not own the harvesting machine which was owned by the informal lending party and farmers pay the machine rental cost and petrol charges on per acre basis.

According to family size of the respondents, bigger family size with more children has higher family income than smaller family size. For bigger family, both parents take the duty of agriculture business and adult children work in neighboring countries overseas such as Thailand and Malaysia or work in country's capital city like Yangon which has few industrial zones. So, it is easy for each adult child to get a job and every month, the children send back their salary to parents which makes increase the overall family income. That is the main reason that farmers cannot get addition labor force during harvesting season and labor cost is high as well and it makes them to choose using harvesting machine as well. According to this study, bigger family size is the lowest percentage which represent 14.5% of total respondents.

5.2 Recommendations

In this study, farmers cannot get enough loan amount during farming period with low interest rates from government bank (MADB). There are a lot of improvements from MADB such as increased the loan amount per acre, revised the farmers' loan system from the group-based lending system to an individual based system but still it is not enough yet. Government need to support more financial aids to get sufficient loan amount to escape the farmers lending from high interest informal lenders. The current 150,000 MMK for each acre owned by farmers is not sufficient for not only cultivation but also selling and distribution to markets. Farmers still need to present Form 7 which is ownership of the farm to MADB and for some farmers, they do not own the farm which they cannot present Form 7 and cannot access the loan with low interest rate of 8.5% per annum. So, government need to think of proving loan to not only the farmers who own the farm land but also the farmers who is not the owner of the farm land but they hire the farm land for cultivation.

Apart from lending for cultivation, farmers need the long-term loan which more than one year depends on the investment they made in farming such as buying the automatic farming equipment for their own. Currently most of the credit is for seasonal loan which is approximately 6 months period.

According to finding, the farming of crops income is higher than rice cultivation which need to promote to farmers for high income crops to be cultivated to increase the profitability of the farmers which will lead to country's poverty alleviation and that leads to the prosperity of Myanmar.

Furthermore, implementation of a crop insurance scheme to protect farmers in Myanmar is very important and on January 2018, the Ministry of Planning and Finance approved a two-year pilot crop insurance project aiming to cover damages to crops as a result of erratic weather conditions in Myanmar. Meanwhile, the production cost of paddy is also higher in Myanmar compared to neighboring countries due to poor infrastructure and technology. Farmers are at the mercy of unpredictable weather conditions and crop damage due to pests and disease. Currently, state-owned Myanmar Agricultural Development Bank (MADB) provides loans to farmers who suffer losses from poor crop yields. It is hard for them to pay off their loans if their crops are damaged due to erratic weather conditions, which lands them in a debt trap. This being so, the weather index-based crop insurance scheme will be implemented to help farmers tackle such problems

5.3 Needs for Further Research

This study only focused on credit accessibility and effect of agricultural loan in Wakema Township. The study area cover Wakema Township only. Thus, the result for the study may not reflect the overall situation in Myanmar. Only paddy crops have been taken into consideration. This research cannot be specifically explored farmer's loan usage for farming, details study of expenses category for paddy production. It is due to time constraints to conduct more area 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.

REFERENCES

1. Akram, Waqar, Hussain, Zakir, Sial, M. H. and Hussain, Ijaz. (2008). Agricultural Credit Constraints and Borrowing Behavior of Farmers in Rural Punjab
2. Chakraborty, Tanika and Gupta, Aarti. (2009-2010). Loan Repayment Behavior of Farmers: Analyzing Indian Households
3. Chena, Takwa Abonwi, Maria, Anyik Geena, Teno, Maclean Nkiemboupoh. (2018). Determinants of Access to Credit and Performance of Smallholders Farmers in Kumba Municipality, South West Region of Cameroon.
4. Ciaian, Pavel (DG Joint Research Centre, European Commission, Seville, Spain). (2013). Access to credit, factor allocation and farm productivity: Evidence from the CEE transition economies
5. Culp, Tyler. (2013). Agricultural Credit Analysis, Senior Project.
6. Elahi, Ehsan, Abid, Muhammad, Sahito, Murtaza. (2018). Agricultural advisory and financial services; farm level access, outreach and impact in a mixed cropping district of Punjab, Pakistan
7. Eurocham Myanmar (European Chambers of Commerce in Myanmar), Agriculture Guide 2018
8. Ki, Om (National Expert, GIZ) and Thein, San (Senior National Expert, GIZ). (2016). *A Glimpse into GIZ Banking Report - Myanmar's Financial Sector: A Challenging Environment for Banks* (Third Edition, 2016).
9. Luna-Martinez, Jose De and Anantavasilpa, Ratchada. (2014). *World Bank Report*, LIFT (Livelihood and Food Security Trust Fund), MADB Initial Assessment and Restructuring Options.
10. Priyanka, Mani. (2014). An Analysis of Farmers Access to Credit, Borrowing Behaviour and Resource Use Efficiency In Guntur District of Andhra Pradesh.
11. Reyes, Alvaro, Lensink, Robert, Kuyvenhoven, Arie and Moll, Henk. (2012). Impact of Access to Credit on Farm Productivity of Fruit and Vegetable Growers in Chile.

12. Shah, Mir Kalan, Khan, Humayun , Jehanzeb, and Khan, Zalakat (2008). Impact of Agricultural Credit on Farm Productivity and Income of Farmers in Mountainous Agriculture in Northern Pakistan: a Case Study of Selected Villages in District Chitral
13. The 2014 Myanmar Population and Housing Census, Department of Population Ministry of Labour, Immigration and Population, (October 2017). Wakema Township Report Ayeyarwaddy Region, Hinthada District.
14. Township profile (2017). GAD (General Administration Department), Wakema.
15. Working Paper 9, Rural Finance. (2016). Formulation and Operationalization of National Action Plan for Poverty Alleviation and Rural Development through Agriculture - National Action Plan for Agriculture (NAPA).
16. *World Bank Report*. (2017). Analysis of Farm Production Economics.

APPENDIX
CREDIT ACCESSIBILITY AND THE EFFECTIVENESS OF
LOAN ON FARM PERFORMANCE
(QUESTIONNAIRES)

Part (A)
Demographic Factor

- 1 Position in Family
- 2 Age
- < = 25
- 26 - 45
- 46 - 65
- 66 - 85
- 3 Gender Male Female
- 4 Education
- Primary
- Middle School
- High School
- Under Graduate
- Graduate
- 5 Marital Status Single Married
- 6 Number of Family -----
- 7 How many years have you been farming?

- 8 How long have you been cultivation rice?

- 9 What is the size of your rice farm (Acres)?
- Own (Acres)
- Rent (Acres)

Section (B)
Credit Accessibility

Credit Accessibility from Formal & Informal Lenders

- I. If you are going to choose loan from financial providers, how are the following factors affecting to access credit accessibility

(Please evaluate options with the grade 1 to 5, 1 Not important at All, 2 Rather Not Important, 3 Natural, 4 rather Important, 5 Very Important)

- | | | | | | |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 1. Convenient location of financial institution | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 2. Loan Readiness during Farming Period | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 3. Quality of service of financial institution's staff | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 4. Low interest rate/cost of borrowing | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 5. Convenient repayment period | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 6. No requirements for immovable property as collateral | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| 7. Enough Loan Amount Received | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

- II. Did the loan amount receive from formal lenders adequate?

- | | | |
|--------------------|------------------------------|-----------------------------|
| 1. Government Bank | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Private Banks | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. MFIs | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

- III. Did you get the loan at the time you really needed it?

- | | | |
|---------------------------|------------------------------|-----------------------------|
| 1. Government Bank | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Private Banks | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. MFIs | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Informal Money Lenders | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. Other specify | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Part (C)
Performance

Part (A)
Farm Income

1. What is your major source/proportion of income and amount from various sources?

(Please evaluate following options and give priorities from major income to minor Income)

- | | |
|---|--------------------------|
| i. Rice | <input type="checkbox"/> |
| ii. Crops | <input type="checkbox"/> |
| iii. Livestock | <input type="checkbox"/> |
| iv. Farm Labour | <input type="checkbox"/> |
| v. Rental/Labour for pre /post-harvest facilities | <input type="checkbox"/> |
| vi. Small scale business | <input type="checkbox"/> |
| vii. Teaching | <input type="checkbox"/> |
| viii. Public Servant/Government employment | <input type="checkbox"/> |
| ix. Shop | <input type="checkbox"/> |
| x. Others (Please specify) | <input type="checkbox"/> |

2. On average, how much income did you earn in a year?

B Farm Productivity

3. Productivity of Crops

Crop	Unit	Production				Selling Price				Remark
		2017	2016	2015	2014	2017	2016	2015	2014	
Rice (Raining Season)										
Rice (Summer)										
Ground Nut										
Sesame										
Other.....										

Suggestions to Improve Access to Credit

1 What are you expectations among the credit programs in your area?

2 Do you have any suggestions/ recommendations to help improve?

