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EFFECT OF CREDIT ACCESSIBILITY ON FARM PERFORMANCE (A CASE STUDY IN INGAPU TOWNSHIP, AYEYARWADY REGION)

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(MBF-4th BATCH)

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EFFECT OF CRDIT ACCESSIBILITY ON FARM PERFORMANCE
(A CASE STUDY IN INGAPU TOWNSHIP, AYEYARWADY REGION)

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

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ABSTRACT

Agricultural growth is important for alleviation of poverty and stimulation of economic growth and development. The main objective of this study is to analyse the effectiveness of agricultural credit on farm's performance in Ingapu township, Ayeyarwady region.In Ingapu, there are 72 village tracts which include 652 villages. Sipin village group is the village group which is only depending on cultivation sector. There are five villages in Sipin village group having 318 households. Among them, 95 farmers are selected by random sampling method. The face to face interview was applied with the help of structured questionnaires. To analyze the primary data, Pearson Correlation analysis, Descriptive analysis and Linear Regression analysis were used. The findings of the study showed credit accessibility, paddy cultivated acres and amount of credit were significant relationship to farm performance, but not strong relationship. If the score of input increase, while other things remain unchanged, the farm performance will increase The bank credit amount was not enough for seasonal farming operation. In this study, 89.47% of respondents could not 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 traders 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.

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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
EUR	-	Euro Dollar
GDP	-	Gross Domestic Product
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
MRSC	-	Rice Specialized Companies
MRF	-	Myanmar Rice Federation
NGO	-	Non-Governmental Organization
Rs	-	Rupee
SACS	-	Supervised Agricultural Credit Scheme
SFI	-	State Financial Institutions

CHAPTER I
INTRODUCTION

Debt financing plays an essential role for the poverty of the rural households in developing countries in a number of ways. It is an important instrument for smoothing consumption, in a context where incomes typically experience large seasonal fluctuations [Ghosh et al., 2000]. However, credit markets in developing nations especially in rural households do not behave completely like competitive markets. They are dual structured, where formal and informal financial systems operate side by side. Due to the lack of availability of a properly structured debt market in the rural areas of the country, majority of the households borrow from informal sources of finance which charge high interest rates and often lead to informal agents usurping the assets of the households. To provide easier access to credit we often find governments intervening in the workings of the credit market in multiple ways. In Thailand increased participation in formal financial institutions increased economic growth between 1976 and 1990[Townsend and Ueda, 2003].

The finance sector is the lifeblood of any economy and its smooth functioning is central to rapid and inclusive economic growth. A well-functioning financial system must intermediate efficiently between savers and borrowers; manage risks prudently; provide a wide variety of financial services to firms, farms, and households; mobilize savings effectively; identify and lend for sound investments; remain robust in the face of shocks; and ensure that access to finance is available to all.

In any country, financial services sector occupies a unique place among all business sectors. It plays a vital role as a catalyst for overall economic development, seeding growth in other sectors by providing the necessary funds to various economic agents, namely private individuals and corporations. It is also in itself a key business sector contributing a large number of well qualified and high earning jobs and is arguably the largest sector in the world in terms of revenues. No developed nation has reached an advanced stage of development without a relatively large, sufficiently successful and reasonably sound financial sector. No developing economy has enjoyed sustainable economic growth without a sound expansion of its banking sector. Ultimately, the banking crisis experienced around the world and its effects rippling through the economy is testimony to the significance of banks in modern economies. Myanmar will be no

exception. The creation of a sound, inclusive and successful banking sector cannot be taken out of the country development equation, no matter what the other priorities may be.

Agriculture plays a significant role in the economic development of Myanmar. To meet the requirements of the growing population and rapidly developing economy, agriculture has to grow fast and get modernized. This requires the use of high pay off inputs. Adoption of high yielding varieties requires large quantities of fertilizers, plant-protection chemicals, modernized equipment, and machineries, which in turn needs huge investment. In Myanmar, there are large amount of labor while land and capital are rare. It would be very difficult to get the benefits of modernization of agriculture without enough and timely supply of credit to the farmers. Agricultural growth is crucial for alleviating rural poverty. Access to institutional credit to more farmers and proper quantity and quality of agricultural credit are crucial for realizing the full potential of agriculture as a profitable activity.

In Myanmar, most of farmers have been continuously using the traditional system in agricultural, if they change to use the scientific system, they will need huge investment of capital. Most of the farmers are poor with small landholdings and their economic resources are quite limited. For spreading scientific system of farming, it is necessary that disbursement of credit in rural areas should be made available in huge quantity. Although the importance fact is agricultural sector did not get its due share of institutional credit for a long time.

1.1 Rationale of the Study

Myanmar's economic condition is depending on its main business "Agriculture" and on farmers as well. The farmers are also facing with environmental affect such as soil destruction, climate changes. The success of famers is very important for the nation. Because majority of farmers are continuing the traditional system of farming, scientific system of farming needs huge investment of capital in Myanmar. Most of the farmers are poor with small landholdings and their economic resources are too much limited. For spreading scientific system of farming, it is necessary that disbursement of credit in rural areas should be made available in huge quantity. Although the importance, agricultural sector did not get its due share of institutional credit for a long time.

To get efficient amount of credit is important for small-holding farmers. If they get effective amount of credit, they can promote agricultural sector. There are two types

of sources of credit: formal financial institutions and informal financial institutions. Government banks, private banks and MFIs are including in formal institutions while traders, money lenders, friends and relatives are in informal institutions. The Influencing factors of borrowing behavior; demographic factors, social factors and psychological factors main points to decide to choose the credit term. The facts are pushing the farmers' borrowing behavior. The financial provider will not lend the money if the farmers cannot payback regularly. The farmers can pay back the credit when their farming performance is well. If they can pay back credit regularly, they can get the loan when they need. Thus, the farming performance is linking with credit accessibility. To solve the problems like that need to study this issue.

According to 2017 World Bank Report, agricultural productivity in Myanmar is low. For example, to harvest rice, one day of work generates only 23 kg of paddy in Myanmar, compared to 62 kg in Cambodia, 429 kg in Vietnam, and 547 kg in Thailand. Farm practices are still largely labor intensive. In Ayeyarwady, farmers spend more than 100 days per hectare on monsoon rice paddy compared to 52 days in Cambodia, 22 days in Vietnam, and 11 days in Thailand. Myanmar's wages are still very low and compared to international standards with daily wage at $2 in the Delta and Dry Zones.

All lands in Myanmar are owned by the State and cultivators have only the tilling rights. Most farmers have only land as their main asset, but their inability to use land as collateral for bank loans has made it difficult for them to access formal credit with lower interest rate. Myanmar Agricultural Development Bank (MADB) is the only source of institutional for crop cultivation. MADB Report-2017 presented that the rice farmers have been given top priority and about 80 % of total loans are given to the rice farmers only from MADB's bank and loan amount covers less than 50 % of production cost. The annual loan rate for farmers is 8.5%. The seasonal loans must be repaid within one cropping season, and the loan size is not adequate for farmers to repay on MADB. Thus, farmers have to borrow from informal money lenders with high rates ranging 5 to 20 % per month. Most of farmers have to rely on microfinance managed by NGO. Private players called as Myanmar Rice Specialized Companies (MRSC) emerge to help the farmers by providing farm credit and such inputs as seeds and fertilizers and their coverage is rather small to fulfill the needs of the whole country.

MADB provides agricultural loans to farmers on maximum amount per acres basis, up to a maximum of 10 acres, and farmers supervise to take the maximum loan amount. This maximum amount per acres has improved significantly over the last few

years from a low as MMK 80000 per acres in 2009, to a current level of MMK 150000 per acres for paddy.

Agricultural credit should reach the agriculturists at the right time, at the right quantity and at favorable terms. There are two important institutions, the MADB and the MFIs, lending to agriculturists in the area under enquiry, Ingapu Township, Hinthada District, Ayeyarwady region, Myanmar. MADB and MFI's are unable to eliminate moneylenders who are financing at rates of interest from 72% to 120% per year.

In accordance with CSO Year Book 2017, the Ayeyarwady region represents the 28.47% of national paddy cultivation area, 5,037,199 acres in 2016-17. Paddy production of Ayeyarwady region is 375,346,786 bushels in 2016-17.There are 117,515 paddy sowing acres in Ingapu Townships**,** cultivating only hard paddy like Ba Yin Ma**.**

1.2 Objectives of the Study

There are two main objectives:

(1) To identify the credit accessibility of farmers in *Ingapu* township.

(2) To analyse the effectiveness of agricultural credit on farm's performance in *Ingapu* township, Ayeyarwady region.

1.3 Scope and Method of the Study

This study focuses on the credit behavior and performance of farmers in Sipin village group, Ingapu township, Ayeyarwaddy region. The research was not addressed the farmers at other areas in Myanmar. In Ingapu, there are 72 village tracts which include 652 villages. Sipin village group is the village group which is only depending on cultivation sector. There are 318 households and mostly of them are farmers. Five villages in Sipin village group are getting credit in Ingapu. Among them, 30% of farmers were selected with simple random sampling method.

Face to face interview was applied with the help of structured questionnaires. To analyze the primary data, Pearson Correlation analysis, Descriptive analysis and Linear Regression Analysis were used. The data for this study is gathered through the use of primary and secondary data sources. The secondary data were be collected from Ministry of Finance, MIMU, Ministry of Agriculture, Myanmar Industries Association(MIA), Central Bank of Myanmar(CBM), yearly report of World Bank, ADB, GIZ and previous research papers and literature relevant to the subject matter of this study paper.

1.4 Organization of the Study

This study is organized with five chapters. Chapter one presents Introduction of the study including the rationale, objectives, Scope and Method of the study. Chapter two reviews the related theoretical background. This is followed by the agricultural finance in Ingapu, the background of the over view on Ingapu township in chapter three. Chapter four is dedicated to analysis of agricultural credit accessibility and its effects on farm performance from the survey in Ingapu township. Chapter five captures the conclusion and recommendations arising from the study paper.

CHAPTER II
THEORETICAL BACKGROUND

In this chapter, the literature review concerning the theories and research finding from previous studies are included. The Importance of agricultural credit, credit accessibility, amount of credit, demographic factors, farm performance, previous researches and conceptual framework of the study are delivered too.

2.1 Importance of Agricultural Credit

Agricultural lending is a crucial component in agricultural production because it helps mitigate farming risks and provides guaranteed funding for the yearly operation (Paap 2012). Like any other businesses, farmers need money to acquire assets, maintain cash flows, operate consistently, and to expand. Some farming operations simply need loans to survive, while others use agricultural loans to thrive and expand. Loans are essential in the agriculture production industry mostly because of the annual cycles. Most agricultural operations are only for part of the year, which leads to irregular revenue streams, reliance on seasonal weather, and sometimes seasonal demand. There are so many variable factors that go into agricultural production. Weather poses the biggest risk for farmers because it is uncontrollable, unpredictable, and very destructive. The input costs differ from one year to the next, which are not cheap at start-up either. Depending on the farming operation, the initial cost can far surpass the savings of a single farmer. Therefore, loans become the major funding source in the agricultural production industry.

The growth momentum in rural credit suggests that the sector was given sufficient priority in terms of the availability of loan. However, the challenges faced by needy farmers as well as the lending institutions were still daunting. A large majority of needy, willing and able to borrow farmers generally cannot avail agricultural credit because of the procedural and bureaucratic lending process that favored and was skewed toward influential farmers in the rural sector.

Mbata (1991) investigated the impact of the Supervised Agricultural Credit Scheme (SACS) first set up by the Rivers State Government (Nigeria) in 1975 as a tool for agricultural development. A comparative analysis of the productivities of two groups of farmers who borrowed from formal sources and those who borrowed from informal sources were undertaken. Data covered the 1998/89 cropping season. The findings of the

study revealed that farmers who had access to the SACS consumed more inputs, obtained higher yields and thus realized greater farm profit per hectare than their counterparts who obtained credit form informal courses. This was direct impact of the SACS on small scale farmers. It was therefore recommended that through extension services the scope of the SACS should be widened to embrace more farmers in Rivers State in particular and in Nigeria at large.

2.2 Credit Accessibility

Rural development and, in particular, farm productivity, can be influenced by several factors; one is access to credit. Access to credit may affect farm productivity because farmers facing binding capital constraints would tend to use lower levels of inputs in their production activities compared to those not constrained (Feder et al., 1989; Petrick, 2004). Improved access to credit may therefore facilitate optimal input use and have a major impact on productivity. Thus, access to credit allows farmers to satisfy their cash needs induced by the agricultural production cycle and consumption requirements.

Access to finance is the ability of individuals or enterprises to obtain financial services, including credit, deposit, payment, insurance, and other risk management services. Those who involuntarily have no or only limited access to financial services are referred to as the unbanked or under banked, respectively.

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).

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).

Devi (2012) found that agricultural credit not only helped to increase the productivity but also develop the process of cultivation as a whole in Andhra Pradesh, India. There was an enormous increase in the usage of modern seeds, modernized inputs, fertilizers and pesticides after receiving the agricultural credit, which increased yield per acre and thus the income of the farmers.

‘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).

‘Credit terms’ was measured in terms of interest rate, grace period, and repayment period (Salahudin, 2004; Kakuru, 2007).

(a) Requirement of Collateral

There were many problems faced by the farmers like complicated procedure, unnecessary delay in disbursement, unlawful demand of official, but the major problem is collateral due to which the tenants and share cropper were dropped from loaning schemes. The security or collateral requirement for accessing credit restricts majority of the farmers from borrowing.

(b) Terms of Repayment

The terms of repayment for the loan also affects the eventual productivity and credit accessibility where short run loans were directly used to yearly production and long run loan were probably used for machine and equipment. Formal short-term credit is most used by unconstrained borrowers, while informal short-term credit is most used by risk and transaction-cost rationed farmers.

(c) Getting Loan in time from Financial Providers

Getting the loan at necessary time is also considered in ease of credit accessibility; for example, if a loan for fertilizer unavailable on time would be useless to the farmer. One main reason for the delayed disbursement of loans could be non-cooperation and lengthy procedure. It was inferred from the analysis that most of loans were sanctioned and disbursed in a period of 1 to 3 months.

Agricultural development requires timely and adequate supplies of essential farm inputs. Investment capacity of farmers is low as they are poor and they cannot afford to meet increased demand for the purchase of improved seeds, recommended dose of

fertilizer, hiring farm machinery etc; and thus lack of finance become an excuse for low productivity.

(d) Interest Rate

Lower interest rates on formal sources could drive productivity. However, easier availability could also increase unproductive spending which could lead towards non repayment. The most important issue related to decision making of the farmers for the loan was interest rate. It represented the cost of borrowing at margin of the household from the data; the average interest rate was calculated for all the agro-climatic regions. The interest rate of informal sector is ranging between 10 to 20 percent per month that is above the market interest rate of formal financial institutions. Increase interest cost, reduce the ability to use input resource which again implies a drop in output, income, and productivity.

2.3 Amount of Credit

Financial institutions can be classified into two categories: formal and informal. The formal finance sector is predominately made up of commercial banks, cooperatives, MFIs. The informal financial sector consists of moneylenders, traders, family members, friends, neighbors. Traders have also been a major component of rural finance, which operates between producers in rural areas and urban markets. They provide credit in the form of inputs on supplier's credit or an advance against future purchases of crops. Traders do not usually require collateral, but rather the agreement of the farmer to sell them crops over an agreed period.

Ayegba and Ikani (2013) observe that unregulated private money lenders are still a major source of financing agricultural sector in Nigeria. The main obstacles for agricultural credit from formal sector include high interest rates, bureaucratic bottlenecks, late approval of loans, and unnecessary request for collateral, among others. They recommend that banks and financial institutions should create credit instruments and services that are tailored to the risks and cash flow patterns in the agricultural sector. The banks should open up new branches in rural areas and avoid unnecessary credit conditionalities that discourage famers from borrowing.

2.4 Demographic Factors

Nouman et al. (2013) studied the impact of socio-economic characteristics of farmers on access to agricultural credit in Pakistan. Amount of credit borrowed by the

farmers was used as dependent variable whereas, the independent variables are different socio-economic characteristics of the borrowers of the agricultural credit including age, marital status, education, number of dependents, other occupations, farm size, farm status, tenancy status, farming experience, income from farming, and income from other occupations and suggested that the amount of agricultural credit that can be borrowed by the farmers is significantly affected by their marital status, farm status, farm size, and education level.

Singh and Sinha (2010) reported that the quantum of institutional credit availed by the farming households was affected by a number of demographic factors, which include education, farm size, family size, caste, gender, occupation of household, etc. The study suggested that simplification of the procedure for a better access to agricultural credit of small holders and less educated / illiterate farmers.

2.5 Farm Performance

The main objective of the study is to find out the behavior of agricultural credit accessibility and its effect on farm performance of farm income and farm productivity. To measure the farm performance was in terms of farm productivity and farm income.

Gay and Airasian (2003) noted that causal research designs are used to determine the causal relationship between one variable and another; in this case, the cause and effect relationship between agricultural loans and performance of small holder sugar cane farmers in Kakamega county, Kenya. Causal research design is consistent with the study's objective which is to determine the effect of agricultural loan accessibility, agricultural loan disbursement and agricultural loan interest on the performance of small holder sugar cane performance in respect to tonnage.

(a) Farm Income

To determine the farm income, net farm income calculated by end of growing season. The farm income is valued using prices declared by the household at the time of the household consider the average value for each year to estimate total value of farm production.

(b) Productivity

Myanmar is agricultural country; improvement of farm productivity leads country's growth. The improvement in agricultural productivity depends on an appropriate technical as well as functioning marketing system for both agricultural inputs

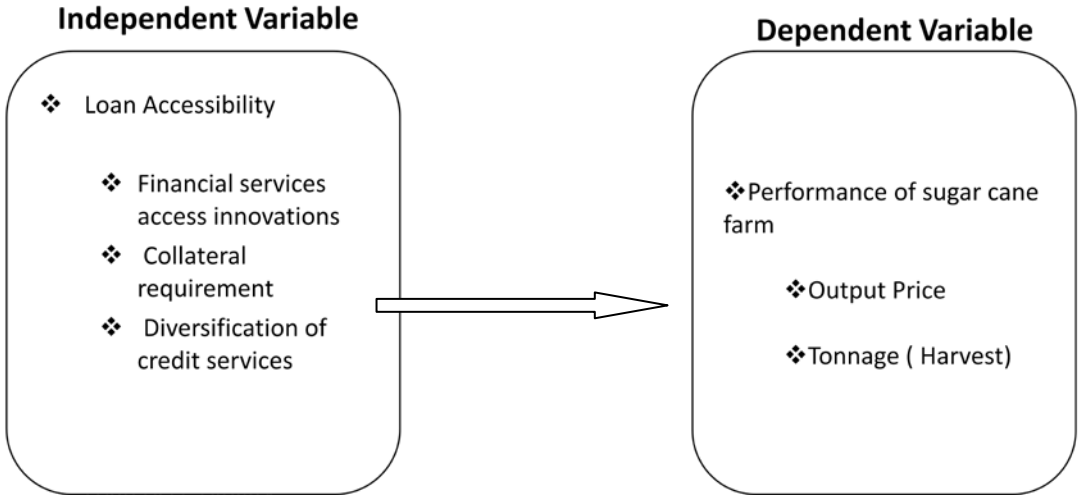
and output and adequate rural infrastructure. Productivity measured as the value of farm output production.

2.6 Previous Researches

The study used the threshold decision-making theory proposed by Hill and Kau (1973) and Pindyck and Rubinfeld (1998) to analyze the determinants of credit demand by farmers.

Figure (2.1)

Conceptual Frame Work of Contribution of Agricultural Loans Accessibility to Performance of Farmers



Source: D. S. Wanjawa , Dr. C. T. Yugi, W. M. Muli, 2017

The theory points out the fact that when farmers are faced with a decision to adopt or not to adopt an innovation, in this case demand agricultural loans, every farmer has a reaction threshold, which is dependent on a certain set of factors. As such, at a certain value of stimulus below the threshold, no adoption is observed while at the critical threshold value, a reaction is stimulated. In this study this factors are loan interest rates, disbursement of loan and accessibility of loan. The performance of smallholder sugarcane farmers increase performance with an increase in agricultural loans accessibility and a decrease in loan accessibility leads to a decrease in their performance.

Byaruhanga (2013) sought to find out relationship between credit accessibility and the performance of agricultural farmers in Rwanda through their cooperative society. Abdelateif and Bauer (2013) intended to assess access to micro credit and its impact on farm profit among rural farmers in dry land of Sudan. Hancock (2014) investigated

effects of credit and credit access on smallholder maize farmer storage behaviour in northern Ghana.

Jumare (2006) assess the impact of credit on agricultural production with specific objectives to determine its effect on farm size, cost of labour, cost of production, quantity of inputs as well as output among small scale farmers in Makarfi Local Government Area of Kaduna State, Ghana.

Dong et.al. (2010) observe that production inputs, farmers‟ capabilities and education cannot be fully employed under credit constrained situation. Based on a survey of 511 households from Heilongijiang Province of Northeast China and employing endogenous switching regression model, they conclude that agricultural productivity in the study area can be increased by 31.6% with the removal of credit constrained situation. The study further shows that productivity and income of the credit unconstrained farmers are higher than the credit-constrained farmers.

Ayaz and Hussain (2011) observe that credit availability to farmers is much more important than any other factors to improve the resource use efficiency in agriculture sector. Their study is based on the 300 cross section sample farmers from Faisalbaad District of Pakistan. By employing Stochastic Frontier Production Analysis (SFA), they conclude that credit to agricultural sector has more constructive and significant impact on the farmers‟ technical efficiency than other factors like farming experience, education, herd size and number of cultivation practices.

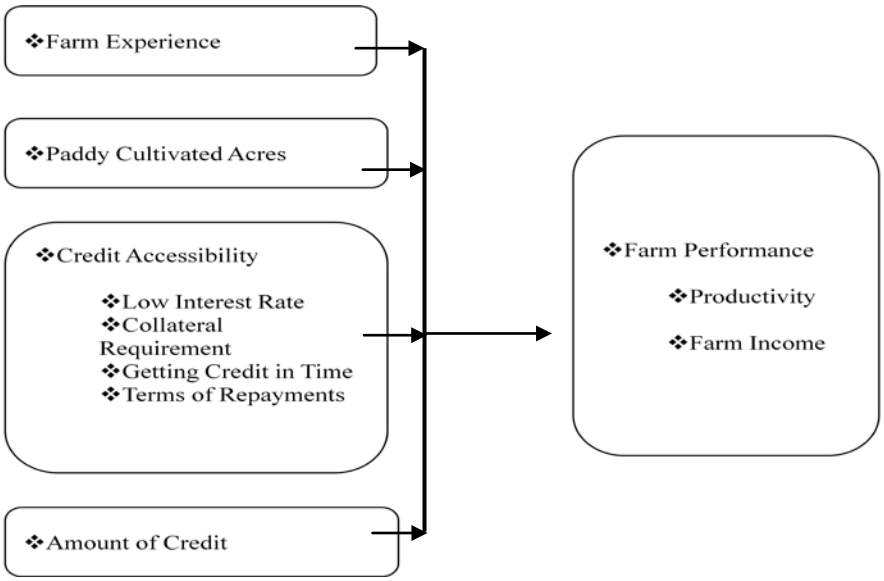
2.7 Conceptual Framework

The previous study was contribution of agricultural loans accessibility to performance of small holder sugar cane farmers in Kakamega County, Kenya by D. S. Wanjawa , Dr. C. T. Yugi, W. M. Muli in 2017,showing the relationship between the dependent variable (Loan Accessibility) and independent variables (Performance of Sugar Cane Farm; Output Price and Tonnage Harvest) which was estimated through a linear multiple regression analysis.

This study assumes that credit accessibility has strongly and positively relationship to influence on performance of farmers in Ingapu Township. Conceptual framework of the study is shown in Figure (2.2)

Figure (2.2)

Conceptual Frame Work for Effect of Credit Accessibility on Farm Performance in Ingapu Township.



Source: Own compilation

The conceptual framework is two step processes, at first step treatment, the variables are credit accessibility, farm experience, paddy cultivated acres and amount of credit. At the second step to estimate the effect of treatment variables on the benefits of outcome variables on the performance: productivity and farm income.

CHAPTER III
BACKGROUND STUDY OF AGRICULTURAL FINANCE IN INGAPU TOWNSHIP

The main purpose of the study is to investigate the impact of agricultural credit on agricultural productivity in Ingapu township. The survey was conducted in the months of September 2018. The present study considered some significant quantitative explanatory variables based on theory and literature. This chapter consists of discussion on agricultural finance in Myanmar, background study on Ingapu township and agricultural finance in Ingapu.

3.1 Agricultural Finance in Myanmar

European chambers of commerce in Myanmar studied in 2018,with a contribution of about 38% to Myanmar's GDP and 23% in exports, agriculture is the leading employer in the economy (60%). Out of 67.6 million hectares of land in Myanmar, 12.8 million hectares are cultivated land. When measured by value of production, rice is the dominant commodity, accounting for 43% of production value, which is almost five times as high as the second highest value commodity: poultry. Although Myanmar's agriculture sector is still recovering from the effects of Cyclone Komen in the summer of 2015, the agriculture sector still accounts for 29% of value-added in Myanmar and is projected to grow at 4% from 2016–2017, compared to 3% in 2015–2016. Crop production accounts for 72% of agricultural output; Myanmar's three main groups include paddy, beans and pulses, and oilseed crops. Myanmar's lands can be divided into three agro-ecological zones: the delta and coastal zone, the dry zone, and the hill regions.

Compared with international standards or even regional peers, agriculture is a very labour-intensive industry in Myanmar; most agricultural activities are carried out manually with low levels of mechanization, which results in low productivity and agricultural output and, consequently, low agricultural wages and farm profits. A farmer in Myanmar only earns about $1.80–$2.50 per day in monsoon compared to $10.00–$16.50 per day in Thailand and $7.80 per day in the Philippines. Moreover, investment in this sector remains minimal and the industry lacks modern warehousing, distribution and logistics facilities, packaging and branding. Myanmar farmers also do not use enough fertilizer with the correct nutrient balance, partly due to lack of knowledge and training.

Farmers also lack access to irrigation systems; in 2014–2015, only 15% of crop area was connected to public irrigation systems. Poor quality seeds also hinder the agricultural sector's ability to reach its full potential. Although the government has seed distribution schemes, they are under-resourced. According to the World Bank, the supply of certified paddy seeds only meets about 1% of the demand. Further, due to a poor enabling environment in Myanmar, private seed providers have not been able to produce enough to meet demand, nor import the required amounts of quality seeds. As a result, many Myanmar farmers use saved seeds, thus producing low yields. Agricultural land is currently under-capitalized and farmers have very limited access to credit except to borrow capital at high interest rates. At the end of 2012, the Myanmar Agriculture Development Bank (MADB) provided loans to 1.87 million clients, mostly smallholder farmers. MADB only provides loans to cover a fraction of production costs for up to 10 acres; the bank does not support medium or large holder farmers. In total, 88% of those loans are provided to small farmers engaged in paddy production and are only large enough to purchase inputs for the following cropping season; they are often insufficient for the purchase of farm tools and equipment. Farmers can take out 12-month loans of MMK 150,000 per acre for up to 10 acres if they are growing paddy.

Other sources of funding are such as the Government who has been providing loans to with low interest under cooperation, private microfinance institutions (MFIs) which offer loan with low interest but limited by geographical reach and caps in loan size, and the last one is informal sources such as private money lenders who become major source of capital or many farmers although the interest rate is 10-20 % per month.

Despite these challenges, 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. Private sector investment in agriculture and in agribusinesses has also started picking up, including in fertilizer manufacturing and seeds and.

Paddy is sown on 15,658 thousand acres of land (48% of net sown land) and is the most common crop choice for farmers. However, paddy output decreased due to the 2015 floods and volatile growth despite high prices and strong demand for rice from China in the first two quarters of 2016–2017.

Challenges in Productivity are: getting not enough support of the qualified seeds lack of knowledge in soil nutrient management, expensive price of fertilizer and slow pace of mechanization.

3.1.1 Myanmar Agricultural Development Bank

Myanmar is an agricultural country. According to 2014 world bank report (LIFT),it is estimated that the agriculture sector represents between 35 to 40 percent of gross domestic product (GDP) and that up to 70 percent of the labor force (of 32.5 million) is directly or indirectly engaged in agricultural activities or depend on agriculture for their income. Moreover, it is estimated that agriculture products generate between 25 and 30 percent of total export earnings.

MADB's loan portfolio is heavily concentrated on a single type of client (farmers) and one commodity (rice). MADB finances only up to 10 acres per farmer. Most farmers financed by MADB are engaged in subsistence agriculture and use undeveloped cultivation techniques that prevent them from reaching high yields for their crops. 88 percent of MADB's loan portfolio is concentrated in paddy farmers. Currently, the annual interest rate for loans is 8.5 percent, which is a subsidized rate (the market interest rate is 12 percent). Most loans granted by MADB are not collateralized. Farmers are required to join a group of 5 to 10 farmers to collectively guarantee each individual loan. Agriculture insurance products are not available yet in the marketplace.

In practice, however, MADB's current annual interest rate on loans (8.5 percent) is substantially lower than the annual interest rates charged by informal lenders (72 percent to 120 percent) operating in rural areas. In addition, before 2012 MADB charged higher interest rates, in the range of 13 to 18 percent per year. A gradual return to the 2011 interest rate levels, accompanied by an improvement in the quality of services, is desirable.

3.2 Background Study on Ingapu Township

This section presents the background study of Ingapu township such as demographic, geographic and socioeconomic conditions of Ingapu township. Geographic background of Ingapu township is presented with topography and climate situation of the region. Demographic factor of Ingapu township are delineated by the number of population, occupation and education status according to annual report of Myanmar population and housing census. The socioeconomic conditions are GDP, Individual Income and financial institutions.

3.2.1 Geographic Condition of Ingapu Township

Ingapu township is located in Hinthada district, Ayeyarwaddy region of Myanmar country. It is located in south-west of Myanmar country. It is between 17°x73′ and 18°x31′ N latitude and 90°x48′ and 95°x47′ E longitude. It is 27 miles long from the north to the south and 40 miles wide from the east to west. The total area extent of Ingapu township is 628.2 square miles. There are 8 quarters in the city and 72village groups in the Ingapu township.

It is bounded by MyanAung township, Ayeyarwaddy region in the north, Moe Nyo township, Bago region in the east, Hinthada township, Ayeyerwaddy region in the south and Gwa township, Rakhine State in the west.

Ingapu township is within the region of tropical monsoon climate. In 2016, the highest temperature is 41°C, the lowest temperature is 13°C, and annual rainfall is 78.91 inches (200.38 centimeters), the annual rainy day is 104 days in Ingapu township. In 2017, the highest temperature is 40°C, the lowest temperature is 29°C, and annual rainfall is 89.1 inches (226.28 centimeters), the annual rainy day is 93 days in Ingapu township.

However, paddy output decreased due to the 2015 floods and volatile, numbers of private households 1509 were destroyed by cyclone Komen. The estimated damage amount is 58.346 million (MMK). Due tothe high prices and strong demand for rice from China in the first two quarters of 2016–2017, some farmers gets recovery.

3.2.2 Demographic Condition of Ingapu Township

Table (3.1) shows the gender ratio of Ingapu township. It is shown female ratio is more than male ratio. In Ingapu township, there are more females than males with 91 males per 100 females.

Table (3.1)

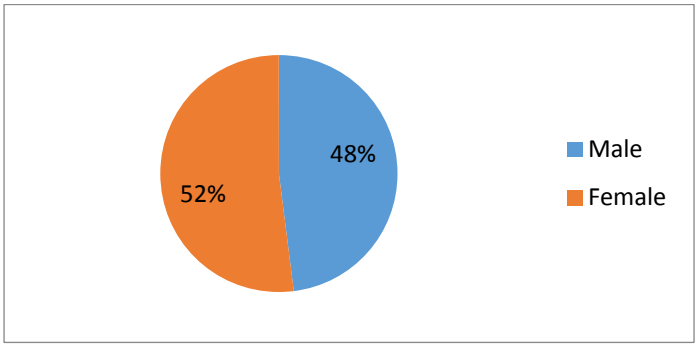
Gender of Ingapu Township

Male	102,377.00
Female	112,007.00

Source: Population and Housing Census, 2014

Figure (3.1)

Gender of Ingapu Township



Source: Population and Housing Census, 2014

Table (3.2) is urbanization of Ingapu township. The rural population is too much more than urban population. It could be the people who depends on agricultural sector is the major population in Ingapu. The majority of the people in the Township live in rural areas with only (6.2%) living in urban areas.

Table (3.2)

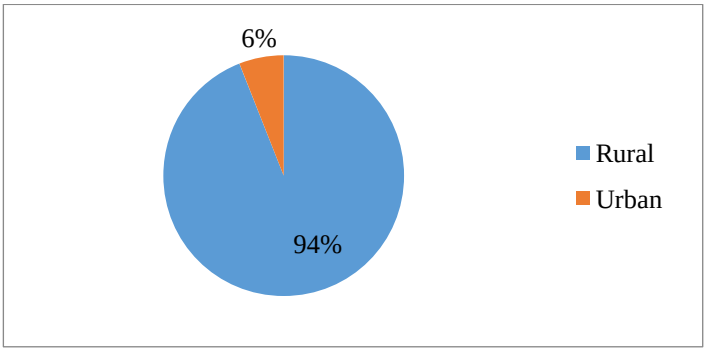
Urbanization in Ingapu Township

Rural	201,064
Urban	13,320

Source: Population and Housing Census, 2014

Figure (3.2)

Urbanization in Ingapu Township



Source: Population and Housing Census, 2014

There are cultivating the four type of rice. Urban numbers of private households are 3407 and rural numbers of private households are 52034 at the end of October 2017, in Ingapu township. Urban housings are 3386 and rural housings are 50557. There are 72 total numbers of village groups and total 625 villages in Ingapu township. Population density is 131.8 (Per KM^2).

3.2.3 Socioeconomic Situations in Ingapu

In Ingapu township, 47.5 percent of the employed persons aged between15 to 64 are skilled agricultural, forestry and fishery workers and are the highest proportion, followed by 26.2 percent in elementary occupations. In Ingapu township, the proportion of employed persons working in the industry of agriculture, forestry and fishing is the highest with 66.1 percent. The second highest industry is wholesale and retail trade; repair of motor vehicles and motorcycles at 7.9 per cent. There are 71.4 percent of males and 57.0 percent of females working in Agriculture, forestry and fishing industry. In Ayeyawaddy region, there are 64.7 percent of employed population working in agriculture, forestry and fishing industry and 7.9 percent in wholesale and retail trade; repair of motor vehicles and motorcycles industry.

Table (3.2) shows 2016.17 Gross Domestic Product,2017-18 estimated Gross Domestic Product and 2016-17 performance of Ingapu township. As per table, the Gross Domestic Product is continuously growing more than previous three years, it can present the economic growth in Ingapu township.

Table (3.3)

Gross Domestic Product of Ingapu Township

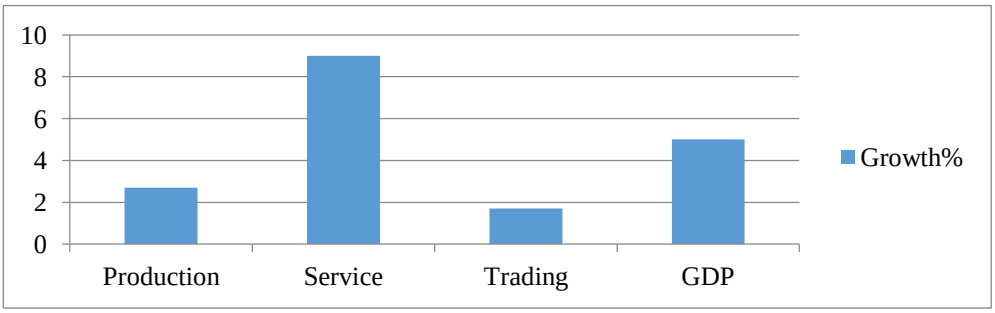
MMK in Millions

Sr.	Particular	2016-17 GDP Value	2017-18 Estimated Value	2016-17 Performance		
				Value	Performing %	GDP Growth %
1	Production	97,414.9	1,02,750	75,522	67.3	2.7
2	Service	42,517.2	45,476	38,120	86.1	9
3	Trading	21,756	23,631	14,279	61.6	1.7
4	GDP	1,61,688.1	1,71,857	1,27,920	71.3	5

Source: Department of General Administration Report, 2017

Figure (3.3)

GDP Growth Rate in Ingapu Township in the Year 2016-17



Source: Department of General Administration Report, 2017

In accordance with the 2017 general administration department report, Ingapu Township, Hinthada district, Ayeyarwaddy region, the Gross Domestic Product has increased at the same time average annual individual income also continuously increase. The average income has been increased more than previous 3 years, thus it could be Ingapu township's economy is growing. Table (3.4) shows average annual individual incomes.

Table (3.4)

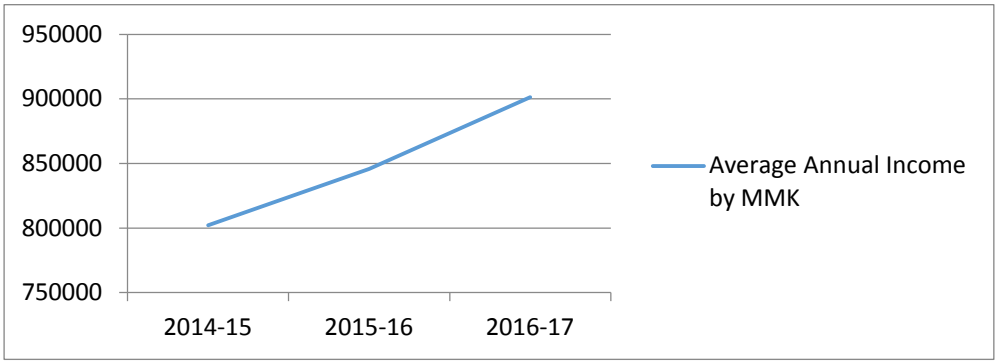
Average Annual Individual Income in Ingapu

Financial Year	2014-15	2015-16	2016-17
Annual Individual Income by MMK	8,02,020	8,45,844	9,01,218

Source: Department of General Administration Report, 2017

Figure (3.4)

Annual Individual Income by (MMK)



Source: Department of General Administration Report, 2017

There are four types of seedlings which most of the respondents in this study have been using : Ba Yin Ma, HteeSaung, Saw Kyar and Thai Rice. Types of cultivated rice is presented in Table (3.5).

Table (3.5)

Types of Cultivated Rice

Type	No. of Respondent	%
Ba Yin Ma	79	83.1
HteeSoung	10	10.5
Saw Kyar	1	1.1
Thai Rice	5	5.3
Total	**95**	**100.0**

Source: Survey Data, 2018

According to the Table (3.5), the most of the farmers 83.1% of total in the target area are using Ba Yin Ma. 10.5% are cultivating Htee Soumg and the rest 6.4% are using Saw Kyar and Thai rice. All types of seedlings are short term ages. Farmers in Ingapu Township are afraid of flood that they have to choose short age seedlings not knowing it is suitable or not with their soil.

3.3 Agricultural Finance in Ingapu

This section studies four major financial institutions in studying area, Sipin village group, Ingapu township, the government bank (MADB), private bank, microfinance institutions and informal money lenders and credit accessibility of Sipin village group in Ingapu township.

3.3.1 Government Bank (MADB)

The only one government bank, MEB is situated in Ingapu. The other bank is MADB branch. Farmers can take out 12-month loans of MMK 150,000 per acre for up to 10 acres if they are growing paddy with form-7 collateral from MADB. Annual interest rate is 8.5%. The MADB is the single largest regulated provider in terms of number of clients and is the largest individual regulated provider by loan book value. It also has the second largest branch network (208 branches). The MADB provides loans across three seasonal cycles. It provides two categories of loans − seasonal and term loans. Seasonal loans constitute 98 percent of MADB loans. Around 90 percent of MADB loans are

concentrated in paddy. 100% of farmers in studying area are willing toborrow agricultural credit from MADB, because cheapest interest rate and trust wealthy financial institutions.

3.3.2 Private Bank

According to 2016 GIZ banking report of Myanmar financial sector showed that although A Bank and MAB cannot operate agricultural credit system to farmers in whole Ayeyarwaddy region, farmers in studying area is waiting for to borrow agricultural credit. The supported banks mainly for the agriculture are Myanmar Apex Bank (MAB), Farmers Development Banks, Ayeyarwaddy Farmers Development Bank (A Bank) etc. MAB allows farmers to have access to its bank loans by taking their certificate of ownership of the farmland (Form – 7) as collateral. The (Form – 7)certificate has been created with the enactment of the Farmland Law in 2012 by the ministry of Agriculture and Irrigation. According to the data, in 2015 the bank lent MMK 596 million at an interest rate if 13% per annum to 275 farmers in Danubyu township of the Ayeyarwaddy region. It is the first private commercial bank which extends loans to farmers for a period of up to three years. The bank implements its projects with the coordination of Myanmar Rice Federation (MRF). It leads only to those who are recommended by the MRF.

A provincial private bank by the name of Ayeyarwaddy Farmers Development Bank (A Bank) was established in November 2015 at Pathein in the Ayeyarwaddy region. A Bank disburses loans to farmers in the Ayeyarwaddy delta region by accepting (Form – 7) together with a guarantee from one of the agriculturally specialized organizations such as the MRF as collateral. It extends short-term loans amounting to around MMK 100000 per acre. By the end of the financial year 2015-16, the amount of loans extended to farmers from the two townships of Pathein and Bogale by the A Bank reached MMI 14 billion.

3.3.3 Microfinance Institutions

The government has also been providing low interest loans to farmers under cooperatives. There are three different types of cooperatives involved in the provision of financial services. Cooperatives licensed as MFIs, financial cooperatives and agricultural cooperatives. There are four corporative in Ingapu Township, but no financial cooperatives.

Although private banks also cover all 14 regions, SFIs, driven largely by the MADB, have a rural focus as opposed to the urban-focused commercial banks. Similarly,

MFIs operate in more densely populated towns and cities that are not very rural and not considered to be low-income areas. Two notable exceptions are PACT and Proximity (INGOs). PACT, the largest MFI in Myanmar, and Proximity are the only MFIs with a rural focus, largely driven by their donor mandate. The limited reach of the regulated financial infrastructure in Myanmar has resulted in significant dependence on unregulated and often informal infrastructure to meet risk mitigation needs, especially amongst the rural population. Private microfinance institutions (MFIs) offer loans at low interest rates. However, they are limited by geographical reach and caps in loan size. There are no MFIs in study area, Sipin village group in Ingapu Township. MFIs have limited to lend, the only one MFI, Mya Seinn Yaung offers loan to a few old customers.

The formal MFI sector in Myanmar is made up of a diverse set of institutions including INGOs, domestic NGOs, and cooperatives, domestic and foreign for-profit companies. Registered MFIs serve a total client portfolio of 690 000. The majority of MFI clients are served by INGOs, which have 82 percent of loan clients.

3.3.4 Informal Money Lenders

Informal credit, such as private money lenders, has become a major source of capital for many farmers. Money lenders usually charge a monthly interest rate between 10% to 20%.The informal financial sectors consists of traders, family members, friends, neighbors and relatives. Traders have also been a major source of rural finance in Myanmar, who operates between producers in rural areas and urban markets. They provide credit in the form of supplier's credit or an advance against future purchases of crops. Traders do not usually require collateral, but rather the agreement of the farmer to sell them crops over an agreed period.

3.3.5 Credit Accessibility of Sipin Village Group in Ingapu Township

Most of farmers have no experience in banking sector. All of them can connect only through MADB. The other banks (private banks) cannot operate in Ingapu. At the same time, MFIs also has limit to agricultural credit. Even Mya Seinn Yaung cannot operate well. MFIs cannot reach these villages. On the other hand, village administrator also strictly controlled the villagers not to borrow from other financial institutions except MADB. The village administrator did not offer guarantee to all borrowings because if the villagers borrow from every financial provider, they cannot control their expenditure. If they use for other expenses not for the farm, they have to face with difficulties when

repayment time. But all farmers contacted MADB since several years ago. MADB agricultural credit is essential for farming. The second priority for source of finance is informal money lenders. Some money lenders did not need any collateral, they need only guaranteed. And the farmers can borrow form money lenders whenever they need.

(a) Year of Connection with Financial Providers

The farmers in Ingapu have connection with financial institutions since long long ago. The credit accessibility experience of famers can show as **y**ears of connection with government bank, private bank, MFIs, informal money lenders and other specific classified 3 categories. They are 1to 5 years, 6 to 10 years and over 10 years. The farmer who wants to borrow needs to save at least 10,000 kyats in saving account as a member of government bank and private banks. Other respondent who are borrowing informal sources have not saving deposit likes government and private bank. Results are described the following table (3.6)

Table (3.6)

Years of Connection

Year	1 – 5 years		6 – 10 Years		Over 10 Years	
	No of respondents	%	No of respondents	%	No of respondents	%
Government Bank	58	61.05	30	31.58	7	7.37
Private Bank	-	-	-	-	-	-
MFIs	15	15.78	5	5.26	-	-
Informal Money Lenders	26	27.36	35	36.84	34	35.79
Other specify	-	-	-	-	-	-

Source: Survey Data, 2018

In Table (3.6), 1 to 5 years is the most connection with government bank as 61.05%. Moreover, one-third of respondent connected with MADB in 6 to 10 years. The remaining respondents are over 10 years of connection as nearly 7 percent. 1 to 5 years is the most connection with MFIs is 15.78%. On the other hand, farmers who getting the lone from the informal money lenders are also over 10 years. It could be assumed that farmers in Ingapu township used both formal financial institutions and informal financial

institutions at the same time. The bank credit amount is not enough for seasonal farming operation.

As per table (3.7) MADB paddy credit are continuously increase during 2014-15 to 2016-17 financial years.

Table (3.7)

MADB Paddy Credit Data in Ingapu Township

Amount of Credit (MMK in Millions)

Year	2017		2016		2015	
Season of Credit	Summer	Monsoon	Summer	Monsoon	Summer	Monsoon
Amount of Credit	5,343.25	13,926.9	3,308.28	14,846.7	2,619.680	9,819
Number of Borrowers	15,054	15,132	15,533	16,242	15,063	15,725

Source: MADB Loan Department Report, 2017

(b) Main Sources of Finance

In the study area, farmers may borrow various finance institutions. These are government bank, private bank, MFIs, informal money lender, friends and relatives. The situation is shown in Table (3.8).

Table (3.8)

Main Sources of Finance

Source of Finance	First Priority		Second Priority		Third Priority	
	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%
Government Bank	86	90.5	9	9.5	-	-
Private Bank	9	9.5	81	85.3	1	1.1
MFIs	-	-	1	1.1	91	95.8
Informal Money Lenders	-	-	4	4.2	3	3.2
Other specify	-	-	-	-	-	-

Source: Survey Data, 2018

Almost all borrowers borrowed from government bank with 90.5% for first priority 9.5% and second priority. In other sources of finance, private bank are the second sources of finance for farmers. Moreover, a few percentages of respondents borrowed from informal money lender and friend and relative. Therefore, it can be conclude that almost all of farmer relies on government bank.

CHAPTER IV

ANALYSIS OF AGRICULTURAL CRDIT ACCESSIBILTY AND ITS EFFECTS ON FARM PERFORMANCE

This chapter presents agricultural credit accessibility of farmer and the effect on farm performance in Ingapu township. This analysis is based on empirical data collected from five villages of Sipin village group in Ingapu Township. There are six main parts in this chapter. They are research design, demographic characteristics of respondents, credit accessibility of respondents, amount of credit, performance of farmers and effect of credit accessibility on farm performance.

4.1 Research Design

This study is conducted with the objective of identifying agricultural credit and the effect on farm performance in Ingapu township. There are 72 village groups in Ingapu township. Sipin village group is a place where majorities are farmers. Five villages in Sipin village group were selected to collect data.

To select the sample size total of 95 respondents, the borrowers were selected by simple random sampling method from 318 households. Stratified random sampling techniques are used to select the respondents in study area.

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

Where n_i is the sample in ith village, N_i is the population of beneficiary households in ith village, n is sample size and N is the total population of borrowers in all sample villages. The sample respondents in the study area are described in Table (4.1)

Table (4.1)

Sample Respondents in the Study Area (Sipin Village Group)

Village	Total Numbers of households	30 % of Sample households
Sipin	49	14
KyaungKone	77	23
PhyinZin	32	9
ShaukKone	71	21
TegyiKone	89	28
Total	318	95

Source: Survey Data, 2018

The total sample households are borrowing money from formal and informal organizations and major job of these five villages are cultivation of paddy in monsoon and plantation of paddy, beans and pulse in summer season. In this way, the primary data about borrowing behavior and farm performance in Sipin village group collected by face to face interview using the structured questionnaire. The question is shown in appendix. After the identifying the required sample size, to data collection are both primary data and secondary data. In this section, the primary data are collected by observation method, interview and questionnaire method. 95 sets of questionnaire distributed are returned from the sampled farmer and the data is processed via SPSS version 22. The process includes checking, editing and coding. Initially, the researchers check and review each questionnaire to verify its completeness and incomplete questionnaire were discarded. The total of the response rate was 100 percent. This study would utilize the Pearson Correlation Analysis and Descriptive Analysis.

The questionnaire was designed to measure the level of important for each item. All of the items including in this section are utilized a five-point Likert measurement scale, with “not important at all” forming the one end of the continuum and “very important” is at the other end. Instruction was given regarding the rating of the questions. In each item, “not important at all” indicated low levels of affecting that item while “very important” indicated high levels of affecting that item respectively. Respondents were required to tick the selected box for not important al all, rather not important, natural, important, and very important. These overall response answers are summarized by mean value for each item and standard deviation are calculated for variation of the respondents.

4.2 Demographic Characteristics of Respondents

The demographic characteristics of respondents are two sections: demographic characteristics and paddy cultivated acres.

4.2.1 Demographic Characteristics of Respondents

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

Table (4.2)

Demographic Characteristics of Respondents

Gender	Number of Respondents	%
Male	82	86.3
Female	13	13.7
Total	95	100
Age (Years)		
26 – 45	42	44.2
46 – 65	38	40
Over 65	15	15.8
Total	95	100
Education Level		
Primary	76	80
Middle	17	17.9
High	1	1.1
University Student	1	1.1
Total	95	100
Size of Family		
1 – 3	34	35.8
4 – 6	57	60
Over 6	4	4.2
Total	95	100
Farm Experience		
Under 10 Years	42	44.2
10 – 19 Years	20	21.1
20 – 29 Years	16	16.8
Over 29 Years	17	17.9
Total	95	100

Source: Survey Data, 2018

4.2.2 Paddy Cultivated Acres

When the selected respondents are asked about their paddy cultivated acres, results are shown in the following Table (4.3).

Table (4.3)

Paddy Cultivated Acres

Paddy Cultivated Acres	Number of Respondents	%
Under 5 Acres	39	41.1
5 – 9 Acres	32	33.7
10 – 14 Acres	18	18.9
15 – 19 Acres	6	6.3
Total	**95**	**100.0**

Source: Survey Data, 2018

As a result of Table (4.4), 41.1% of the respondents are cultivation less than 5 acres, 33.7% of the respondents are between 5 to 9 acres, 18.9% of the respondents are between 10 acres to 14 acres and remaining only 6.3% of the respondents are between 15 acres to 19 acres. Therefore, it can be conclude that the majority of respondent cultivated less than 5 acres.

4.3 Credit Accessibility

This analysis of the credit accessibility for borrowing farmers includes: farmers' perceptions on credit accessibility.

4.3.1 Farmers' Perceptions on Credit Accessibility

As the degrees of important that respondents were answered, the scores were arranged. Then, the mean scores and their standard deviation of each item concerning the credit accessibility were analyzed and it is shown in Table (4.4).

Table (4.4)

Farmers' Perception on Credit Accessibility

Numbers	Item	Mean	Std. Deviation
1	Requirement for immovable property as collateral	3.63	0.94
2	Convenient repayment period	4.2	0.59
3	Getting Loan In time	3.59	1.05
4	Low interest rate	4.46	0.71
Overall Mean		**3.97**	

Source: Survey Data, 2018

The overall mean values of credit terms are affecting on credit accessibility of respondents are 3.97. It shows that all of the sampled respondents consider credit terms are important for credit accessibility. Among these the highest mean value of the low interest rate is 4.46. It can be clearly seen that lower interest rate are most important and getting loan in time. An absences of requirement for immovable property as collateral is 3.63 which value is lower than the statistical mean value 3.97.

(a) Collateral Requirements for Credit Assessments

Collateral is a property or other asset that a borrower offers as a way for a lender to secure the loan. If the borrower stops making the promised loan payments, the lender can seize the collateral to recoup its losses. In this section, status of collateral from government, private bank, MFIs and informal money lender are being studies from sampled respondents according to their answered. The results are shown in Table (4.5).

Table (4.5)

Collateral Requirements Status for Credit Assessments

Collateral or Guaranteed Needs	Government Bank		Private Bank		MFIs		Informal Money Lenders	
	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%
Collateral	95	100	87	91.5	70	73.6	88	92.63
Guaranteed	0	0	8	8.43	25	26.32	7	7.37

Source: Survey Data, 2018

According to the results, government bank requires the collateral from borrower since all of the respondents are answered that their property or assets such as their own acres when borrow from the government bank. Some private banks, MFIs and informal money lenders need only guaranteed. Almost all of the financial providers are need collateral from borrower since more than 70 percent of financial provider gets collateral from borrowers.

(b) Getting Loan in Time from Financial Providers

This analysis of farmer respondents answered getting loan in time from financial provider. These answers are farming the period and after farming. It shows in Table (4.6).

Table (4.6)

Credit Received Period Status from Financial Provider

Credit Received Period	MADB		MFIs		Informal Money Lenders	
	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%
Farming Period	10	10.53	4	80	74	100
After Farming Period	85	89.47	1	20	-	-

Source: Survey Data, 2018

According to Table (4.13), in this situation, most of respondent replied that after farming as more than 89 percent of respondents. Only nearly 10 percent of respondent answered that farming period for period of credit received from government bank.

The yearly interest rate of MADB is 8.5 percent, MFIs are 30 percent per year and informal money lenders' interest rates are 10 percent to 20 percent per month. MADB repayment period is one year, MFIs repayment period is six months and the informal money lenders' repayment periods are depends on agreement with lenders and borrowers.

4.4 Amount of Credit by Source of Credit

In Ingapu Township, there are five financial institutions: government bank, private bank, MFIs, informal money lender and friends and relative. Mostly borrowed from loan by government organizations and in addition some of farmers also borrowed from loan by other organizations. Government bank lends the seasonal credit at the minimum amount is 150,000 and the maximum amount is 1500,000 for ten acres. The credit amounts are divided into four groups. The credit amount is depending on cultivated acres. Table (4.7) shows amount of credit received from government bank.

Table (4.7)

Amount of Credit by MADB

Amount of Credit (MMK)	No. of Respondents	%
Under 4,50,000	9	9.5
4,50,001 to 9,00,000	41	43.3
9,00,001 to 13,50,000	15	15.7
Over 13,50,000	30	31.5
Total	95	100

Source: Survey Data, 2018

According to the survey data, almost half of borrowers borrowed 4,50,001 to 9,00,000 kyats. One third of farmers from borrow over 13,50,000 kyats which amount is the second highest percent. At least, less than 4,50,000 is nearly 10 percent. Government loan interest rate is 8.5 percent per year.

The informal organizations include informal money lender and friend and relative. The smallest amount is Kyats 50,000 and the highest amount is Kyats 1,500,000. Table (4.8) shows amount of loan received from informal organizations.

Table (4.8)

Amount of Credit by Informal Money Lenders

Amount of Credit (MMK)	No. of Respondents	%
Under 3,00,000	6	6.3
3,00,001 to 6,00,000	22	23.2
6,00,001 to 9,00,000	2	2.1
9,00,001 to 12,00,000	30	31.6
Over 1,200,000	14	14.7
Not Borrowing	21	22.1
Total	**95**	**100.0**

Source: Survey Data, 2018

According to survey research, 78 percent of farmers borrow from informal money lenders and only 22 percent of the farmers have not borrowing from informal money lender.31.6 percent of respondents borrowed from informal money lenders between 90, 00,001 and 12, 00,000 Kyats are the most. Other organizations loan interest rates are 10 percent to 20 percent per month respectively. Informal money lenders' loan interest rate is greater than government bank.

4.5 Farm Performance

Regarding the performance, all of respondents are involved. The farm performance is productivity and farm income. To study performance includes average yearly income, annual household income and paddy production.

(a) Average Yearly Income

Yearly average income of respondent from their business is broadly divided into five levels. Table (4.9) shows the distribution of income level of respondents per year.

Table (4.9)

Average Yearly Income

Average Yearly Income (MMK)	Number of Respondents	%
Under 30,00,000	12	12.6
30,00,001 to 60,00,000	37	38.9
60,00,001 to 90,00,000	18	18.9
90,00,001 to 1,20,00,000	13	13.7
Over 1,20,00,000	15	15.8
Total	**95**	**100.0**

Source: Survey Data, 2018

As a result of Table (4.9), 38.9% of respondents got income level 30 to 60 lakhs is the most, second most 18.9% of respondents monthly income from their farm is between 60 to 90 lakhs, 15.8% of respondents got income from their farm over 120 lakhs . And then 13.7% were 90 to 120 lakhs and remaining 12.6% were under 30 lakhs.

(b) Main Sources of Income

Main source of income by respondents are classified as farming, crops, livestock, farm labour, rental for harvest facilities, small scale business, teaching.

Almost all of loan borrower households answered that farming is their major job in first priority with 97.3% of the total respondents. The second most are crops cultivation and livestock with second and third priority about 35%. The main sources of few farmers are small scale business and rental for harvest facilities 46.3%. Therefore, main sources of the farmer in Ingapu township are rice farming and other crop cultivating.

(c) Paddy Productivity

In this study, farm performance is measured by rice productivity. Rice productions are divided by two seasons: monsoon and summer according to response of farmers. The numbers of respondents by rice production are presented in Table (4.10) by monsoon and summer.

Table (4.10)

Yield per Acre

Yield Per Acre (Bushels)	Monsoon		Summer	
	Number of Respondents	%	Number of Respondents	%
Under 50	55	57.9	9	9.9
51 to 60	22	23.2	23	23.8
61 to 70	13	13.7	40	42.5
Over 71	5	5.2	23	23.8
Total	**95**	**100**	**95**	**100**

Source: Survey Data, 2018

In Table (4.10), in monsoon the highest amounts of respondents' yield are less than 50 bushels per acre, 57.9 percent. In summer the highest percentage of yield are between 61 bushels and 70 bushels, 40 persons and 42.5 percent. Over 71 bushels are 5.2% in monsoon and 23.8% in summer. The yield per acres in summer is more than monsoon.

4.6 Effect of Credit Accessibility on Farm Performance

Farm Performance can be measure by two ways: productivity and farm income. To find the effect of credit accessibility on farm performance, Pearson Correlation Analysis and Linear Regression analysis were used. The Pearson correlation analysis was used to investigate the relationship between agricultural credit accessibility, farm experience, cultivated acres and amount of credit, and performance. Regression analysis was used to find the amount of variance accounted for by one variable in predicting another variable. Regression analysis was conducted to find the proportion in the dependent variable (Performance) which can be predicted from the independent variable (agricultural credit accessibility, farm experience, cultivated acres and amount of credit).

4.6.1 Correlation Analysis on Productivity

In this section analyzes the effect of credit accessibility, farm experience, cultivated acres and amount of credit on farm performance. The output from correlation between credit accessibility and productivity is shown in Table (4.11)

Table (4.11)

Correlation Analysis on Productivity

		Farm Experience	Paddy Cultivated Acres	Credit Accessibility	Productivity
Productivity	Pearson Correlation	.360**	.604**	.366**	.362**
	Sig. (2-tailed)	.000	.000	.000	.000
	n	95	95	95	95

Source: Survey Data, 2018

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

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

The results means that the paddy cultivated acres and productivity is strongly relationship r= .604. The rest three relationships of farm experience and productivity, credit accessibility and productivity, and amount of credit and productivity are fairly relationship, r= .36, r= .366 and r= .362. All are significant at 1% level.

4.6.2 Correlation Analysis on Farm Income

In this section analyzes the effect of credit accessibility, farm experience, cultivated acres and amount of credit on farm performance. The output from correlation between credit accessibility and farm income is shown in Table (4.12).

Table (4.12)

Correlation Analysis onFarm Income

		Farm Experience	Paddy Cultivated Acres	Credit Accessibility	Amount of Credit (Lakhs in MMK)
Farm Income (Lakhs In MMK))	Pearson Correlation	.187	.498**	.231*	.414**
	Sig. (2-tailed)	.069	.000	.024	.000
	n	95	95	95	95

Source: Survey Data, 2018

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

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

The results means that the paddy cultivated acres and amount of credit, and farm income are fairly relationship, r= .498, r= .414. And they are significant at 1% level. The relationship of credit accessibility is weakly relationship, r= .231.And it is significant at 5% level. Farm Experience is not significant.

4.6.3 Regression Analysis on Productivity

In this study, regression analysis is applied in order to analyse the effects on productivity. The dependent variable is productivity and the independent variables are farm experience, paddy cultivated acres, credit accessibility and amount of credit.

According to Table (4.13), 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 (4.13) below. The F= 21.046 was significant at (P=0.000<0.01) 1% level.

Table (4.13)

Regression Analysis on Productivity

Factors	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-430.424	124.025		-3.470	.001
Farm Experience	.966	1.606	.053	.601	.549
Paddy Cultivated Acres	16.784	3.720	.419	4.512	.000
Credit Accessibility	120.889	31.009	.316	3.898	.000
Amount of Credit (Lakhs in MMK)	4.802	1.547	.263	3.105	.003
n=95, Adjusted R^2 =.483,F=21.046, (p value= 0.000)					

Source: Survey Data, 2018

The results of the analysis are presented in Table (4.14), the values of adjusted R square 483.The model explain 48.3% of variance in the credit accessibility, farm experience, cultivated acres and credit accessibility on productivity. The value of F-test, the overall significance of the models, came out highly significant at 1% level.

These results show that the coefficients credit accessibility and paddy cultivated acres are significant at 1% level since the results p value are less than 0.01. And amount of credit is significant at 5% level since the resulted p value is less than 0.05. Farm experience is not significant. If the score of credit accessibility increase by 1 unit, while other things remain unchanged, the farm productivity will increase by 120.889 bushels. If the score of paddy cultivated acres increase by 1 acre, while other things remain unchanged, the farm productivity will increase by 16.784 bushels.

4.6.4 Regression Analysis on Farm Income

In this study, regression analysis is applied in order to analyse the effects on productivity. The dependent variables (farm income) are explained by four independent variables (farm experience, cultivated acres, credit accessibility and amount of credit).

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=13.147 was significant at (P=0.000<0.01) 1% level.

Table (4.14)

Regression Analysis on Farm Income

Factors	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-25.179	12.447		-2.023	.046
Farm Experience	-.202	.161	-.122	-1.255	.213
Paddy Cultivated Acres	1.406	.373	.387	3.766	.000
Credit Accessibility	7.693	3.112	.221	2.472	.015
Amount of Credit (Lakhs in MMK)	.592	.155	.357	3.816	.000
n=95, Adjusted R^2 =.341,F=13.147, (p value= 0.000)					

Source: Survey Data, 2018

The results of the analysis are presented in Table (4.14), the values of adjusted R square .341.The model explain 34.1% of variance in the credit accessibility, farm experience, cultivated acres and amount of credit on productivity. The value of F-test, the overall significance of the models, came out highly significant at 1% level.

These results show that the coefficients amount of credit and paddy cultivated acres are significant at 1% level since the results p value are less than 0.01. And a credit accessibility is significant at 5% level since the resulted p value is less than 0.05. Farm experience is not significant. If the score of credit accessibility input increase by 1 unit, while other things remain unchanged, the farm income will increase by 7.693 Lakhs. If the score of paddy cultivated acres increase by 1acre, while other things remain unchanged, the farm income will increase by 1.406 lakhs.

CHAPTER V
CONCLUSION

This chapter was conclusion for this study and includes the findings of the study, the suggestions for improvements and need for further study of agricultural sectors in Sipin village group, Ingapu township.

5.1 Findings

This study analyses the agricultural credit accessibility of farmer and effect on farm performance in Ingapu township, Ayeyarwady region. The findings of the study showed credit accessibility, farm experience, paddy cultivated acres and amount of credit were significant positive relationship to farm performance.

Farmers in Ingapu township used both formal financial institutions and informal financial institutions at the same time. The bank credit amount is not enough for seasonal farming operation. The farmers used money from credit was to pay off other debts and non-productive expenses. It might be effect on farm performance. The study showed credit accessibility, farm experience, paddy cultivated acres and amount of credit were not strong relationship to farm performance.

Availability of other financial services form of same financial institution should important but it was the least interesting of farmers. Farmers were not interested in financial services for their future investment, but they only thought interest rate and payment term.

Almost all of the financial providers were need collateral from the borrowers. The major problem was collateral due to which the tenants and share cropper were dropped from loaning schemes. The security or collateral requirement for accessing credit restricts majority of the farmers from borrowing.

Further, there was need to increase the volume of loan disbursed. The disbursement should adequately meet the need of the farmers for increase in yield. Almost all of farmers were not enough credit for paddy production so that they borrowed from informal money lenders with high interest rate. If increase interest rate cost they needed to reduce input. It could affect productivity and income.

In this study, 89.47% of respondents could not 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 traders 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.

Banks and financial institutions are skeptic about the repayment of loan disbursed to agricultural sector. So, they demand a lot of mortgage and annual income of farmers. Small farmers have little access to agricultural credit. This problem should be resolved by introducing agricultural insurance policies and ensuring fair market price of the agricultural products.

Most of the farmers are lack of knowledge and they have been using the traditional method. Although they are using some machines, the capacity is not useful for the needs. Thus, need to promote the agricultural knowledge of the villagers.

Moreover, most of Myanmar youths are willingly to go abroad for more income that human resources for agriculture sector are decreases. It can identify as Brain drain.

The farmers are needed to promote the knowledge about soil. Nearly almost all farmers do not know the type of crops seedling is whether match with their soil or not. The other fact is there is not enough the right seedling.

They are using some fertilizer and pesticides without knowledge of any affection and information. Department of Agriculture has to conduct trainings of using fertilizer and pesticides, capacity building, using technical methods and using modern machines.

The farmer asked to change the system of MADB bank for loan payment, if the term may extend 3 years instead of current system, the farmers will be more on edge.

5.2 Suggestions

Farmers were not getting as much credit as they need even by paying very high interest rates. Thus, policy makers should ensure that the farmers get as much credit as they need at a subsidized interest rate. It should enhance their access to improved seeds, use of fertilizer and pesticides, better irrigation facilities and mechanized methods of production which would ultimately increase the productivity of farmers.

Agricultural credit has helped enhance the agricultural productivity of the farmers in the study area. With such a credit facility, farmers would have a better access to improved seeds, fertilizer, pesticides and better irrigation facility. Thus, farmer friendly agricultural credit services should be extended and deepened even in the rural areas. It

could help the farmers of the rural area attain a higher level of technical efficiency and higher farm productivity.

Fertilizer, pesticides, irrigation and other necessary farm inputs have obtained a low portion of the credit. Thus, banks and financial institutions should be encouraged to disburse credit to finance the necessary inputs of agricultural production besides the capital inputs.

Getting credit from banks and financial institutions has been felt difficult by most of farmers. This procedure should be simplified and made farmer friendly.

Farmers in the study area have not benefited much from using the credit facility in the production of paddy and crops because of high interest rate charged and low productivity of agricultural sector. One reason for such low productivity was the subsistence farming practices being used by the farmers. Thus, farmers should be provided technical know-how about how to utilize credit for the enhancement of farm productivity by using better farming practices and better inputs. Coordination with the Department of Agriculture could be made to impart such technical know-how.

Some location is lower than the water level and it is flood area. It causes the ruin of the ploughed farms during rainy season. The farmers asked to build a drainage which flows to the river, the production of the farms will be increased and the economic situation as well.

There is need to diversify the mode of loan disbursement and shorten loan processing period. This can be through releasing funds through mobile money or smart card so that farmers can buy farm input at the right time and thereby realise high yields.

5.3 Needs for Further Study

This study only focused on effect of credit accessibility on farm performance in Ingapu township. The study area is Ingapu township only. The result cannot show over all Myanmar situations. The study focused on only Paddy production. This result cannot represent Myanmar over all. Need further study more widely and whole Myanmar area.

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APPENDIX

BORROWING BEHAVIOR AND PERFORMANCE OF FARMERS

(QUESTIONNARIES)

Section: A

Demographic Factors

1 Position in Family ……..

2 Age

< =25 ☐

26-45 ☐

46-65 ☐

66-85 ☐

3 Gender

Male ☐

Female ☐

4 Education

Primary ☐

Middle School ☐

High School ☐

University Student ☐

Graduate ☐

5 Marital Status

Single ☐

Married ☐

6 Number of Family members ……..

7 **Decision Maker in the Family** ……..

8 How many years have you been farming?

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9 How long have you been cultivation rice?

---

10 What is the size of your rice farm (Acres)?

Own (Acres)……..

Rent (Acres)……..

11 Which Types of crop do you cultivate?

……

Section: B

Credit Accessibility

A Amount of credit

1. What credit source did you apply for finance your farm?(Give Priorities)

A Government Banks ☐

B Private Banks ☐

C MFIs ☐

D Informal Money Lenders ☐

E Other specify ……. ☐

2. How much credit did you access in last 3 years?

No.	Source of credit	Amount of credit (MMK)		
		2016	2017	2018
1	Government Bank			
2	Private Banks			
3	MFIs			
4	Informal Money Lenders			
5	Other specify ……			

3 Is collateral one of the requirements for accessing credit from your source?

A Government Banks ☐ Yes ☐ No

B Private Banks ☐ Yes ☐ No

C MFIs ☐ Yes ☐ No

D Informal Money Lenders ☐ Yes ☐ No

E Other specify …… ☐ Yes ☐ No

4 What are the terms for repayment for the loan?

A Government Bank ----------

B Private Banks ----------

C MFIs ----------

D Informal Money Lenders ----------

E Others(Please specify) ----------

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

A Government Bank ☐ Yes ☐ No

B Private Banks ☐ Yes ☐ No

C MFIs ☐ Yes ☐ No

D Informal Money Lenders ☐ Yes ☐ No

E Other specify ……. ☐ Yes ☐ No

6. What is the interest rate on the credit accessed within 3 years?

No.	**Source of Credit**	**Interest Rate**		
		2016	**2017**	**2018**
1	Government Bank			
2	Private Banks			
3	MFIs			
4	Informal Money Lenders			
5	Other specify ……			

7 The loan amount from MADB is enough for you really needed? ☐ Yes ☐ No

B Credit Accessibility

1 If you are going to choose loan in financial providers, how are the following factors affecting your choice to use loan?

(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. Low interest rate/cost of borrowing 1☐ 2☐ 3☐ 4☐ 5☐
2. Convenient repayment period 1☐ 2☐ 3☐ 4☐ 5☐
3. No requirements for immovable property as collateral 1☐ 2☐ 3☐ 4☐ 5☐
4. Getting loan in time 1☐ 2☐ 3☐ 4☐ 5☐

III Performance

Part (A)

Farm Income

1. What is your major source/proportion of income from various sources?
   (Please evaluate following options and give priorities from major income to minor Income)
   - i. Rice ☐
   - ii. Crops ☐
   - iii. Livestock ☐
   - iv. Farm Labour ☐
   - v. Rental / Labour for pre / post-harvest facilities ☐
   - vi. Small scale business ☐
   - vii. Teaching ☐
   - viii. Public Servant/Government employment ☐
   - ix. Shop ☐
   - x. Others (Please specify) …… ☐

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

Part (B)

Farm Productivity

3. Productivity of Crops

Crop	Unit measurement	Total Productivity			Selling Price			Remark
		2017	2016	2015	2017	2016	2015	
Rice (Raining Season)								
Rice (Summer)								
Ground Nut								
Sesame								
Other…..								

C The effectiveness of getting loans

1. Social Impact

(Please evaluate options with the grade 1 to 5, 1 Disagree at All, 2 Disagree, 3 Natural, 4 Agree, 5 strongly Agree):

A Use money from loan is spent in education of my family

1☐ 2☐ 3☐ 4☐ 5☐

B Use money from loan is more spending in health care activities

1☐ 2☐ 3☐ 4☐ 5☐

C Use money from loan is more use money in repairing my house

1☐ 2☐ 3☐ 4☐ 5☐

D Use money from loan is more use money in my properties

1☐ 2☐ 3☐ 4☐ 5☐

2. Economic Impact

(Please evaluate options with the grade 1 to 5, 1 Disagree at All, 2 Disagree, 3 Natural, 4 Agree, 5 strongly Agree):

A Use money from loan is to purchase of crop land

1☐ 2☐ 3☐ 4☐ 5☐

B Use money from loan is to buy machines, equipment etc

1☐ 2☐ 3☐ 4☐ 5☐

C Use money from loan is to use cultivate in other types of crop

1☐ 2☐ 3☐ 4☐ 5☐

D Use money from loan is to use in modern cultivation techniques

1☐ 2☐ 3☐ 4☐ 5☐

E Use money from loan is to pay off other debts

1☐ 2☐ 3☐ 4☐ 5☐

F Use money from loan is to buy better seeds for cultivation

1☐ 2☐ 3☐ 4☐ 5☐

G Use money from loan is to buy and use fertilizer and germicide

1☐ 2☐ 3☐ 4☐ 5☐

Suggestions to Improve Access to Credit

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

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