

Title	ミャンマーにおける銀行を利用できない人々のマイクロファイナンス機関へのアクセスシステムの構築
Author(s)	Hnin, Pwint Aye
Citation	
Issue Date	2014-09
Type	Thesis or Dissertation
Text version	ETD
URL	<a href="http://hdl.handle.net/10119/12298">http://hdl.handle.net/10119/12298</a>
Rights	
Description	Supervisor:中森 義輝, 知識科学研究科, 博士

# **Constructing an Access System of Unbanked in Myanmar to a Microfinance Institution**

**Hnin Pwint Aye**

**Japan Advanced Institute of Science and Technology**

Doctoral Dissertation

Constructing an Access System of Unbanked in Myanmar  
to a Microfinance Institution

By

Hnin Pwint Aye

Submitted to

Japan Advanced Institute of Science and Technology  
in partial fulfillment of the requirements  
for the degree of  
Doctor of Philosophy

Supervisor: Professor Yoshiteru Nakamori

School of Knowledge Science

Japan Advanced Institute of Science and Technology

September 2014

## Abstract

Half of rural unbanked in Myanmar enable to participate to the microfinance institution in the microfinance project area. The current system of microfinance institution involves the functions for borrowing the loans to the unbanked. Some of the legal policies in the current system of microfinance institution are inconsistent with the unbanked and the unbanked miss the opportunity borrowing the loans.

Hence, we construct an access system consist of four subsystems for smoothing the entrance of unbanked to the microfinance programs by operating i-System methodology together with a pilot survey with officials and a survey with the unbanked households, such as non-clients and dropouts. The access system diminishes the barriers in the functions of the current system of microfinance institution and expands the current system without removing the current system.

The access system is a conceptual system and necessitates testing to recognize whether it is workable or not. We test the access system from the view of unbanked by a survey, and from the perspectives of officials through the evolutionary constructive objectivism. We activate a survey with the unbanked and justify the access system with the satisfaction of unbanked. Around 30% of unbanked have desire to join in the microfinance program as the result of access system. We propose five hypotheses and prove the access system via the evolutionary falsification principle. Although the reliability for impact assessment subsystem is poor, the other four reliabilities are good and excellent. We recognize to prepare the functions of service subsystem and protect the delinquency rate increment of microfinance institution from the criticisms of the officials for the open questions.

As the emergence principle of the evolutionary constructive objectivism, we study a literature review for realizing the causes of over indebtedness and delinquency rate, and strategy for safety delinquency and over indebtedness to solve the new emergence problem or weakness of access system. Then, we create a service subsystem by driving i-System methodology again together with the survey data of the first and second survey. The service system provide skilled development training relating with the employment of unbanked for improving the livelihood of unbanked and involve three kinds of lecture and four levels for each lecture. This service system run with the six phases, such as searching the knowledge, organizing the knowledge, distributing the knowledge, monitoring and evaluating, researching the knowledge and reorganizing the knowledge.

We hope access system contribute the smooth approach of unbanked to the MFI, security of over indebtedness and delinquency, the capacity improvement of the unbanked in Myanmar.

Keywords: legal policy, microfinance institution, unbanked, access system, subsystem

## **Acknowledgements**

First and foremost, I would like to express deeply gratitude to the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) for its financial support for my study in Japan. I am grateful to the General Tin Htut (Minister of Cooperative Ministry) and Colonel Hla Moe (Managing Director of Cooperative Export Import Enterprise) who gave an opportunity to me for answering the MEXT scholarship examination for 2011.

I am sincerely indebted to my supervisor Professor Yoshiteru Nakamori for his diligent guidance for my doctorate study at Japan Advanced Institute of Science and Technology (JAIST). I specially credit to Professor Hashimoto, Professor Umemoto, Professor Kyoichi Jim Kijima (Tokyo Institute of Technology), Professor Mitsuru Ikeda, Associate Professor Hieu Chi Dam, Associate Professor Nam Van Huynh, all of the teacher at JAIST and all of my lab members. However, I cannot thank everyone who helped me to accomplish all of the doctoral study, I truthfully appreciate to Mr. Maung Maung (General Manager), Mr. Kyaw Thu (Deputy General Manager), Mr. Moe Kyaw (Nyaung U Regional Manager), Mr. Tin Maung Shwe (Magway Regional Manager), all of the officials of the Private Agency Collaboration Together (PACT) in Myanmar, Mr. Htet Naung Kyaw (my elder brother) who helped me for my survey data collection, officials of cooperative departments in the Magway Township, Mr. Dubhgan Hinchey and members of CELESTE at JAIST.

Finally, I would like to dedicate this research to my beloved parents, my lovely country (Myanmar), the Cooperative Ministry and my native town (Magway Township).

## Contents

<b>Abstract</b> .....	<b>i</b>
<b>Acknowledgements</b> .....	<b>ii</b>
<b>Contents</b> .....	<b>iii</b>
<b>List of figures</b> .....	<b>vi</b>
<b>List of table</b> .....	<b>vii</b>
<b>Chapter 1: Introduction</b> .....	<b>1</b>
1.1 Background .....	1
1.1.1 Brief introduction of Myanmar .....	1
1.1.2 What is poverty? .....	1
1.1.3 Poverty situation in Myanmar.....	1
1.1.4 Weak points of the microfinance program in Myanmar regarding literature review .....	3
1.2 Objectives .....	3
1.3 Originality of the study.....	3
1.4 Relevance to knowledge science .....	4
1.5 Organization of the dissertation .....	4
<b>Chapter 2: Literature Reviews</b> .....	<b>6</b>
2.1 Introduction.....	6
2.2 Importance of microfinance program for development.....	6
2.2.1 Nongovernmental organizations of the microfinance institutions .....	6
2.2.2 Current situation of microfinance program in Myanmar .....	7
2.3 Importance of service for the development .....	9

2.3.1	The occurrence of over indebtedness and delinquency rate increment .....	10
2.3.2	Strategy for defending the over indebtedness and delinquency rate increment.....	11
2.4	Research methodology .....	13
2.5	Research process.....	14
2.5.1	Research process for constructing an access system .....	14
2.5.2	Research process for justifying the access system .....	16
2.5.3	Research process for preparing a service subsystem of the access system .....	18
<b>Chapter 3:</b>	<b>Constructing an Access System of Unbanked in Myanmar to a Microfinance Institution .....</b>	<b>20</b>
3.1	Introduction .....	20
3.2	Intelligence dimension: the current system of PACT microfinance institution in Myanmar .....	20
3.3	Involvement dimension: the obstacles of rural unbanked in the current system of microfinance institution .....	24
3.3.1	Results of pilot survey .....	25
3.3.2	Drawing hypotheses .....	26
3.3.3	Survey results & analyzing hypotheses.....	27
3.4	Imagination dimension: idea exploration to solve the obstacles in the current system of microfinance institution .....	34
3.5	Integration dimension: constructing a system that rural unbanked in Myanmar enable to access the microfinance institution.....	37
<b>Chapter 4:</b>	<b>Justification of Access System of Unbanked in Myanmar to a Microfinance Institution.....</b>	<b>41</b>
4.1	Introduction.....	41
4.2	Justification from the perspective of officials.....	41
4.2.1	Drawing hypothesis .....	41
4.2.2	Results of hypotheses .....	43

4.2.3 Results of open questions.....	44
4.3 Justification from the outlook of unbanked .....	44
4.3.1 Drawing hypotheses for unbanked .....	44
4.3.2 Results from the perception of unbanked.....	45
4.4 Future research of justification .....	48
<b>Chapter5: Preparing a Service System of Microfinance for Unbanked in Myanmar .....</b>	<b>49</b>
5.1 Introduction .....	49
5.2 Intelligence dimension: the causes of over indebtedness and delinquency rate increment, and the strategy for controlling the over indebtedness and delinquency rate .....	49
5.3 Involvement dimension: the current capacity of unbanked in Myanmar.....	51
5.3.1 Drawing hypotheses for the perspectives of unbanked.....	51
5.3.2 Results of hypotheses .....	51
5.4 Imagination dimension: the ideas for the service to provide unbanked in Myanmar.....	53
5.5 Integration dimension: the inspiration of the service system of microfinance for unbanked in Myanmar.....	56
<b>Chapter 6: Discussion.....</b>	<b>58</b>
<b>Chapter 7: Conclusion and Future Work.....</b>	<b>59</b>
7.1 Conclusion.....	59
7.2 Future research.....	60
Questionnaires.....	61
Appendix.....	71
References .....	85
Publication.....	90



## List of figures

Figure 1.1 Location of Myanmar.....	2
Figure 2.1 Three zones holding microfinance program in Myanmar .....	8
Figure 2.2 PACT offices in the world.....	8
Figure 2.3 Services and a service system for poverty reduction.....	10
Figure 2.4 i-System for construction an access system.....	15
Figure 2.5 Justification process by unbanked .....	17
Figure 2.6i-System for construction a service system.....	19
Figure 3.1 The current operational procedure of PACT MFI in Myanmar .....	21
Figure 3.2The biographical data of the rural unbanked in Myanmar .....	29
Figure 3.3. The causes of rural unbanked in Myanmar did not participate in the MFI .....	34
Figure 3.4. Ideal exploration to solve the conflicts in the current system .....	35
Figure 3.5 Access system for rural unbanked in Myanmar to a MFI.....	40
Figure 5.1. The causes and protecting strategy of over indebtedness and delinquency rate increment.....	50
Figure 5.2. A proposed service system for unbanked in Myanmar.....	57

**List of tables**

Table 3.1 Loans products of the PACT MFI ..... 22

Table 3.2. The poverty level of the survey area..... 28

Table 3.3 The access of unbanked to the PACT MFI..... 28

Table 3.4The conflicts between the employments of unbanked and the current system of MFI..... 30

Table 3.5. Idea exploration to solve the conflicts in the current system ..... 36

Table 3.6. Summarization the knowledge for creating a system..... 39

Table 4.1. The satisfaction of unbanked on the ideal system..... 46

Table 4.2. Comparing two results of before and after ideal system ..... 48

Table 5.1.  $H_{19}$ : The unbanked in Myanmar have low capacity because they possess low literate level. .... 52

Table 5.2.  $H_{20}$ : The unbanked in Myanmar have low capacity because they own impermanent employment. .... 53

Table 5.3. The idea of nonfinancial service for unbanked in Myanmar ..... 55

# Chapter 1

## Introduction

### 1.1 Background

#### 1.1.1 Brief introduction of Myanmar

Myanmar situates in the Southeast Asia and is bordered on the north and northeast by China, on the east and southeast by Laos and Thailand, on the south by the Andaman Sea and the Bay of Bengal, and on the west by Bangladesh and India. See Figure 1.1.

It is located between latitudes 09°32' N and 28°31' N and longitudes 92°10'E and 101°11'E. The total area of Myanmar is 678,500 sq. km where 657,740 sq. km occupies the land and 20,760 sq. km occupies the water. The bordering countries are Bangladesh 193 km, China 2,185 km, India 1,463 km, Laos 235 km, and Thailand 1,800 km. The central lowlands ringed by steep, rugged highlands The lowest point is the Andaman Sea (0 m) and the highest point Hkakabo Razi (5,881 m).

Myanmar has three main seasons, hot season, rainy season and cold season. Hot season is from March to May, rainy season is from June to October and cold season is from November to February. The tropical monsoon is usually cloudy, rainy, hot, humid summers and less cloudy, scant rainfall, mild temperatures, lower humidity during winter.

Myanmar is a Union of fourteen administrative areas- seven states and seven divisions. The seven states are represented by the seven major ethnic groups- Chin, Kachin, Kayah, Kayin, Mon, Rakhine and Shan. Myanmar is made up of 135 national races, of which the main national races are Kachin, Kayah, Kayin, Chin, Bamar, Mon, Rakhine and Shan. Some of the Ethnic groups are listed as Akha, Palaung, Padaung, Naga, and Taron. Population is estimated to be over 60 million. The nationality is Myanmar. The largest ethnic group is the Burma. In modern Myanmar, there is a diffusion of races across all seven states and seven divisions. The major language is Myanmar, but minority ethnic groups have their own languages.

The predominant religion in Myanmar is Theravada Buddhism, with about 90% of the population being Buddhists. The remaining 10% are Christians, Hindus and Muslims.

#### 1.1.2 What is poverty?

The definition of poverty is that people who do not possess the basic-necessities, such as the food, shelter, clothing, etc. (MacEwan, 2007). Poverty is experienced in the low-income countries of the world. The poverty relates the inequality distribution of income or other measures of well-being (Atkinson, 1987). The United Nations Millennium Development Goals (MDGs) project assigns the absolute poverty as living on less than \$2 per day and extreme poverty as living on less than \$ 1 per day. In 2008, a billion people lived in the world on less than \$1.25 a day (World Bank, 2012).



Figure 1.1 Location of Myanmar

### 1.1.3 Poverty situation in Myanmar

Poverty situation in Myanmar is that 26% of the rural population is under the poverty line, the dollar-a-day (Saha, 2011 & UNDP, 2011). People living in rural areas are 70% of the total population, over 60 million, and 85% of rural population depends on loans. The poverty incidence is the highest in Chin State at 73% (UNDP, 2011). Rural poverty is significantly higher than urban poverty, at 29% and 16% respectively. If the transitory poverty vs. chronic poverty in both urban and rural areas are compared, transitory poverty is relatively higher than chronic poverty in both areas at 19% vs. 5%, and 31% vs. 12% separately. Chronic poverty means a long-term or permanent situation of poverty. Transitory poverty means that people falls into, escapes from poverty, and occurs as a significant phenomenon in Myanmar (UNDP, 2011).

Currently, there are forty-eight least developed countries (LDCs) designated by the United Nations. United Nations Economic and Social Council examine the lists of LDCs every three years depending on the three criteria:

1. Low income criteria based on a three-year average estimate of the gross national income (GNI) per capital
2. Human assets weakness criteria based on indicators of nutrition, health, school enrolment and literacy rate
3. Economic vulnerability criterion based on indicators of natural shocks, trade shocks, exposure to shocks, economic smallness and economic remoteness

When a country meets at least two of three criteria, a country will normally qualify to graduate LDC status. Myanmar also includes in the LDCs (UNTCAD, 2011).

One of the important objectives of Myanmar is poverty reduction. In the National-level workshop for the rural development and poverty alleviation held in May 2011, the government launched a rural development and poverty reduction program using micro-finance received from

foreign assistances in the form of international nongovernmental organizations (INGOs) & nongovernmental organizations (NGOs).

#### **1.1.4 Weak points of the microfinance program in Myanmar regarding literature review**

While the rural unbanked around 35.7 million in Myanmar rely on informal moneylenders, the PACT is a single provider and provides 10 per cent of the total demand of micro-credit for Myanmar. The effects of the PACT microfinance program in the dry zone area of central Myanmar (Lhing *et al.*, 2010) indicates that the microfinance programs of PACT positively affect its participants by comparing the demographic and socio-economic characteristics of the clients and non-clients, and livelihoods of the clients improve after participating in the microfinance programs of PACT. Moreover, the author suggested that information system of PACT cannot distribute the information on the advantages of participating in the microfinance programs of PACT and loans and legal procedures of PACT are hard for rural unbanked to appreciate. The rural unbanked in Myanmar very little access to loans and other working capital (PACT, 2010). Therefore, the above suggestions apparently oblige to research for the non-clients in Myanmar enable to access the PACT.

### **1.2 Objectives**

The first objective of this study is to construct a system facilitating the inconsistent legal policies in the current system of MFI for the unbanked in Myanmar and improve the relationship between MFI and its customers.

After constructed and proposed a conceptual system, we require to appreciate whether the proposed access system is practicable in Myanmar. Therefore, we justified the proposed access system from two perspectives: the satisfaction of unbanked and the belief of officials on the functions of access system as the second objectives of this study.

### **1.3 Originality of the study**

The three originalities were found in this research. First, we studied the legal policies from the vision of the local unbanked to construct an access system for providing benefits for both rural unbanked in Myanmar and the MFI. Many authors (Chiumya, 2006, Gallardo, 2001, Hardy *et al.*, 2002 & Meagher, 2002) studied the legal policies of microfinance to protect the entire financial system of MFIs from the view of the microfinance institutions because MFIs disburse loans to the unbanked without collateral and utilize strict legal procedures to reduce delinquency rate.

Second, service is considered for negotiate between two parties, unbanked and MFIs, in the access system. Other authors studied the service to improve of the livelihoods of the poor by increasing the capacity of the poor, and protect the over-indebtedness of the poor. MFIs applied the stringent legal policies to protect the security of financial system of MFIs. For the unbanked enable to borrow the loans from MFIs, MFIs require to reduce the austere legal policies. When

access system amend the tight legal policies of MFIs for unbanked can borrow the loans, if unbanked have also low capacity, service is essential in the access system to keep delinquency rate and over-indebtedness instead of legal policies. The service system can develop many employment opportunities for low skilled labor and improve the livelihoods. Therefore, the capacity of unbanked and returns to capital will increase. As a result, they can dutifully repay their installment repayments of the loans. Two parties, unbanked and MFIs, can enjoy the win.

As the third originalities, the theory of knowledge construction systems is operated in this research to construct the conceptual access system, test the conceptual access system and create a conceptual service subsystem of the access system as the result of justification process. Many fields, such as economics, management, service and system, are comprised in this research, constructing access system. Human resource development specialization and poverty reduction specialization in the economics subject is applied for poverty reduction of unbanked by improving the capacity of unbanked. Management and problem solving specialization is utilized for improving the problem situation in the microfinance institution and creating the new management system of microfinance institution, such as access system. Financial service, such as loans, and the public service or social service are involved for improving the livelihoods of unbanked.

## **1.4 Relevance to Knowledge Science**

Nakamori (2012) stated,

“Knowledge Science is more a problem-oriented interdisciplinary academic field than a single discipline. The mission of Knowledge Science is to organize and process both objective and subjective information and to create new value, new knowledge. Knowledge science mainly deals with the research areas involving social innovation such as regeneration of organizations, systems, and the mind. System science is to strengthen system’s ability by integrating a diversity of knowledge”.

(P.2 and 3)

In this research, we applied theory of knowledge construction systems to solve social problem, rural unbanked who necessary the money assistance cannot borrow the loan from the MFI, in the developmental field and develop new system. We researched the current employment, poverty and literacy of unbanked in Myanmar, the current operational procedures of MFI, the causes of over-indebtedness, the strategy to protect over-indebtedness and the advantages of service for development and MFI as the objective information. Then, researched the feeling of unbanked related with the current operational procedures of MFI and the proposed access system, the opinions, idea and experience of official of MFI as the subjective information. We organize this subjective and objective information to construct new system for microfinance in Myanmar as the new value or innovation.

## **1.5 Organization of the dissertation**

The dissertation contains six chapters. Chapter 2 presents literature review, research methodology, survey and research process of this research. At chapter 3, the constructing an access system of unbanked in Myanmar to a microfinance institution is explained. In chapter 4, we justify the access system from two perspectives of unbanked and officials of microfinance institutions. Chapter 5 describes creating a service system for unbanked in Myanmar. The conclusion and future work is expressed in chapter 6.

## Chapter 2

### Literature Reviews

#### 2.1 Introduction

In this chapter, we present with four portions, such as microfinance for poverty reduction, service for development, research methodology and research process of this research. The importance of microfinance for poverty reduction, the occurrence of over indebtedness and delinquency rate, and the strategy for the resistance of over indebtedness and delinquency rate and the theory of knowledge construction systems performing as the methodology for this research are learnt from the literature review.

#### 2.2 Importance of microfinance program for development

Most of formal financial institutions in the least developed countries do not provide uncollateralized credit (Adams *et al.*, 1983, Braverman *et al.*, 1986; Hoff *et al.*, 1990 & World Bank, 1992). The poor who lack physical collateral cannot borrow credit from financial institutions and depend on the informal lenders with high interest rate. Informal lenders are important in many low-income countries (Adams *et al.*, 1992; Ghate, 1992). Therefore, microfinance aimed the poor will be bankable (Daley-Harris, 2002) and emerged to provide credits to the poor for reducing poverty in the LDCs (Binswanger *et al.*, 1995 and World Bank, 1990).

The poor, who lack capital, have low education or skills in the developing countries are difficult to find jobs and become self-employed. Providing credit to the poor is a beneficial way to become self-employed (Yunus, 1984). Creating employment (DESA, 2013) and improvement human capital (King *et al.*, 2006) are the well-known strategies to reduce poverty. Therefore, the main purpose of microfinance is to help the poor by providing credits to become self-employed and escape from poverty. Microfinance positively influences the first six out of seven millennium goals by poverty alleviation (Littlefield *et al.*, 2003). Microfinance distributes effective benefit for the poor with regard to economic and social well-being perceptions (Khandker, 1998).

##### 2.2.1 Nongovernmental organizations of the microfinance institutions

Many international organizations such as the United Nations and the World Bank intend to reduce poverty as a major goal. The World Bank is also financing microcredit programs directly as well as indirectly through various social funds projects in differences countries (World Bank, 2012). The World Bank relatively modest contributes to grow microfinance. The mission of World Bank is "Help reduce poverty". World Bank Group consists of five organizations:

1. The International Bank for Reconstruction and Development (IBRD) lends to governments of middle-income and creditworthy low-income countries.



2. The International Development Association (IDA) provides interest-free loans called credits and grants to governments of the poorest countries.
3. The International Finance Corporation (IFC) provides loans, equity and technical assistance to stimulate private sector investment in developing countries.
4. The Multilateral Investment Guarantee Agency (MIGA) provides guarantees against losses caused by non-commercial risks to investors in developing countries.
5. The International Centre for Settlement of Investment Disputes (ICSID) provides international facilities for conciliation and arbitration of investment disputes.

The donor organizations playing major role in many countries for development of microcredit institutions (Khandker, 1998) are:

1. The United States Agency for International Development (USAID)
2. International Fund for Agricultural Development (IFAD)
3. Norwegian Agency for International Development (NORAD)
4. Canadian International Development Agency (CIDA)
5. Swedish International Development Authority (SIDA)

In 1995, World Bank provided grant funding of \$30 million to establish the consultant group to assist the poorest (CGAP) fund of \$100 million to directly support and spread microcredit programs in developing countries. CGAP seeks to strengthen microcredit programs by providing grants to support efforts to extend banking to the poor. CGAP identifies best practices, develops guidelines for microcredit programs, and channels funds to women and the poor through microcredit programs. Since 1987, CGAP has provided more than \$1 billion in loans to 87 microcredit programs, including social funds that are components of large projects (CGAP, 1997).

### **2.2.2 Current situation of microfinance program in Myanmar**

Millions of small and micro-entrepreneurs, farm-workers and casual employees who cannot provide collateral to the banks have to rely on informal moneylenders for credit because formal financial institutions in Myanmar do not lend uncollateralized credit according to Myanmar's Financial Institutions Law 1990. The monthly interest rates of informal lenders are around 10%. The activities of microfinance programs in Myanmar initiated as the cooperative program under the India Cooperative Credit Society Act in 1904. Under Human Development Initiative (HDI) of UNDP, microfinance was conducted as a separate project in 11 townships of Myanmar in 1997. Three INGOs executed microfinance in the different regions of Myanmar such as Grameen Trust for the Delta zone, PACT in the Dry-zone and GRET for the Shan-zone (Turnell, 2005; PACT, 2012). In order to consolidate these three operations into a single entity, PACT was selected in later March 2005. See Figure 2.1.



Figure 2.1 Three zones holding microfinance program in Myanmar

Since 40 years ago, Private Agency Collaboration Together (PACT) was instituted and was a membership organization of U.S. private and voluntary organizations. PACT works together some of the well-known non-governmental organizations in this field. The purposes of PACT are to provide greater resources, broader opportunities, and better means to improve social and economic conditions of the poor people by improving self-help capabilities. PACT assisted more than 12000 local organizations and implements over 100 projects in over 62 countries in Asia, Austrasia, Africa and Latin America (PACT, 2010). See Figure 2.2.



Figure 2.2 PACT offices in the world

PACT disburses only 10 per cent of total demand of micro-credit for Myanmar. Currently, the demand for micro-credit in rural segment of the economy of Myanmar is estimated at around US\$ 470 million. As of now, Myanmar has no relevant laws for microfinance, MFI and NGOs like as many other countries. Current activities of the microfinance in Myanmar are conducted under the instructions of specific authorizations provided to microfinance actors.

### 2.3 Importance of service for the development

Service is intangible, consumed simultaneously with the production and cannot be stored (Hill, 1977). In the twenty century, service activity raised “the source of employment, output, innovation and wealth creation” (Andersen, 2000). Service is essential in the economies of developed countries and less developed countries (Fuchs, 1968; Singelmann, 1978). Service economy refers to the economic developments because it can change employments in the developing countries, grow employment opportunities and provide employments for low skilled labors. The service economies in developing countries are financial services, tourism, distribution, health, education, hospitality, retail, human services and information technology. Financial services are one kind of the economic services provided by the finance industry (Wikipedia, 2014). In the least developed countries, as the formal financial institutions are unable to provide financial service to the poor, non-governmental organization support the credit with the objective that the poor become self-employment and escape from the poverty. Social services are “a sort of public services provided by any national or regional government organization for its inhabitants. It includes health care, public housing, and social security and social work” (World Bank, 2004). A service system is a value coproduction pattern of people, technology, internal and external service systems connected via value propositions, and shared information (language, laws, measures, etc.). The smallest service system is a single person and the largest service system is the world economy. The concepts obtaining from the above literature review are logically connected as show in figure 2.3.

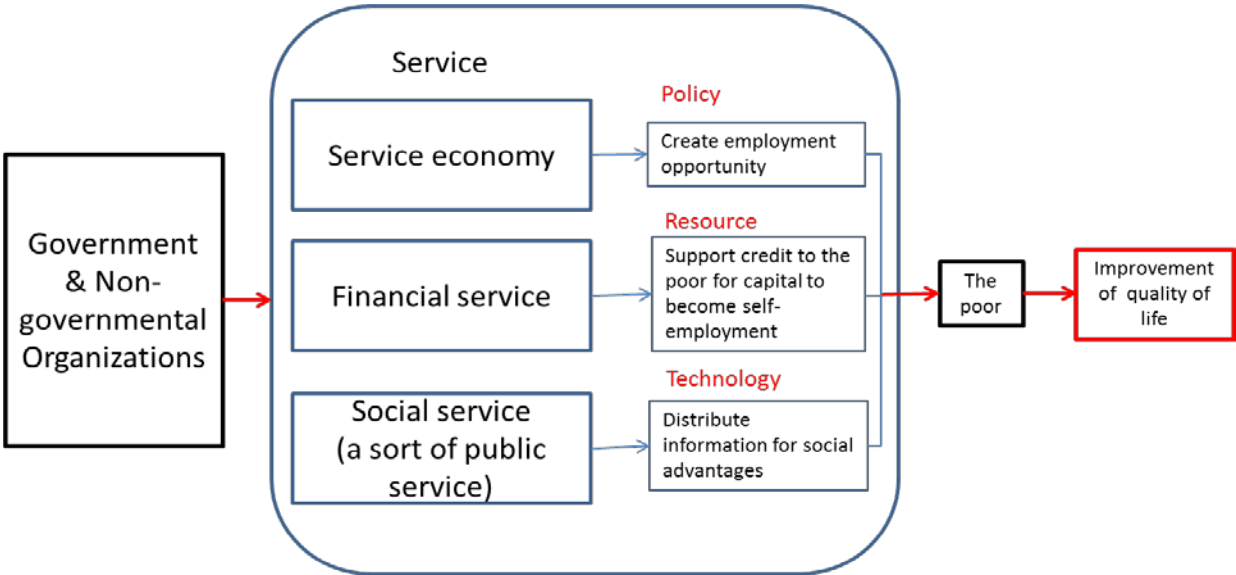


Figure 2.3 Services and a service system for poverty reduction

### 2.3.1 The occurrence of over indebtedness and delinquency rate increment

Though microfinance has many positive impacts on the poverty reduction in the world, we also found negative impacts on the poor by suffering over-indebtedness. The following are few examples of negative impacts of microfinance, the reasons of happening negative effects of microfinance and the strategy to escape from the negative effects of microfinance regarding literature reviews.

Liv (2013) stated that borrowers in Cambodia felt over-indebtedness because borrowers have low financial literacy to manage their income for the installment repayment of loans, insufficient profit from their entrepreneurial activities to cover debt obligation, and multiple loans.

Maurer *et al.* (2010) studied the situation of indebtedness of microcredit clients in Bosnia and Herzegovina. The borrowing patterns, repayment performance and over-indebtedness of the microcredit clients were studied with 887 clients. Over half of sample microcredit clients had more than one active credit contract. Overdue on their loan repayments are 27% of survey clients. Clients with multiple loans confronted with repayment problem. The level of indebtedness was measured by the debt service payments in relation to net income. Over-indebtedness was at 27% of microcredit clients. There were correlation between the numbers of active credits, the number of days late or the amount overdue and the level of indebtedness of the client. The two factors, deterioration of economic conditions, e.g. lower income from the normal situation and evolution of an easy credit culture, contributed to over-indebtedness of microcredit clients.

Schicks (2010) discussed the causes of over-indebtedness from the perspectives of behavioral economics, psychology and sociology. The influence of psychological concepts on over-indebtedness were the attitude of borrower towards the future, debt or money and money management as well as self-control or decision. The highly prominent influence of socio-demographic factors among microfinance customers on over-indebtedness included young age, low level of education, low or unstable labor market status, changes in family composition, e.g. divorce, ill health, gender, ethnicity, having many young children, and influence of income instability.

Kappel *et al.* (2010) expressed that the multiple loans and higher obligations for loan installments did not essentially increase the risk of over-indebtedness. If the clients have multiple loans that are productively invested and yield a profit enough to improve the net income, then the indebtedness level of household remains unchanged. If the clients have ability to gainfully invest the loans in the businesses, multiple borrowing is not a problem. However, when a business sector collapse occurs the job losses and falling wages, borrowers have to default and fall in over-indebtedness.

Chhikara *et al.* (2012) indicated that indebtedness of the farmers has occurred as a significant issue in India. When the indebtedness injured the social status of a farmer, it caused to commit suicide of the farmer. Since 2002, the suicide rate of farmers in the Haryana is two farmers per one hour and 4.8% per one-lakh farmers. Hence, the indebtedness of farmers becomes a matter of severe argument for the whole country. In the context of indebtedness measurement, the loan utilization pattern is very important characteristic. The level of indebtedness of a person alters on the loan utilization pattern. Haryana farmers utilize 62.2%

loan amount in farm activities, 6.8% amount of the loan in non-farm business and 18.8% amount of the loan in consumption, marriage and ceremonies in 2003.

If we see from the MFI, over indebtedness effects on the microfinance institutions as the delinquency increment.

### **2.3.2 Strategy for defending the over indebtedness and delinquency rate increment**

Chhikara *et al.* (2012) also point out that the other context is due to expanding of non-farming activities in the State, agriculture employment has also decreased. Today, the farmers meet many contests i.e., marketing, cost of farming, indebtedness, financial assistance at the reasonable cost, weather, prices of agricultural products, decreasing yield in agricultural outputs etc. A third of farmers in India do not like farming. Therefore, the state government should notice the disadvantages of utilization of loan in unproductive activities, energize the co-operative movement and the self-help group movement, upgrade the dairy farming and training of animal husbandry for landless farmers, and improve the non-farming activities to increase income generation for sustainable livelihood.

Nogales (2011) asserted that over-indebtedness of a client is socially wrong in both microfinance and business perspectives. Social policies mentioned, "Good social practices are good business practices also create effective business perception." Consequently, microfinance institutions must keep a focus on the ultimate clients, conduct adequate analysis of the capacity of clients to pay and provide services that meet the needs of the clients.

Ogwumike (2002) found that the lower educational level tended to be the higher the poverty rates. From the perspective of economic growth for the reducing poverty, the low capacity labor of the industrial sector should be encouraged to become the economic growth. Human capacity should be improved with education, health, nutrition, and housing needs of the labor to improve the quality of labor and their productivity. When implementing the programs to reduce mass unemployment and articulating policies for development programs with labor-intensive potentials, not only jobs opportunity but also the productivity and income of the youths and other beneficiaries were enhancing. These programs include the vocational skills development program, the special public works program, the small-scale enterprises program and the agricultural employment program. The remarkable progress in respect of its various programs had been achieved. The special public works program has created jobs for over 154,910 persons.

Rahman *et at* (2012) stated that Bangladesh had achieved acceleration in its economic growth since the early 1990s. When agriculture cannot support to cover the growing labor force in the rural areas, the underemployment rate is high and this labor force might not be suitable for employment in non-farm sectors, where higher-level skills are required. For such sector, the policy, infrastructure and environment were required to improve the quality of labor force. Therefore, developing appropriate training, the demand for a trained labor force and the type of training required must be assessed to obtain a labor force with good quality education and training. The economic growth and changes in the economic structure were essential from the

view of poverty reduction because the growth of industry and service sectors could create the employment opportunities, especially employment with higher levels of productivity.

The microcredit programs of Bangladesh are the pioneers of microfinance. Bangladesh Rural Advancement Committee (BRAC) and Grameen Bank are the largest and prominence both inside and outside Bangladesh. Whilst agriculture in Bangladesh offered few employment opportunities for growing labor force, expansion in rural nonfarm income and employment was necessary to stimulate for economic growth. As rural non-farm sector supported a major source of income and employment for microcredit borrowers, the returns to capital and labor in the nonfarm sector were high. Nonfarm activities provided the rural growth. Hence, microfinance institution needs to provide adequate infrastructure investment for service.

BRAC assumes that though credit programs just help the poor to become self-employed and generate cash income, credit program cannot be a main instrument for poverty lessening. If the poor could use advanced knowledge and technology, the poor would more benefit. BRAC believed that skills development training must provide together with credits. The objectives of skills-based training are to provide members with practical skills training directly related to their current or proposed income-generating activities. BRAC provides skills training and other inputs before disbursing credit. The borrowers of BRAC have higher returns to capital because of the effectiveness of skills development training (Khandker *et.al*, 1996).

At first, Grameen Bank considers that skill-based training is not necessary for the poor and merely the provision of credit is essential. Later, Grameen Bank has realized that credit alone is not sufficient, and the poor need social development to become more disciplined and productive. Grameen Bank disburses credits before providing social development and organizational inputs (Khandker *et al.*, 1995 and Khandker, 1996).

Thus, microcredit programs require providing skills development and other subsidiary services to the poor and unskilled borrowers to sustain their benefits.

## 2.4 Research methodology

In the real life situations, we have to deal with two types of problems, structured problems and unstructured problems. Unstructured problems cannot be explicitly stated other than with a simplistic representation of the situation even if the existence of the problem is clear in the sense that we feel uneasy. Such problems are recognizable but are not defined. We thought this research problem was unstructured problem because this research problem was that although the clients of MFI obtained many advantages and improved their livelihoods after participating in the microfinance programs of PACT, half of unbanked in the project area of microfinance program did not participate in MFI. In this study, we utilize perceptions of theory of knowledge construction system to construct a system enable solve this problem. This theory is systematic approach, systematic (holistic) thinking and synthesizing objective and subjective knowledge. Also includes three fundamental parts, such as a knowledge construction system, a structure-agency-action paradigm, and evolutionary constructive objectivism.

**(a) A knowledge construction system:** It is also called the *i*-System, is a procedural approach to knowledge creation and *i*-System integrate objective and subjective knowledge. It includes the five ontological elements or subsystems, such as intervention, intelligence, involvement, imagination and integration. Intelligence, involvement and imagination from high dimensional creative space collect and organize distributed tacit knowledge together with the actors in each dimension. Intervention and integration relate with social action and knowledge from the sociological perspective. Systemic intervention is purposeful action. Integration synthesizes the distributed knowledge from the three dimensions with a certain purpose to construct new knowledge. These five ontological elements were originally interpreted as nodes. Intervention is the initial node, where begins inquiry of the problems for the entire creativity process. Arrows diverge to the three nodes, such as intelligence, involvement and imagination, from the intervention for collecting the knowledge for the holistic understanding the problem and solving the problem. The intelligence node represents to various types of knowledge, the involvement node for social aspects and the Imagination node for the creative aspects. Integration node is its final dimension and converged by all arrows from these three nodes for synthesizing the knowledge to construct the conceptual system. The links without arrows denote the possibility of impact in both dimensions.

**(b) Structure-Agency-Action Paradigm:** In collecting knowledge, the *i*-System requires actors to have the following agencies. Intelligence in the scientific dimension (scientific-actual front) has the capacity of actor (Capacity of actors: experience, technical skill, functional disciplinary knowledge) and attitude of actors (attitude of actors: logical, rational, objective). Involvement in the social dimension (social-relational front) has capacity of actors (intellectual enthusiasm, faith, openness), and attitude of actors (empathetic, moral, a-rational). Imagination in the creative dimension (cognitive-mental front) has capacity of actors (insight, judgment, curiosity), and attitude of actors (subjective, intuitive, post-rational).

**(c) Evolutionary constructive objectivism:** It is originally considered for testing knowledge creation theories, consisting of three principles:

**Evolutionary falsification principle:** Evolutionary developed knowledge is tested by falsification in the broadest sense, including inter-subjective falsification through critical discussions. Descriptive theories are tested by critical experiments and prescriptive theories are tested by repetition of applications.

**Emergence principle:** This fundamental principle is related to the emergence of new concepts and properties at higher levels of complexity. When confronting a complex problem, do not hesitate to create a new concept.

**Multimedia principle:** Pay attention to visual and preverbal information, which is much more powerful than words, and relates to intuitive knowledge and reasoning. Pay attention to various aspect of information to enhance holistic understanding and complete synthesis.

## 2.5 Research process

The research process following the theory of knowledge construction systems can be divided into three process, such as constructing an access system, justification of the access system and preparing a service system.

### 2.5.1 Research process for constructing an access system

The access system is constructed under the following research questions and the major research question is:

MRQ 1: How to construct a system that rural unbanked in Myanmar can access the PACT?

Under this major research question, three subsidiary research questions can be divided and they are:

SRQ1. What is the current system of PACT in Myanmar?

SRQ2. What are the reasons that rural unbanked in Myanmar cannot access the PACT?

SRQ3. How to solve the problem that rural unbanked in Myanmar were unable to access the PACT?

The research is operated according to the procedures of the *i*-System. The intervention dimension of *i*-System is the will to solve problem, motivation (objective, mission, and goal), external pressure (needs, request), problem setting (subject, direction). In this research, we have a will to construct a system, which can solve the obstacles of unbanked in the current system and can support easily collaboration of the unbanked in the microfinance programs. This problem was found from a literature review. The knowledge for constructing a system is collected at the intelligence, involvement and imagination dimension diverged from the intelligence dimension by applying a survey.

As the survey issues, the current system of the MFI, the biography of the rural unbanked, the obstacles of rural unbanked in the current system of MFI, the reasons for unbanked are unable to participate in the MFI and the effectiveness of the current information contribution system of MFI, are collected for constructing a system. Survey areas are Nyaung U and Magway Township in the dry zone area of central Myanmar. Survey data was collected in Thayarwaddi (middle) village of Nyaung U township and seven villages in Magway Township, such as Wet Theik, Than Taw Kone, Ngwar Gue, Nat Kan, Dahat Kan, Kan Hla and Daung Nay, in September 2012. There are 57609 households in Magway Township, and 51,041 households in Nyaung U Township. As the target population, 106 unbanked households and 22 officials were selected. We define the unbanked into two strata as 50 households for non-clients stratum and 56 observations for dormant and dropout stratum. Dropout means that although she was a client in the past, she became a dropout when she could not follow the legal policies of PACT. Dormant people mean that they are also similar with dropouts but now they are waiting to join in PACT again.



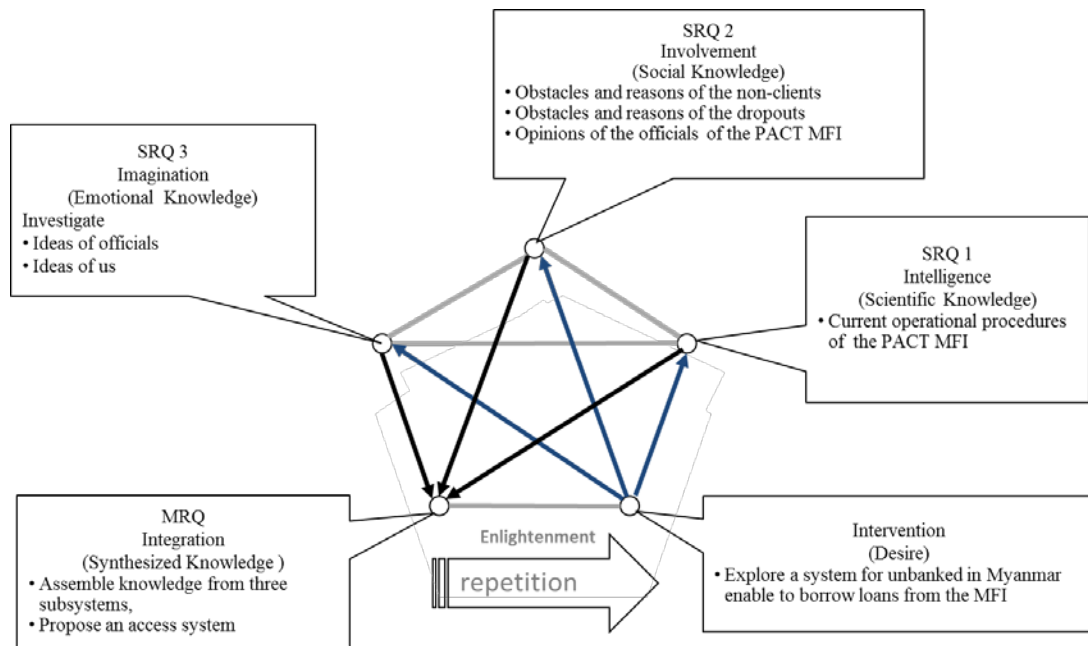


Figure 2.4 *i*-System for construction an access system

Therefore, we commenced this research from the intelligence dimension to answer the first subsidiary research question as the first step of the research process. Intelligence is the research contents (methods, tools), research facility, existing research (scientific knowledge, literature, information, recognition, public knowledge). In this study, we studied the current system of the PACT microfinance institution in Myanmar from the officials of MFI by the personal interview survey and internal data of the MFI as the public or scientific knowledge.

As the second step of research process, the answer of second subsidiary research question are researched from the involvement dimension of *i*-System. Involvement is social motivation, will, desire, hope and opinions. A pilot survey was held with the officials of MFI by applying open question type to appreciate the obstacles of rural unbanked. We prepared the questions and proposed hypotheses centered on the problems studied from the perspective of officials. The questions included the information of unbanked, such as biography, the obstacles in the current system of MFI and the effectiveness of the current information contribution system of MFI by using face-to-face personal interview survey and door-to-door interview survey approach to visit the house of the respondents in the survey area at the appointment time. We proved the hypotheses with these survey data.

As the third step of research process, the answer of third subsidiary research question was researched at the imagination dimension. Imagination (other aspects of creativity) is holistic thinking and creating our own ideas on new or existing things. For construction of access system, we applied personal interview with the two regional officials and a literature review to solve the obstacles in the current system of MFI for the unbanked.

Finally, the answer of major research question was researched at the integration dimension. Integration (systemic knowledge) synthesizes the knowledge from the three subsystems to construct the access system. The knowledge of the above three subsidiary research questions

were summarized to construct a system that rural unbanked can easily access to the MFI. See Figure 2.4.

## **2.5.2 Research process for justifying the access system**

The access system is required to test for realizing whether the access system is actually practicable in work place because the access system is a new constructed system as a conceptual system. We chose justification for testing the access system because the verification is expensive and takes long time. We justify the access system from the two perspectives, such as officials and unbanked.

### **(A) Justification process from the perspective of officials**

The evolutionary constructive objectivism (Wierzbicki and Nakamori, 2007) is utilized to identify whether the access system is feasible in Myanmar.

We present the functions of the access system at the microfinance meeting of the Magway Township in June 2013. However, we are difficult for justifying the access system by the multimedia principle. Therefore, we propose hypotheses for the functions of access system and operate a survey involved closed and open questions with the thirty officials of 22 microfinance organizations. The closed questions are for obtaining believes or inter-subjective agreements of the officials on the functions of access system, and the open questions are for obtaining criticism of the officials for the access system. We prove the hypotheses with these survey data. The weakness of the access system is appreciated from the criticisms of the officials, and then new concepts will emerge as the emergence principle of the evolutionary constructive objectivism. The Cronbach's alpha statistical method (Cronbach LJ, 1951) is exploited because we find the emotion of the respondents. Cronbach's alpha method is a coefficient of internal consistency and is used as an estimate of the reliability of a psychometric test for a sample of examinees. We selected the different officials of the cooperative ministry, which is responsible governmental organization for microfinance in Myanmar because we construct the access system with the idea of officials of the PACT and the researchers.

### **(B) Justification process from the perspective of unbanked**

The access system is justified from the perspective of the unbanked appreciating whether the access system aid more convenient admission of the unbanked, contribute the satisfaction to the unbanked and improve the relationship between the unbanked and MFI. A survey is operated with the 106 unbanked households in the Magway and Nyaung U townships, previous survey area and populace because the access system is constructed for reducing the obstacles of these unbanked in the current system of MFI.

When we researched for creating access system, we already studied the obstacles of unbanked in the current system and the ideas to solve these conflicts. We modify the inconsistency legal policies with these collected idea policies, and arrange the training based on the biography of unbanked for the capacity improvement of unbanked. This modified system, the

ideal system produced by the access system, is proved by with four steps.

At the first step for justification of the ideal system produced by the access system, we pose the two hypotheses for this ideal system, explain to the sample survey populace, and then gather the feedbacks of unbanked, as survey data. The survey respondents who satisfied with the ideal system of MFI pretend as the active clients at the second step. When MFIs really change the hard operational procedures, we think the active clients will participate in the microfinance programs as the clients. An ideal result of the population for the ideal system of MFI is inferred from the active clients of the sample population at the third step. After calculating ideal result of the survey area, two results of before and after the functions of the access system are compared to decide on the proposed access system. If the numbers of clients after ideal system are increased, we can conclude that the access system is applicable for Myanmar. See Figure 2.5.

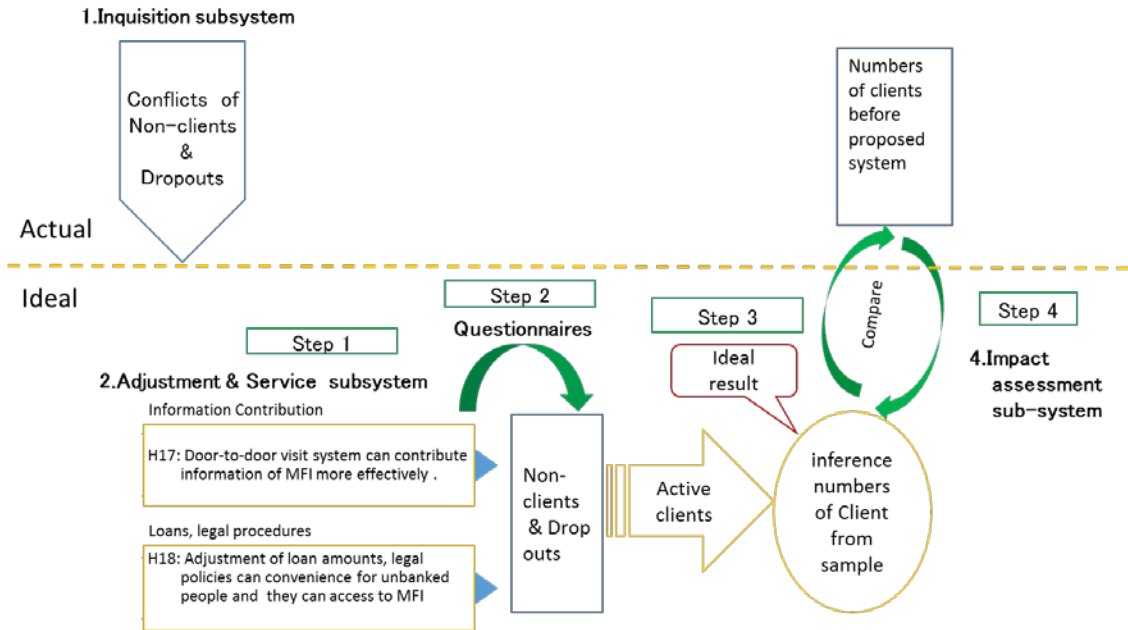


Figure 2.5. Justification process by the unbanked

**2.5.3 Research process for preparing a service subsystem of the access system**

The service subsystem is constructed under the following major research question is: MRQ2: How to create a service subsystem of the access system for unbanked in Myanmar?

Under this major research question, three subsidiary research questions can be divided and they are:

SRQ4. Why does the delinquency rate increment and over indebtedness occur in the microfinance and how to protect them?

SRQ5. What is the current capacity of unbanked in Myanmar?

SRQ6. What are the ideas for service to support unbanked in Myanmar?

We operate the *i*-System again for creating a service subsystem. At the interventions dimension, we have desire to prepare a service subsystem to secure the financial system of MFI and over indebtedness of unbanked by improving the capacity of unbanked to response the criticism of the officials in the justification of the access system. The knowledge for constructing a service system is collected at the intelligence, involvement and imagination dimension diverged from the intelligence dimension and apply the results of two surveys for constructing an access system and justifying the access system. The biographical data of the rural unbanked are the survey issues for the service system.

We began from the intelligence dimension to answer the fourth subsidiary research question by a literature review. We studied the causes of over indebtedness and delinquency rate increment, and the strategy to keep them from the existing research. The answer of fifth subsidiary research question are researched from the involvement dimension of *i*-System. The biographical data of unbanked and the opinions of officials for the capacity of unbanked in Myanmar are utilized again to decide the capacity of unbanked. The answer of sixth subsidiary research question is researched at the imagination dimension. For construction of service system, we explore the idea centered on the employment situations of unbanked. To answer the second major research question, we summarize all the data collected at the integration dimension and build the process for nonfinancial service training. See Figure 2.6.

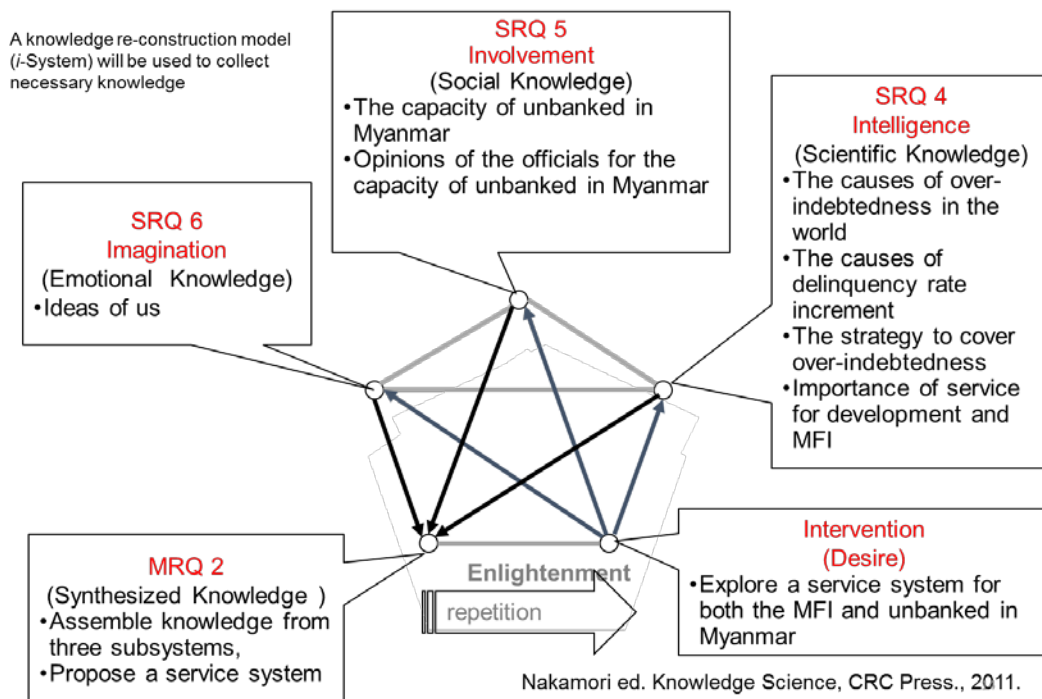


Figure 2.6 *i*-System for construction a service system

## Chapter3

# Constructing an Access System of Unbanked in Myanmar to a Microfinance Institution

### 3.1 Introduction

The purpose of this paper is to create a system that enable to lessen the inconsistency policies in the current system of microfinance institution for the unbanked in Myanmar and improve the relationship between microfinance institution and its customers. The *i*-System methodology and survey method were applied. A survey was hold in the two township of Central Myanmar in September 2013. The current system of microfinance institution is a single relationship between microfinance institution and unbanked in Myanmar. By the occurrence of the conflicts between the current system and the situations of unbanked, half of the targeted people were unable to join in the microfinance programs and became dropouts and non-clients. A system included four sub-systems is created with the idea of officials and idea from the literature review, and to complement in the current system. The originality of this paper is that we studied the legal policies from the vision of the local unbanked to reduce the obstacles in the current system of microfinance institution. Many authors studied the legal policies of microfinance from the view of the microfinance institutions for the security of financial system of microfinance institutions.

### 3.2 Intelligence dimension: the current system of PACT microfinance institution in Myanmar

As the public or scientific knowledge for the intelligence dimension of *i*-System, we studied the current system of the PACT microfinance institution in Myanmar at the PACT office by asking the officials and studying the internal data of PACT office in September 2012.

The current system of PACT MFI includes three portions such as information contribution (meeting), loans and legal policies (PACT, 2011). It is a single relationship between MFI and its clients. PACT has to choose the villages to initiate the microfinance programs. After choosing the villages, PACT holds information contribution (meetings) at the targeted village and explains the microfinance programs included many kinds of loans and legal policies that are obligated during the borrowing period. After rural unbanked realized the legal policies, they enable to borrow the loans from MFI in accordance with the legal policies and become the clients of MFI. PACT follows the Grameen Bank basic procedures (Ray, 1987).

From the information contribution system, MFI communicate to the unbanked and support the unbanked the way to approach the MFI. Hence, the unbanked are capable to approach the

MFI by following the current system. The current system is illustrated by the red color in the figure because it is important for relationship between two parties, MFI and unbanked. Arrows diverging from the PACT MFI to the three portions of the current system means MFI supports these three portions of the current system to the unbanked. The arrows connected between the loans, legal policies and the information contribution system mean information contribution system explains about the loans and the legal policies. The blue downward arrow from MFI to information contribution system and the unbanked means MFI communicate to the unbanked by distributing the information of microfinance programs. The blue arrows from the unbanked to loans, the clients and the MFI means rural unbanked become clients of the MFI by borrowing the loans of MFI, and rural unbanked approach to MFI by this inflow. Between these outflow and inflow arrows, the MFI and the unbanked relate each other by the current system. See Figure 3.1.

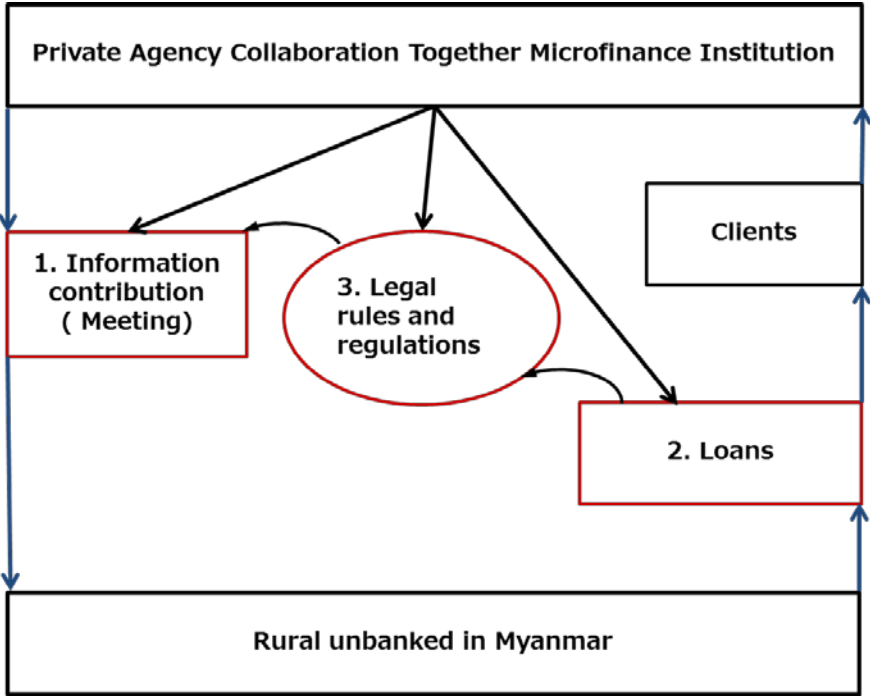


Figure 3.1 The current system of PACT microfinance institution in Myanmar

**(A) Information contribution (Meeting)**

When PACT holds meeting at the targeted village, PACT distributes the information of microfinance programs with three stages.

At the first stage of the meeting, PACT holds meetings with the president of the village and members of village committee of the targeted village to explain about its microfinance programs. The aims of holding the meeting are to inquire about the interest of villagers in the program and the information of other organization in this village, collect secondary data of the village, obtain the permission of the president for holding the meeting with the villagers, and assign the place and time for the next meetings.

At the second stage of the meeting, PACT holds the meeting with the villagers to explain about the microfinance programs and continue Participatory Rural Appraisal with them (PRA).

The third stage, officials of PACT explain about the legal policies to the interested villagers, form a small group with five interested villagers, obtain the permission of household headed of the interested villagers for joining in the programs and collect baseline data of prospective client.

**(B) Loans types of the PACT**

PACT disburses nine types of the loan products. See Table 3.1.

After unbanked have already organized a group with five peers and attended the non-formal business education training, they become the clients of PACT and enable to borrow regular income generating loans according to the loan priority arrangement of group. If all members in a group can successfully repay their repayment duties, they can borrow microenterprise loans and SRG wholesale loans based on the business feasibility, capacity of the borrowers and the solidarity of the groups in a village.

Table 3.1 Loan products of the PACT microfinance institution

No	Loan products	Loan sizes	Remarks
1	Regular income generating loans: Starting from \$90 (for livestock, trading, production, service, etc.)	\$100-\$250	A new borrower can start from this loan and then can access to higher value loans with successful repayment of the current loan.
2	Microenterprise loans	Up to \$ 1250	Based on the business feasibility and capacity of the borrower
3	Health care loans	\$65	For the family members of every clients
4	Education loans	\$65	Enrollment and associated expenses
5	Agricultural loans	\$125	Per acre, maximum amount limited to \$ 375
6	Extra loans	Up to \$ 65	Additional specific requirement
7	Consumer loans	Up to \$100	For improving living standard
8	Vulnerable loans	\$65	Especially for the poorest
9	SRG wholesale loans	\$ 1875	For each SRG group

Secondary Data, PACT Office , Yangon (Sept 6, 2012)

Vulnerable loans are especially for the poorest at the poverty level D. They enable to borrow this loan with the recommendations of Center Committee, regional managers and loan officials,

and their sign on the loan contract without forming a group. The poorest villagers can create the belief of other villagers by successful repayment of the vulnerable loans. Then, they are also capable to participate in the groups.

PACT MFI allows the agricultural loans, health loans, education loans, extra loans and consumer loans to respond the requirement of clients. Agricultural loan is especially for the landholder farmers and for the cultivated period. The loan amounts are depending on their possessed land, acre. If the clients have unhealthy family members, they can borrow health care loans. The education loan is for the clients who have students in their family members. Over six month life clients can borrow extra loans depending on their specific requirement. The consumer loans are for improving living standard of the clients who have over three year services.

### **(C) Legal policies**

PACT laid down strict legal policies to protect the defaulted loan. Legal policies can be divided into two groups, such as the criterions for borrower and rules.

#### **(a) Criterions for the borrower**

To become a client of PACT, unbanked complete the following criterions and they are:

1. Women or low-income people
2. Age between 18 and 60 years for a new client (accept until 65 years for the clients)
3. One applicant for one household
4. Permanent resident in the village
5. Family permission
6. Healthy person

#### **(b) Rules for the clients**

If unbanked complete the above criterions and interest to borrow loans from PACT, they need to follow the following rules to become a client:

1. The villagers interested in the program compulsorily attend the non-formal business education (NFBE) training and answer a recognition test at the end of the training.
2. Organize a peer group with five villagers interested in the MFP.
3. Select a leader and a secretary from the five members.
4. Propose a business operating with the loan. (If the proposed business is completely implemented, the officials can reduce the loan amount.)
5. Plan a loan priority arrangement to disburse the loans to the three persons among the five members at the first time.
6. All Clients have to save 300 kyats every fortnightly, and keep 500 kyats at least in their saving account.
7. The opportunity to borrow the repeat loans depends on the repayment performance.
8. The loan installment repayment is bi-weekly or monthly.



9. If the member is absent at the regular group meeting, absentee is able to give installment repayment and regular saving to the group leader.
10. After NFBE training, a center committee is organized with group leaders of all the groups in the village. The responsibility of the center committee is to select the new members, prepare loans application forms for the members, assign loan amounts and date for distribution, collect the loans, and administrate their members to follow center disciplines.
11. All the group members and center committee members oblige to attend the loans application and disbursement meetings, and a special group meeting.
12. All clients coerce to obey all the rules of the center committee.
13. The substitution attendance of the group members never permit at the loan disbursement meeting.
14. Holding the loans disbursement meetings are not allowed without attendance of all group members and are moved to until all members can attend.
15. If the first loan prior members lack for repayment duty, the second loans disbursement is moved until the first loans prior members can repay.
16. Group members have an obligation to reimburse for the loan defaulted members as the social collateral.
17. If one of the groups in the village is insolvent, all of the groups in this village have an obligation to reimburse.
18. The interested villagers in the microfinance programs can apply as new members to a group incomplete five members.
19. The loans defaulter can be removed from the group.
20. Members who have already repaid the loans can resign from the group and withdraw her saving from PACT.
21. The group incomplete five members necessitate finding new members within three months or combining with other groups.
22. If the resigned member has desire to join again, she has opportunity to apply as a member.
23. If the member is over age, unhealthy or impermanent resident at the village, replacement with others family members are allowed.

### **3.3 Involvement dimension: the obstacles of rural unbanked in the current system of microfinance institution**

At the imagination node, the intuitions of officials on the occurrences of obstacles in the current system of MFI were researched by a pilot survey. Depending on these understandings, hypotheses were proposed and proved by the survey data about the inter-subjective emotion of the unbanked included non-clients and dropouts on the current system of MFI. The intelligence and involvement dimensions shape the rich picture of the real world by describing the problem issues in the real world.

### 3.3.1 Results of pilot survey

The biographical data of unbanked and the causes of rural unbanked were unable to access the MFI are studied from the twenty-two officials by interviewing with the open question types. If summarized their answers as follow:

- (a) Marital status can be divided into two, such as married and single.
- (b) Six literate levels are uneducated, monastery, primary, secondary, upper-secondary and bachelor.
- (c) PACT divides into four poverty levels depending on the amount of their property including overall household income, household saving, household assets, livestock assets, such as poverty level A, B, C and D. Poverty level D is the poorest of the unbanked.
- (d) The employment types can be grouped into four kinds, such as landholder farmer, small and micro enterprise owner (SME), part-time and migrant worker and unemployment. Part-time and migrant worker included part-time farmers, part-time workers, migrant workers and migrant sellers.
- (e) The causes of obstacles in the current system appreciating from the officials are:
  1. When MFI hold the meeting at the villages, some villagers are unable to attend the meeting with these reasons:
    - They did not know the microfinance program meeting was holding in the village.
    - They are busy or at the work place when the meeting was holding in the village.
    - They do not interest to borrow the loans.
    - They do not need cash assistance.
  2. The landholder farmers do not need cash assistance.
  3. The agricultural loan amounts are not enough for the farm expenses.
  4. Regular loans are small for the SME owners.
  5. SME owners are unable to wait until they are eligible for borrowing SME loans.
  6. SME owners do not know they enable to borrow the SME loans because they did not attend the meeting.
  7. SME owners fear the obligation for loan defaulters in their group members. When they cannot find five consistence group members, they cannot participate in MFI. Otherwise, when someone of their group members leaves from the group, they cannot search other consistence members for organizing a group and they became dropouts.
  8. Migrant workers are impermanent resident and move to the other place where they can obtain a job. Therefore, they conflicts in criteria, permanent resident in the village.
  9. Some cannot follow the rule attending the meeting on time because they have no time during the working hours.
  10. Some who have impermanent income and job are unable to repay loans and become loan defaulters.
  11. Some are over age.
  12. Some have health issue.

13. Some are difficult to receive the group acceptance for participating in a group.

### 3.3.2 Drawing hypotheses

Depending on the obstacles of the rural unbanked were unable to access the MFI, we proposed eleven hypotheses.

If the awareness of rural unbanked in Myanmar about the microfinance program achieved from attending the current information contribution system, the current system is effective. Otherwise, the current information contribution system is ineffective. For this, we proposed:

H1a: The rural unbanked do not realize the microfinance programs by the distribution of current information contribution system.

If the reasons of the rural unbanked did not attend the current information contribution system were unneeded cash assistance or uninterested to borrow the loans from the MFI, the absence of attending the meeting is not the weakness of the current system. Although they demand the loans, the causes of the absence of attending the meeting are that they do not know holding the meeting in the village or cannot attend at the working hours. This states the current system is inconsistency with the rural unbanked in Myanmar. Then, we pose:

H1b: The current information contribution system is inconsistency with the rural unbanked in Myanmar.

Centered on these two hypotheses (H1a & H1b), the applicability of the current informational contribution system is proved. We assumed:

H1: The current information contribution system is ineffective for Myanmar.

For the landholder farmers are inconsistent in the loan amount, we offered second and third hypothesis:

H2: Farmers do not cooperate in the MFI because of unnecessary cash assistance.

H3: Farmers do not join in MFI because of insufficient agricultural loan amounts.

We suggested fourth and fifth hypotheses for the conflicts of the SME owners in the current system. Three issues are included in fourth hypothesis, such as SME owners assume regular loan is small, do not know the SME loans because of the absence of attending the meeting and cannot wait the time for borrowing SME loans.

H4: SME owners do not participate in the MFI because of inadequate loan amounts.

H5: SME owners do not collaborate in the MFI, as they fear the obligation for loan defaulters.

For the conflicts of part-time and migrant workers, we supposed hypotheses 6, 7 and 8:

H6: Part-time and Migrant employments are unable to access the MFI because of impermanent resident.

H7: Part-time and migrant workers do not approach because they cannot obey some of the rules.

H8: Part-time and migrant workers do not combine in the MFI because they have impermanent income and employment.

For the conflicts in the criteria and other factors for the rural unbanked to access the MFI, we presented hypotheses 9, 10 and 11:

H9: Some do not consolidate in the MFI because of over age.

H10: Some do not conjoin in the MFI because of unhealthy.

H11: Some are unable to unite in the MFI because they are not capable to receive group recommendation.

### **3.3.3 Survey results & analyzing hypotheses**

The poverty level A is the smallest at 4% of village households. The poverty level C, the second lowest poverty level, is at the highest 59% among four poverty levels of the village households. The second highest is the poverty level B at 27%. Then, the lowest poverty level D is at 10%. See Table 3.2.

When the approach of rural unbanked to the PACT in the survey area is calculated on the secondary data of PACT office, half of the households in the survey area can participate in the PACT, a third is non-clients and a fifth is dropouts. See Table 3.3.

Most of the rural unbanked are married and fewer than ten are single in term of marital status.

If we organize the six literate levels into two groups, such as normal and lower literate group, the normal literate group includes the three levels, such as secondary, upper secondary and bachelor and is about a fifth. The lower literate group includes three levels, such as uneducated, monastery and primary, and is over three quarter.

The poverty level "C", the second lowest poverty level, is at the peak among four poverty level and about two thirds of the sample populace. The poverty level "A", the highest poverty level among four levels, is at the lowest and fewer than ten.

Although we find unemployment just a few, part-time and migrant employments are at the peak among four employment levels and around a half. See Figure 3.2.

Table 3.2. The poverty level of the survey area

Township	Village	Poverty Level				Total Households
		A	B	C	D	
1. Nyaung U	1. Thayarwaddi(M)*	3	5	181	61	250
2. Magway	2. Wet Thike	3	30	59	2	94
	3. Than Taw Kone	2	54	137	24	217
	4. NgwarGue	3	51	148	24	226
	5. Nat Kan	7	95	154	21	277
	6. DahatKan	27	110	18	0	155
	7. KanHla	11	71	173	0	255
	8. Daung Nay	10	65	170	40	285
Total		66	481	1040	172	1759
		4%	27%	59%	10%	100

Table 3.3. The access of unbanked to the PACT MFI

Township	Village	Clients	Non-clients	Dropouts	Total households
Nyaung U	Thayarwaddi (M)*	166	76	8	250
Magway	Wet Thike	69	11	14	94
	Than Taw Kone	74	99	44	217
	Ngwar Gue	132	0	94	226
	Nat Kan	179	4	94	277
	Dahat Kan	42	81	32	155
	Kan Hla	158	36	61	255
	Daung Nay	40	245		285
Total		860	552	347	1759
%		48.89	31.38	19.73	100.00

Data from Nyaung U and Magway regional office (13-09-2012)

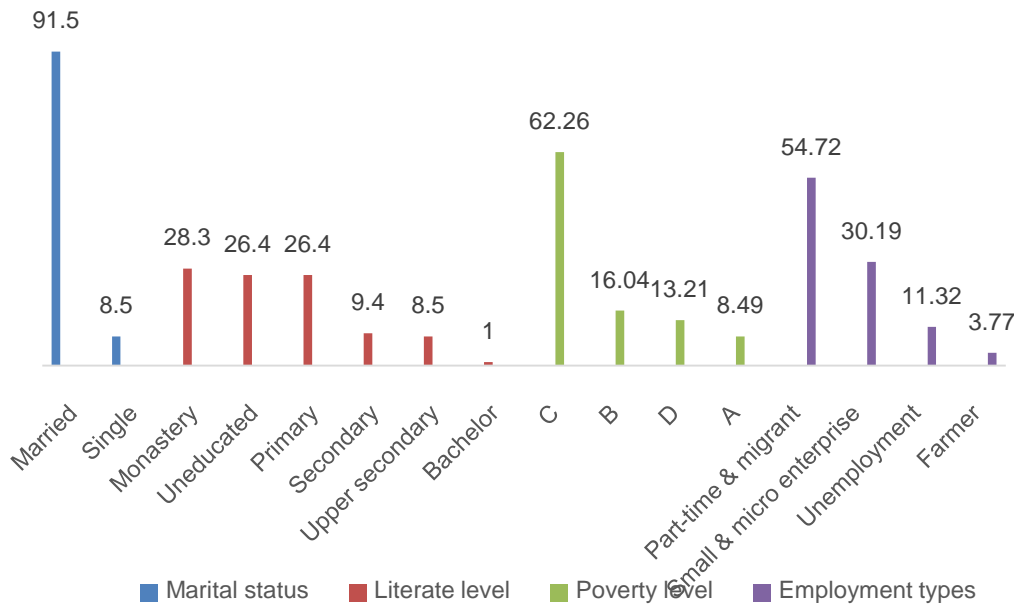


Figure 3.2. The biographical data of the rural unbanked in Myanmar

The conflicts occurred between the current system of MFI and the employments of unbanked can be stated by the distributed relative frequency in the contingency table.

Farmers of survey respondents feel that they do not need cash assistance and the loan amounts are small for their business. Therefore, they conflict in the loans of the current system and do not participate in MFI.

The rural unbanked in Myanmar who possess small and micro enterprise give the reasons that the loan amount is small, and they disappoint the obligation for the loan defaulters as the social collateral. Hence, they leave from the microfinance groups and do not cooperate in the MF program.

Part-time and migrant employment resigned from the MFI or did not collaborate in the MF when they were over age, move to other village for receiving employment, and defaulted their loan repayment duty when they have no income and impermanent employment. When part-time workers were unable to attend the meeting in the working hours, they were difficult to obtain the acceptance of the group members to enter in a group for borrowing the loans and they renounced from the group or were not able to involve in the group.

Some of rural unbanked are unemployment or dependent person on their family because they are over age and unhealthy. Consequently, they are impossible to receive the group recommendation for entering in a group. See Table 3.4.

Table 3.4. The conflicts between the employments of unbanked and the current system of MFI

Portions of current system	Conflicts	Employments				Total
		Farmer	SME	Part-time	Unemployment	
Loans	Unneeded cash assistance	0.03				0.03
	Small loans	0.01	0.07			0.08
Criteria	Over age			0.06	0.06	0.12
	Impermanent Resident			0.16		0.16
	Health issue			0.03		0.03
Rules	Ruler defaulter			0.31		0.31
	Loan defaulter			0.01		0.01
	Obligation for loan defaulter	0.23				0.23
Other factors	Obstacle for receiving group recommendation			0.03		0.03
		0.04	0.30	0.54	0.12	1

The chi-Square ( $\chi^2$ ) upper tail one-sided test are applied for testing hypotheses and inference about the standard deviation ( $\sigma$ ). Total sample size of non-clients and dropouts are large. When grouping centered on the employments of non-clients and dropouts, the sample size is small ( $n \leq 30$ ). We take  $S^2$  as the point estimator of  $\sigma^2$  to estimate confidence intervals and test hypothesis (Johnson, 1996).

When researching the effectiveness of current information contribution system, we asked the non-client respondents because dropouts were old clients, already attended the information contribution (meeting), participated in the MF programs and resigned from the groups with some inconsistent factors. We proved the hypotheses for current information contribution system with the survey data of non-client households.

To prove hypothesis one (a), the rural unbanked do not realize the microfinance programs by the distribution of current information contribution system,

$$n = 50, \bar{x} = 1.1, S_{1a}^2 = 0.092, \alpha = 0.05, d.f = 49 \text{ and } \chi_{0.05}^2 = 66.339$$

$$H_0: \sigma_{1a}^2 = \sigma_{0a}^2$$

$$H_{1a}: \sigma_{1a}^2 > \sigma_{0a}^2$$

$$\sigma_{0a}^2 = (n - 1)S_{1a}^2 / \chi^2 = 0.068$$

When we compare two standard deviations, the standard deviation of sample population is greater than the confidence interval ( $\sigma_{1a}^2 > \sigma_{0a}^2$ ,  $0.092 > 0.068$ ). The hypothesis one (a) is accepted.

The hypothesis one (b), the current information contribution system is inconsistency with the rural unbanked in Myanmar, is validated as follow:

$$n= 50, \bar{x}= 2.163, S_{1b}^2=0.885, \alpha=0.05, d.f=49 \text{ and } \chi_{0.05}^2= 66.339$$

$$H_0: \sigma_{1b}^2 = \sigma_{0b}^2$$

$$H_{1b}: \sigma_{1b}^2 > \sigma_{0b}^2$$

$$\sigma_{0b}^2 = (n - 1)S_{1b}^2/\chi^2 = 0.654$$

Because the standard deviation of sample population is greater than the confidence interval ( $\sigma_{1b}^2 > \sigma_{0b}^2$ ,  $0.885 > 0.654$ ), we agree hypothesis one (b).

Regarding the results of these two hypotheses ( $H_{1a}$  &  $H_{1b}$ ),  $H_1$ , the current information contribution system is not effective for Myanmar, is permitted.

When the hypothesis two, farmers do not cooperate in the MFI because they do not require cash assistance, is confirmed,

$$n= 4, \bar{x}= 1.5, S_2^2=1, \alpha=0.05, d.f= 3 \text{ and } \chi_{0.05}^2= 7.81$$

$$H_0: \sigma_2^2 = \sigma_0^2$$

$$H_2: \sigma_2^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1)S_2^2/\chi^2 = 0.38$$

Therefore, hypothesis two is received because of ( $\sigma_2^2 > \sigma_0^2$ ,  $1 > 0.38$ ).

For H3: Farmers do not join in MFI because of insufficient agricultural loan amounts.

$$n= 4, \bar{x}= 2.25, S_3^2=0.92, \alpha=0.05, d.f= 3 \text{ and } \chi_{0.05}^2= 7.81.$$

$$H_0: \sigma_3^2 = \sigma_0^2$$

$$H_3: \sigma_3^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1)S_3^2/\chi^2 = 0.35$$

$$\sigma_3^2 > \sigma_0^2, 0.92 > 0.35$$

As a result, we allow hypothesis three.

To prove the hypothesis four, SME owners do not participate in the MFI because of inadequate loan amounts,

$$n= 32, \bar{x}= 2.37, S_4^2=0.69, \alpha=0.05, d.f= 31 \text{ and } \chi_{0.05}^2= 44.985$$

$$H_0: \sigma_4^2 = \sigma_0^2$$

$$H_4: \sigma_4^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1)S_4^2/\chi^2 = 0.475$$

When the result is ( $\sigma_4^2 > \sigma_0^2$ ,  $0.69 > 0.475$ ), hypothesis four is admitted.

For proving the fifth hypothesis: SME owners do not collaborate in the MFI, as they fear the obligation for loan defaulters.

$$n= 32, \bar{x}= 1.41, S_5^2=0.64, \alpha=0.05, d.f= 31 \text{ and } \chi_{0.05}^2= 44.985$$

$$H_0: \sigma_5^2 = \sigma_0^2$$

$$H_5: \sigma_5^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1)S_5^2/\chi^2 = 0.44$$



When we compare two standard deviations, the standard deviation of sample population is greater than the confidence interval ( $\sigma_5^2 > \sigma_0^2$ ,  $0.64 > 0.44$ ). The fifth hypothesis is concurred.

The sixth hypothesis: part-time and migrant employments are unable to access the MFI because of impermanent resident, is approved as following:

$$n = 58, \bar{x} = 2.41, S_6^2 = 0.84, \alpha = 0.05, \text{d.f.} = 57 \text{ and } \chi_{0.05}^2 = 75.624.$$

$$H_0: \sigma_6^2 = \sigma_0^2$$

$$H_6: \sigma_6^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1) S_6^2 / \chi^2 = 0.63$$

$$\sigma_6^2 > \sigma_0^2, 0.84 > 0.63$$

Thus, we sixth hypothesis is adopted.

To prove the seventh hypothesis that part-time and migrant workers do not approach because they cannot obey some of the rules,

$$n = 58, \bar{x} = 1.86, S_7^2 = 0.998, \alpha = 0.05, \text{d.f.} = 57 \text{ and } \chi_{0.05}^2 = 75.624$$

$$H_0: \sigma_7^2 = \sigma_0^2$$

$$H_7: \sigma_7^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1) S_7^2 / \chi^2 = 0.752$$

$$\sigma_7^2 > \sigma_0^2, 0.998 > 0.752$$

Consequently, seventh hypothesis is conceded.

When proving the eighth hypothesis that part-time and migrant workers do not combine in the MFI because they have impermanent income and employment,

$$n = 58, \bar{x} = 2.93, S_8^2 = 0.136, \alpha = 0.05, \text{d.f.} = 57 \text{ and } \chi_{0.05}^2 = 75.624.$$

$$H_0: \sigma_8^2 = \sigma_0^2$$

$$H_8: \sigma_8^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1) S_8^2 / \chi^2 = 0.103$$

$$\sigma_8^2 > \sigma_0^2, 0.136 > 0.103$$

Hence, eighth hypothesis is tolerated.

The conflict factors for over age are found in the two kinds of employment, such as unemployment, part-time and migrant workers. If we prove by the part-time and migrant workers,

$$n = 58, \bar{x} = 2.79, S_{9a}^2 = 0.38, \alpha = 0.05, \text{d.f.} = 57 \text{ and } \chi_{0.05}^2 = 75.624.$$

$$H_0: \sigma_{9a}^2 = \sigma_{0a}^2$$

$$H_{9a}: \sigma_{9a}^2 > \sigma_{0a}^2$$

$$\sigma_{0a}^2 = (n - 1) S_{9a}^2 / \chi^2 = 0.29$$

If we prove by the unemployment,

$$n = 12, \bar{x} = 2, S_{9b}^2 = 1.091, \alpha = 0.05, \text{d.f.} = 11 \text{ and } \chi_{0.05}^2 = 19.675.$$

$$H_0: \sigma_{9b}^2 = \sigma_{0b}^2$$

$$H_{9a}: \sigma_{9b}^2 > \sigma_{0b}^2$$

$$\sigma_{0b}^2 = (n - 1) S_{9b}^2 / \chi^2 = 0.61$$

When we compare the standard deviations of unemployment, part-time and migrant worker, with the standard deviation of sample population, we initiate that  $(\sigma_{9a}^2 > \sigma_{0a}^2, 0.38 > 0.29)$  and  $(\sigma_{9b}^2 > \sigma_{0b}^2, 0.38 > 0.29)$ . For that reason, ninth hypothesis is endured.

When we prove the tenth hypothesis: some do not conjoin in the MFI because of health problem,

$$n= 12, \bar{x}= 2.5, S_{10}^2=0.82, \alpha=0.05, d.f = 11 \text{ and } \chi_{0.05}^2= 19.675$$

$$H_0: \sigma_{10}^2 = \sigma_0^2$$

$$H_{10}: \sigma_{10}^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1) S_{10}^2 / \chi^2 = 0.46$$

As this result  $(\sigma_{10}^2 > \sigma_0^2, 0.82 > 0.46)$ , tenth hypothesis is assented.

To prove that some are unable to unite in the MFI because they are not capable to receive group recommendation,

$$n= 12, \bar{x}= 2.5, S_{11}^2=0.82, \alpha=0.05, d.f= 11 \text{ and } \chi_{0.05}^2= 19.675$$

$$H_0: \sigma_{11}^2 = \sigma_0^2$$

$$H_{11}: \sigma_{11}^2 > \sigma_0^2$$

$$\sigma_0^2 = (n - 1) S_{11}^2 / \chi^2 = 0.46$$

$$\sigma_{11}^2 > \sigma_0^2, 0.82 > 0.46$$

The eleventh hypothesis is acceded.

The current system of MFI is the only single relationship between the MFI and its customers, observed in the intelligence dimension of *i*-System. At the involvement dimension of *i*-System, we realize that the conflicts originate in the current system. Information contribution system is ineffective for the unbanked regarding the results of hypothesis one. The current loans are inconsistency for some of the unbanked regarding the results of hypotheses 2, 3 and 4. The seven conflicts are initiated in the legal policies related to the results of hypotheses 5 to 11. The occurrence of conflicts centered on the employment situations of unbanked. Hence, a half of the targeted people in the microfinance project area become non-clients and dropouts, and fail to participate.

At the intelligence dimension, MFI intended the current system for relating with unbanked according to the circulated arrows between two parties. When this current system is inconsistent with the situations of unbanked, the unbanked become dropouts and non-clients as the outcomes of current system. In the figure of intelligence dimension, we added and demonstrated the occurrence of conflicts between the current system and unbanked by the divergent arrows from the unbanked to the current system. Then, non-clients and dropouts were become because of the conflicts illustrated by converging three arrows from the three portions of current system at the non-clients and dropouts. The dotted arrow between the non-clients and the MFI, and the dotted arrow from the unbanked to loans and the MFI means the unbanked cannot access to the MFI by borrowing the loans because of the obstacles in the current system. This figure 4 combines the intelligence and involvement dimensions to present the occurrence of problem in the real world as the rich picture of the real world (Check land, 1999). See Figure3.3.

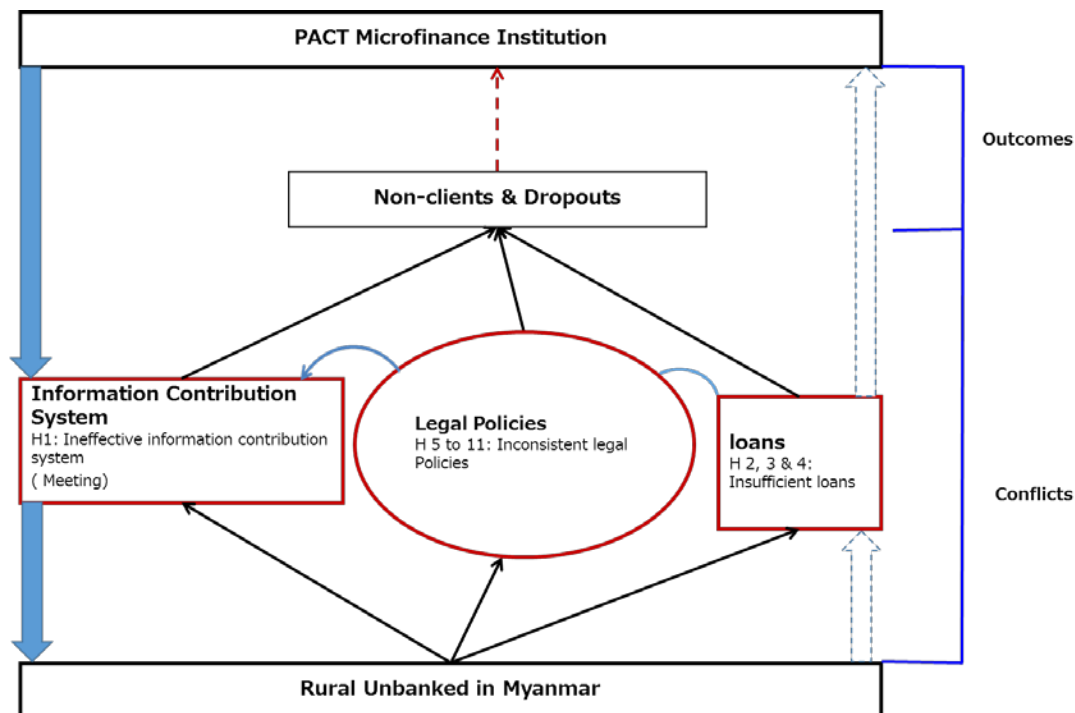


Figure 3.3. The causes of rural unbanked in Myanmar did not participate in the MFI

### 3.4 Imagination dimension: idea exploration to solve the obstacles in the current system of microfinance institution

The idea to solve the obstacles of unbanked were explored from the two regional officials and a literature review at the imagination dimension of i-System to answer the third subsidiary research question. This survey included to collect ideas for information contribution system, loan amounts and legal policies.

The Nyaung U and Magway regional officials aspired to contribute the information of microfinance program to the non-clients who need cash assistance with the help of the group leaders. Unless the explanation of group leaders is enough, loan officials in this village explain and discuss with the non-clients via door-to-door visit. Then, the idea of Magway regional official for solving the obstacles, rule defaulters, is that if they are busy in their workplace to attend the group meeting, to accept the absentee inform to the group leaders.

We assume that the idea of regional officials for the information contribution is suitable and the followings are our thoughts to solve the conflicts.

For unneeded cash, this conflict is not necessary to solve because the objective of microfinance program is for unbanked.

The conflicts, small loan amount, can be solved by the upgraded information contribution system, loan adjustment and policy adjustment. The upgraded information contribution assist to solve this conflict because the non-clients SME owners did not attend the meeting and recognize about the SME loans. Although the dropouts recognize about the microfinance programs well, the loan amount is small for them. Loan adjustment facilitates this conflict. Policy adjustment

enable to diminish the conflict, some of the SME owners are unable to wait the span for borrowing SME loans.

The weakness of information contribution system causes the conflicts, such as over age, health issue and impermanent resident. When over age or unhealthy or impermanent resident clients leave from the groups, they have opportunity to substitute with other family members. Hence, upgraded information contribution system is able to remove these conflicts.

The conflicts, loans defaulters and rule defaulter, happened in the current system of MFI because unbanked own impermanent income and employment, such as migrant, part-time. The skill development trainings kill this obstacle by contributing the knowledge about the self-employment, entrepreneurship and SME, and financial management (Khandker, 1998; Morduch *et al.*, 2002; Palmer, 2007 and Yunus, 2007).

The conflicts, rule defaulters and obligation for loan defaulters, appear because some of the policy in the current system and the employment situation of unbanked and the inter-subjective emotion of the unbanked are inconsistent. This obstacles can be condensed by adjusting these inconsistent policies not only convenience for the unbanked but also financial security of MFI. See Table 3.5.

At the imagination dimension of *i*-System, we explore the idea with the purpose to improve the problem situations in the real world as the root definition. These ideas are added in the figure of the intelligence and involvement dimensions. In the figure of imagination dimension, we support idea to improve the problem situations in the current system and exemplify with the cloud, which means it is just the idea. If we support the idea to the current system, the arrow from the rural unbanked or non-clients and dropouts to the loans and the MFI change to line from the dotted line. It means non-clients and dropouts can borrow the loans and join in the MFI because of the supported idea. See Figure 3.4.

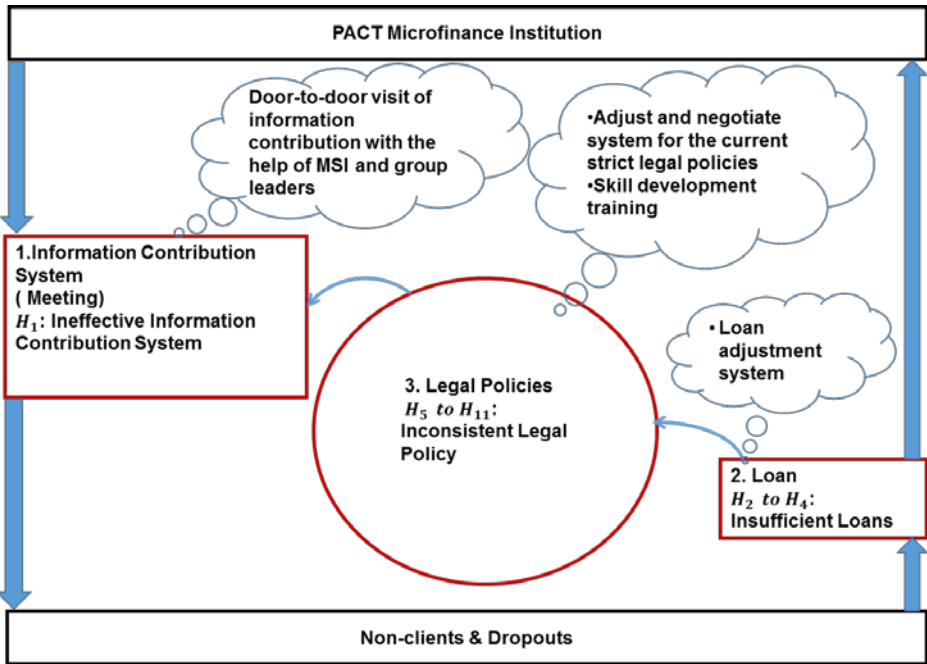


Figure 3.4. Ideal exploration to solve the conflicts in the current system

Table 3.5. Idea exploration to solve the conflicts in the current system

Intelligence dimension (SRQ 1)	Involvement dimension (SRQ 2)	Imagination dimension (SRQ 3)		
		Regional officials of PACT MFI		Researchers
Current operational procedures	Causes of conflicts	Magway	Nyaung U	
1. Information contribution	1. Ineffective information contribution	Upgrade	Door-to-door visit	Door-to-door visit
2. Loan amounts	2. Unneeded cash assistance	The objective of project is for unbanked who require cash assistance		
	3. Small loans			Information contribution
				Policy adjustment
3. Legal policies	4. Age			Information contribution
	5. Health issue			
	6. Impermanent resident			
	7. Loan defaulters			Training
	8. Rule defaulters	Policy adjustment		Policy adjustment Training
	9. The obligation for loan defaulters			Policy adjustment
2. Others	10. Obstacles for receiving group recommendation			Training

### **3.5 Integration dimension:constructing a system that rural unbanked in Myanmar enable to access the microfinance institution**

Knowledge is facts, information, descriptions or skill acquired through experience or education (Nakamori, 2012). System is a set of interacting of its elements, which form the whole. A system has the emergent property, hierarchy, communication and control processes, and as a whole, it can survive against the changing environment in principle (Checkland, 1981). A subsystem is a set of elements, which is a system itself, and a component of a larger system (Wikipedia, 2014).

The knowledge, which is the current system of PACT, the ten conflicts between the rural, unbanked in Myanmar and the current system, and the ideas to solve these conflicts are researched at the three dimensions of i-System. We summarized this knowledge to create a system that can solve these conflicts at the integration dimension as the answer of major research question.

The current information contribution system requires upgrading with the idea of regional officials. Current loan amounts and legal policies also require adjusting to cope with the employment situations of rural unbanked in Myanmar. Knowledge contribution training improving the knowledge and skill of rural unbanked in Myanmar necessitate.

According to the PRA profile, PACT has already known the villagers who necessitate the loan in the project village. If unbanked did not access to the PACT, the reasons why they did not access to PACT are essential to find. For this point, inquisition system is considered for searching the problem situation in the real world and the nature of problem from many issues and tasks related with the problems. In this system, a survey is operated to explore obstacles of unbanked included non-clients and dropouts in the current system. The functions of inquisition system will be similar with the functions searching the answers of the first and second subsidiary research questions. The officials of MFI find the obstacles of the unbanked by utilizing a survey.

After understanding the feedbacks and reasons of non-clients and dropouts as problem situations, these problems are required to solve. For an example, the employment situations of non-clients and dropouts conflict with the some of the current policies in this research. Therefore, adjustment system is considered for solving the problems. The adjustment system explores the idea solving the problems and modified the inconsistent legal policies in the current system of MFI with these ideas. The functions of adjustment system is same with the activities searching the answers of third subsidiary research question. The officials of MFIs explore the idea for solving the problems and edit the inconsistent factors in the current system of MFI.

According to the research second question, some of the clients became dropout with some conflicts. To save becoming dropout, service system for knowledge contribution is considered for the problem solving. It includes training for setting up entrepreneurship, self-employment and financial management. In the service system, the trainers arrange the training syllabus and contribution methods to distribute to the clients, trainees.

After editing the current strict procedures to cope with the feedbacks of respondents, non-clients and dropouts will be able to access easily the MFI and become clients of MFI. The

impact assessment system (Hulme, 2000) is considered to monitor whether the clients of PACT are really increased or not. The officials of the MFI monitor and compare the number of clients increase or not after these three systems. Hence, the officials of MFI who solve the problems require rich procedural knowledge for appreciating the problem situations and exploring the ideas to solve the problems. If the officials is experience persons, these three systems operate effectively and unbanked can easily participate in the microfinance programs. As the result, the number of clients increases. Unless the numbers of client increase, these three systems are functioned again to correct the weakness.

The aim of these four systems is non-clients and dropouts enable to access to the MFI. We consider these four systems as four sub-systems combine these four sub-systems sequentially as a system and propose the access system as a conceptual system.

The current system of MFI includes just three portions, such as information contribution, loans and legal policies, and did not involve for problem searching and solving. A conceptual system, access system, is constructed for supplementing in the current system of MFI without destroying the current system, supporting to improve the relationship between the MFI and its customers. See Table 3.6.

Table 3.6. Summarization the knowledge for creating a system

Intelligence (SRQ 1)	Involvement (SRQ 2)	Imagination (SRQ 3)	Integration (MRQ)	
Current system	Causes of conflicts	Idea	Constructing a system	
1. Information contribution	1. 90% of non-clients did not attend	Door-to-door visit	1. Inquisition sub-system 2. Adjustment sub-system 3. Service sub-system 4. Impact assessment sub-system	Access system
2. Loan amounts	2. Unneeded cash assistance	The objective of project is for the poor who needs cash assistance		
	3. Small loans	Information contribution		
		Loan adjustment		
		Policy adjustment		
3. Legal policies	4. Age 5. Health issue 6. Impermanent resident	Information contribution		
	7. The obligation for loan defaulters	Policy adjustment		
	8. Rule defaulters			
	9. Loan defaulters	Training		

The current system of MFI drives between the MFI and rural unbanked at the intelligence and involvement dimension. These two parties, MFI and its clients, communicate each other by the current system of MFI. Some of the rural unbanked cannot relate to MFI and conflicts with the current system of MFI because the current system omits the system for the problem solving. Therefore, we create a conceptual system, access system, based on the idea (at the imagination dimension) to improve the problems (at the involvement dimension) and accompany in the current system of MFI at the integration dimension.

Therefore, two arrows diverging from the MFI to the current and access system means MFI provide two systems. Four lines diverging from the access system to four sub-systems means the access system comprises four sub-systems to support the unbanked. Access system surrounds the current system, then links up the current system and unbanked with two sub-systems:



inquisition and adjustment sub-systems, because the inquisition sub-system searches the conflicts in the current system and obstacles of unbanked for entrancing in MFI. The adjustment sub-system explores the idea reducing the conflicts and modifies the current system with the feedbacks of unbanked for smoothing the entrance of unbanked to MFI. Therefore, the arrows rotate from inquisition sub-system to the unbanked, adjustment sub-system, the current system and the unbanked. The service sub-system sustains the skill development training to the clients of MFI after the non-clients and dropouts are altering as the clients. This intend for the clients do not leave the MFI without possessing prosperous livelihoods. The last sub-system of access system, impact assessment sub-system, situating at the top of the all sub-systems and very closed with the MFI means this sub-system will operate at the last after running the three sub-systems of access system and the current system of MFI. The impact assessment sub-system evaluates the results of the three sub-systems of access system and edition of the current system of MFI monitoring the increased numbers of client of MFI. See Figure 3.5.

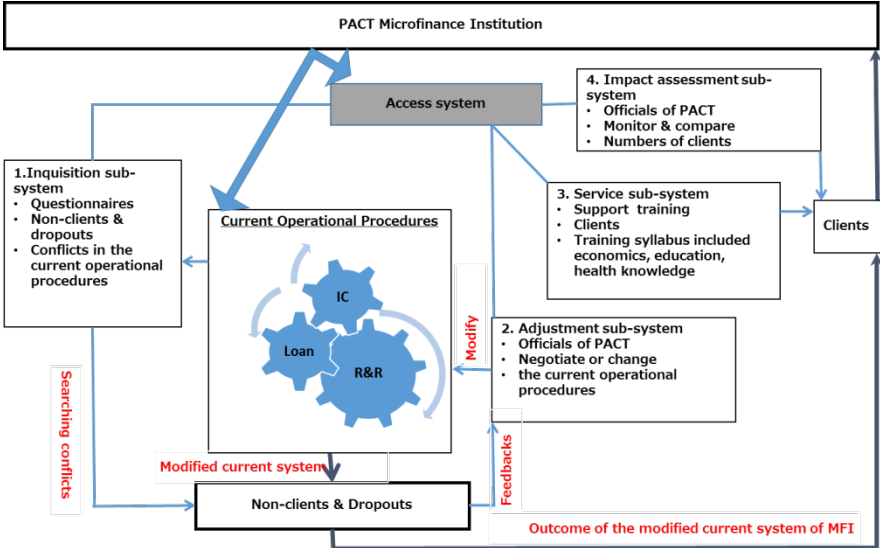


Figure 3.5. Access system for rural unbanked in Myanmar to a MFI

## Chapter 4

# Justification of Access System of Unbanked in Myanmar to a Microfinance Institution

### 4.1 Introduction

The access system is a conceptual system added in the current system of microfinance institution in Myanmar. This system solves the barriers in the current system of microfinance in Myanmar for improving the relationship between microfinance institution and its customers. The objective of this paper is to justify the access system to appreciate the feasibility of access system in Myanmar and contribute more advantages than the current system. The access system is justified from the two perspectives of officials and unbanked. The evolutionary constructive objectivism is utilized for justifying from the perspective of officials. A survey and four steps of justification process are operated for justifying from the view of unbanked. The officials believe that access system enable to improve the current system of microfinance institution. Around 33% of unbanked satisfied with the functions of access system and desire to participate in microfinance programs.

### 4.2 Justification from the perspective of officials

For justifying with the evolutionary falsification principles, we collected the data after presenting the functions of the access system at the microfinance meeting of the Magway Township in June 2013. Therefore, we propose five hypotheses for the functions of access system.

#### 4.2.1 Drawing hypothesis

The inquisition subsystem is considered to identify the causes of problem for solving the problems. For solving the problem in the access system, we requires to perceive the causes of conflicts and the biography of unbanked and the inconsistent policies between unbanked and current system of MFI. These three factors are assumed as the assumptions to prove the hypothesis twelve and they are:

- 12a. We require to find the biography of unbanked as the facts causing the problem.
- 12b. We require to find the inconsistent legal policies in the current system of MFI as the facts causing the problem.
- 12c. We require to consider the causes of conflict for solving the obstacles in the MFI.

If the respondents agree these assumptions, we can conclude that the inquisition subsystem is suitable for Myanmar. Then, we propose:

H12: Inquisition subsystem is appropriate for the MFI in Myanmar.

The adjustment subsystem is to explore the ideas solving the obstacles and substitute these

ideas at the obstacles in the current system. The functions of adjustment sub-system are presented as the items measuring hypothesis 13 and they are:

13a. We need to explore the ideas and strategies relieving the barriers of unbanked.

13b. We need to substitute these ideas and strategies in the hard current policies, barriers of unbanked.

13c. After these two are functioned, the unbanked satisfy and enter in the MFI.

If the respondents agree these assumptions, we can conclude that the adjustment subsystem is appropriate for Myanmar. We believe that unbanked are capable to access the MFI easily as the result of adjustment subsystem. Thus, we assume:

H13: Adjustment subsystem is suitable for applying at the MFI in Myanmar.

Service subsystem, which supports the training for the skill development of clients, is necessary. Because, we thought that they were unable to become self-employment and manage their income for installment repayment. The confirmations of the ability of unbanked for supporting the service subsystem to unbanked are stated as the items measuring hypothesis 14 and they are:

14a. Unbanked are low capacity and unable to increase their income by providing credit

14b. Unbanked are low financial literacy to manage their income

14c. Because of the above two statements, MFI require to sustain the training to unbanked.

If the respondents agree these statements, service subsystem is valuable for the MFI in Myanmar. Therefore, we offer:

H14: Service subsystem is valuable for the MFI in Myanmar.

The impact assessment subsystem are to monitor whether the number of clients increase after running the above three subsystems and evaluate the effectiveness of above three subsystems. Without the positive results obtaining from three subsystems, it is inappropriate to run these three subsystems. The functions of the impact assessment subsystem are expressed as the items measuring hypothesis 15 and they are:

15a. We ought to monitor whether the activities of the three subsystem is effective or not.

15b. We ought to evaluate the results of above three subsystems.

If the respondents agree these expressions, Impact assessment subsystem is needed for the MFI in Myanmar. Hence, we set:

H15: Impact assessment subsystem is needed for the MFI in Myanmar.

Access system included four subsystems is to improve the current system of MFI and facilitate the approach of unbanked to the MFI. By participating in the MFI, unbanked obtain many advantages, such as improvement of income and capacity. The advantages contributed by the access system are offered as the items measuring hypothesis 16 and they are:

16a. We necessitate to facilitate the approach of unbanked to the MFI or not.

16b. We necessitate to improve the livelihoods and capacity of the unbanked.

If the respondents agree these proposals, access system requires for the MFI in Myanmar. Consequently, we provide:

H16: Access system requires for the MFI in Myanmar.

## 4.2.2 Results of hypotheses

The answers for five hypotheses are a 5 point scale, ranging from 1= strongly disagree to 5= strongly agree.

When we prove hypothesis twelve, the inquisition subsystem is appropriate for the MFI in Myanmar,

$$K=3, \sigma_Y^2= 0.467, \sigma_X^2= 0.973$$

$$\alpha = \frac{K}{K-1} * \left(1 - \frac{\sum_{j=1}^k \sigma_Y^2}{\sigma_X^2}\right) = \frac{3}{2} * \left(1 - \frac{0.467}{0.973}\right) = 0.78$$

The reliability is good (Cronbach's  $\alpha=0.78$ ). Therefore, hypothesis 12 is acceptable. See Table C.

For proving hypothesis 13: the adjustment subsystem is suitable for applying at the MFI in Myanmar,

$$K=3, \sigma_Y^2= 0.457, \sigma_X^2= 0.912$$

$$\alpha = \frac{K}{K-1} * \left(1 - \frac{\sum_{j=1}^k \sigma_Y^2}{\sigma_X^2}\right) = \frac{3}{2} * \left(1 - \frac{0.457}{0.912}\right) = 0.757$$

The reliability is good (Cronbach's  $\alpha=0.757$ ). Therefore, hypothesis 13 is acceptable. See Table D.

To verify hypothesis 14: the service subsystem is valuable for the MFI in Myanmar,

$$K=3, \sigma_Y^2= 0.457, \sigma_X^2= 0.912$$

$$\alpha = \frac{K}{K-1} * \left(1 - \frac{\sum_{j=1}^k \sigma_Y^2}{\sigma_X^2}\right) = \frac{3}{2} * \left(1 - \frac{0.628}{1.623}\right) = 0.92$$

The reliability is excellent (Cronbach's  $\alpha=0.92$ ). Therefore, hypothesis 14 is acceptable. See Table E.

H15: Impact assessment subsystem is needed for the MFI in Myanmar.

$$K=2, \sigma_Y^2= 0.37, \sigma_X^2= 0.517$$

$$\alpha = \frac{K}{K-1} * \left(1 - \frac{\sum_{j=1}^k \sigma_Y^2}{\sigma_X^2}\right) = \frac{2}{1} * \left(1 - \frac{0.37}{0.517}\right) = 0.569$$

The reliability is poor (Cronbach's  $\alpha=0.569$ ) for hypothesis 15. See Table F.

We prove hypothesis 16, access system requires for the MFI in Myanmar, as follow,

$$K=2, \sigma_Y^2= 0.629, \sigma_X^2= 1.129$$

$$\alpha = \frac{K}{K-1} * \left(1 - \frac{\sum_{j=1}^k \sigma_Y^2}{\sigma_X^2}\right) = \frac{2}{1} * \left(1 - \frac{0.629}{1.129}\right) = 0.886$$

The reliability is good (Cronbach's  $\alpha=0.886$ ) for hypothesis 16. See Table G.

### **4.2.3 Results of open questions**

The summary of the answers of open questions are:

- a. How to operate the service subsystem in Myanmar?
- b. What are the functions of the service subsystem?
- c. The capacity of unbanked in Myanmar is poor. If the access system reduces some strict legal policies, it is dangerous for MFI by increasing the delinquency rate of MFI.
- d. How can you control delinquency rate in the access system?

### **4.3 Justification from the outlook of unbanked**

For justifying from the perspective of unbanked with four steps, a survey is operated with the 106 unbanked households for collecting the data. We assume two hypotheses for proving with the survey data.

#### **4.3.1 Drawing hypotheses for unbanked**

The two hypotheses, H17 and H18, are established for the ideal system.

The hypothesis 17 is to explore the satisfaction of non-clients on the door-to-door visit system, the ideal information contribution system. Most of the non-clients did not attend the current information contribution system. Thus, non-clients did not understand the microfinance programs clearly and some conflicts occurred. If door-to-door visit system can effectively contribute to the non-clients to comprehend about the microfinance programs, they will participate in the MFI.

We consider the four assumptions for proving the door-to-door visit system and they are:

- 17a. The unbanked clearly recognize about the many kinds of loans disbursing by MFI.
- 17b. The unbanked obviously understand about the legal policies of MFI.
- 17c. The unbanked evidently comprehend about the advantages of participating in the MFI.
- 17d. The unbanked like to join in MFI after appreciating about microfinance programs undoubtedly.

If the respondents agree these assumptions, we can conclude that the door-to-door visit system is effective. Then we arrange hypothesis 17:

H17: As door-to-door visit system can effectively distribute the information of microfinance programs, non-clients noticeably aware about the microfinance programs and will participate in the MFI.

The hypothesis 18 is to inquire the satisfaction of unbanked on the other ideal system of MFI excluded the information contribution system. The idea legal policies are the followings:

- a. Increase agricultural loan amount to cover farm's expense per acre

- b. Revoke the time limitation for borrowing the SME loans by substituting other grants from the unbanked
- c. Rescind the group based lending method for unbanked who can submit collateral (Harper, 2003)
- d. Alter the policy for the attendance of meeting on time
- e. Support the skill development training (Khandker, 1998, Morduch *et al.*, 2002 & Yunus, 2007)

We think that if these ideal policies provide convenience and benefit for the unbanked, unbanked will participate in the MFI. We consider the three questions as the statements for confirming hypothesis 18. Depending on the answers of these questions, we can conclude that whether the ideal system is applicable for Myanmar or not. The three questions and hypothesis 18 are:

18a. How much do you like the adjustments of MFI, which you choose?

18b. Do you think these modified policies facilitate for your accessibility to the MFI?

18c. Would you like to join in the MFI, after amending in the current system of MFI?

H18: If the ideal system supports ease and opportunity for the unbanked, unbanked will cooperate in the MFI.

### 4.3.2 Results from the perception of unbanked

#### Step 1: Analyzing two hypotheses

The answers were a 5 point scale, ranging from 1= strongly disagree to 5= strongly agree.

When proving hypothesis 17, As door-to-door visit system can effectively distribute the information of microfinance programs, non-clients noticeably aware about the microfinance programs and will participate in the MFI,

$$K=4, \sigma_X^2 = 3.9056, \sigma_Y^2 = 1.776$$

$$\alpha = \frac{K}{K-1} * \left( 1 - \frac{\sum_{j=1}^k \sigma_Y^2}{\sigma_X^2} \right) = \frac{4}{3} * \left( 1 - \frac{1.776}{3.9056} \right) = 0.727$$

The reliability is high (Cronbach's  $\alpha=0.727$ ). Therefore, hypothesis 17 is accepted. See Appendix Table H.

The satisfaction of unbanked on the five adjustments relates with the employment situations. Farmers satisfied with the increased agricultural loan amount because the previous agricultural loan amounts are not enough for farm expenses. SME owners like the rejection of time limitation for SME loans and the rejection of group based lending method. Part-time and migrant

employment favors the rejection of meeting, and skilled development training. Unemployment picks out the skilled development training. See Table 4.1.

Table 4.1. The satisfaction of unbanked on the ideal system

Adjustments	Employments				Total
	Farmer	SME	Part-time & Migrant	Unemployment	
a. Increased loan amount	3.77				3.77
b. Revoking time limitation for SME loans	6.60				6.60
c. Rescinding group based lending method	23.59				23.59
d. Altering the policy of attending meeting	23.59				23.59
e. Skill development training	25.47				28.30
f. No answer	5.66				14.15
Total	3.77	30.19	54.72	11.32	1

For verifying hypothesis 18, if the ideal system supports ease and opportunity for the unbanked, unbanked will cooperate in the MFI,

$$K= 3, \sigma_X^2 = 3.474, \sigma_Y^2 = 1.856$$

$$\alpha = \frac{K}{K-1} * \left(1 - \frac{\sum_{j=1}^k \sigma_Y^2}{\sigma_X^2}\right) = \frac{3}{2} * \left(1 - \frac{1.856}{3.474}\right) = 0.697$$

The reliability is acceptable (Cronbach's  $\alpha=0.697$ ). Therefore, hypothesis 18 is agreed and we can conclude that the ideal system is applicable for Myanmar. See Appendix Table I. In summary, these two hypotheses are accepted and the access system is valuable for unbanked in Myanmar.

## Step 2: Calculating active clients on the unbanked

For calculating the probability of active clients who want to join in the MFI depending on sample population of the non-clients and dropouts, mean is 4.41 and standard deviation is 1.043 depending on summarization of the answer (17d and 18c) of unbanked to join in MFI in the hypothesis 17 and 18. We assume that the proportion of non-clients point scale greater than 3

will participate in the MFI,  $P[X > 3]$ .

$$Z = (X - \mu) / \sigma$$

$$Z = (4 - 4.41) / 1.043 = -0.393$$

$$P[X \geq 4] = P[Z \geq -0.393]$$

$$= 1 - P[Z \leq -0.393]$$

$$= 1 - 0.3483$$

$$= 0.6517$$

### **Step 3: Calculating ideal result**

According to the secondary data of PACT, the number of total households in eight villages is 1759 households included 860 client households (48.89%), the others are unbanked households included non-client and dropout households. Regarding the calculating of active clients on the sample households, 0.6517 of unbanked will participate in the MFI. We can inference  $(899 * 0.6517 = 586)$  unbanked households will become active clients. Therefore,  $(860 + 586 = 1446)$  households of eight villages will become clients of the MFI as the result of ideal system.

### **Step 4: Comparing two results and conclusions**

If we compare the numbers of clients before and after ideal system, 33.32 % of client households increased after proposing the ideal system because the unbanked 586 households desire to join in MFI. After running the ideal system, 33.32% of unbanked are decreased. Access system can solve the obstacles of unbanked in the current system, contribute the satisfaction to the unbanked and improve the relationship between the unbanked and MFI. See Table 4.2.



Table 4.2. Comparing two results of before and after ideal system

Particular	Numbers of client before access system		Ideal result (Estimation depend on survey )		Compare number of clients before and after
	Number of Households	%	Number of Households	%	
Clients	860	48.89	1446	82.21	33.32% Increase
Unbanked	899	51.11	313	17.79	33.32% Decrease
Total	1759	100.00	1759	100.00	Good System

**4.4 Future research of justification**

Regarding the results of open questions with the officials, the functions of service subsystem and protection of the financial security of the MFI will be required to arrange as the emergence of new concepts from the criticism of officials.

In Cambodia, the borrowers who have low financial literacy and insufficient profit from their entrepreneurial activities to cover the debt obligation felt over indebtedness (Liv, 2013). Rural unbanked in Myanmar have low literacy and possess part-time and migrant employment. If we reduce the strict legal procedures for they can easily borrow loans, they will borrow the loans. We assume that if they cannot try to increase their income, they can also face the indebtedness. The indebtedness can also influence the microfinance institution by increasing delinquency rate. To prevent this evidence before happen in Myanmar, the MFI should support training programs to the clients to contributing knowledge and technology for business, financial management, animal husbandry and human capacity development. We thought that supporting training is positively related to keep both over indebtedness of borrowers and financial security of the MFI. The above assumption will be researched in the next chapter.

## Chapter5

# Preparing a Service System of Microfinance for Unbanked in Myanmar

### 5.1 Introduction

The objective of this paper is to create a service system to protect the security of financial system of microfinance and over indebtedness of unbanked by improving the capacity of unbanked. Then, creating service system is also an answer for the criticism of the officials in the justification of the access system. The service system is one of the sub-systems of the access system and the access system includes four sub-systems. The two subsystems of access system, inquisition and adjustment subsystem, is constructed to moderate the severe legal procedures of MFI for rural unbanked in Myanmar facilitating the approach of unbanked to a microfinance institution. If these two subsystems reduce legal policies and unbanked in Myanmar own low capacity, service subsystem keep the security of financial system of MFI and over indebtedness of the clients. Because unbanked in Myanmar possess low capacity. A service system involved six segments is created by operating *i*-System methodology again.

### 5.2 Intelligence dimension: the causes of over indebtedness and delinquency rate increment, and the strategy for controlling the over indebtedness and delinquency rate

At the intelligence dimension, we studied to answer the two questions: why delinquency rate increment occurs in the MFI and how to protect the delinquency rate increment of MFI, from the literature and existing research for solving the comments of the officials in the justification of access system.

#### (A) The causes of over indebtedness and delinquency rate increment

Microfinance institutions provide credits to the poor with these aims: to invest in their business, become self-employed and possess developed life by increasing their income. Regarding the literature review stated in chapter two, two kinds of the poor are found. When microfinance institution provides credits to the poor, one kind of the poor escapes from the poverty. Because this kind of poor has sufficient knowledge to increase their incomes, become self-employed and manage their income, though, they lack capital.

Nevertheless, the other kind of the poor confronts over-indebtedness because this kind of the poor lacks knowledge to improve their businesses and has low financial literacy to manage their income for repayment of the loan, mistakenly utilize the loans in the unproductive activities. Therefore, over-indebtedness occurred in Cambodia and some countries in the world, and

suicide case of farmers occurred in India. The defaulted repayments of borrowers are the delinquency rate increment of microfinance institutions (Field *et al.*, 2008). If considered the over-indebtedness evidence from the business perceptive, microfinance institutions encountered a failure as a result. In the figure 5.1, the causes of over indebtedness are illustrated with the blue arrows.

**(B) The strategy protecting over indebtedness and delinquency rate increment**

Regarding the evidences of BRAC and Grameen Bank stated in the literature reviews, when the poor can improve their knowledge, they can increase the income of their business, then, more discipline and dutifully pay their loan installment repayments. The microfinance institution requires to support nonfinancial services focusing on the capacity of clients and their current businesses to improve the capacity and income of the poor. By this way, microfinance institution can become a successful microfinance institution. In the figure 5.1, the strategy protecting the delinquency rate increment and over indebtedness are demonstrated with red arrows. Therefore, nonfinancial services are important for both microfinance institutions and the poor.

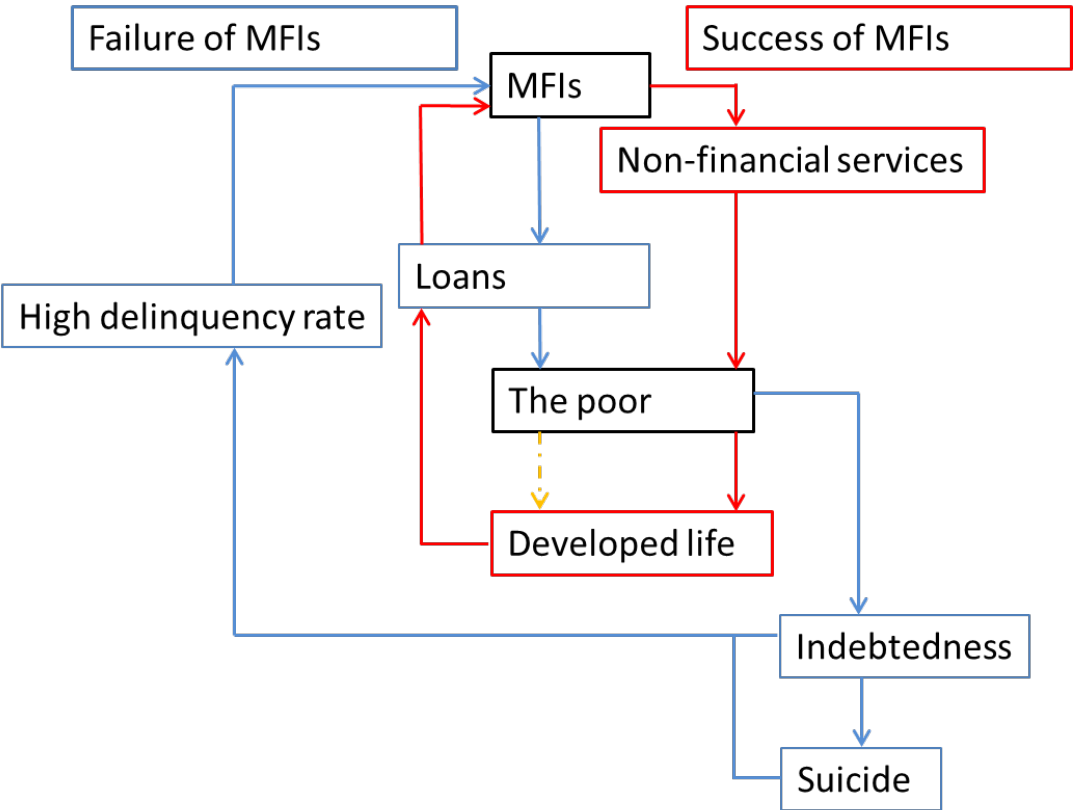


Figure 5.1. The causes and protecting strategy of over indebtedness and delinquency rate increment

### **(C) The strategy protecting delinquency rate in the access system**

Delinquency rate increment occurred from the incident of the defaulted loan as the result of low capacity of the poor. The MFI operates the strict legal policies for controlling delinquency rate. Because of these policies, the some of the unbanked in Myanmar had no opportunity to participate in MFI although they needed the loans. The access system is constructed for reducing the severe legal policies to remove this problem. If the access system is applied in Myanmar and the unbanked have low capacity, delinquency rate increment occurred. Therefore, the service subsystem in the access system is an important strategy for protecting delinquency rate.

### **5.3 Involvement dimension: the current capacity of unbanked in Myanmar**

We require to research the capacity of unbanked to defense the delinquency rate increment and arrange the service system for the unbanked in Myanmar. At the imagination dimension of i-System, we utilized the results of two surveys: the biographical data of unbanked and the opinions of unbaked for searching the capacity of unbanked in Myanmar. Regarding the result of hypothesis 14 in the justification of the service subsystem from the point of officials, we already knew that the unbanked could not try to obtain regular income by just supporting money and manage their income for installment repayment of their loan. Consequently, the unbanked occupy low capacity and necessary the services, skill development trainings. For the view of unbanked, two hypotheses are proposed and proved with the survey data using the Pearson's chi-square test for goodness of fit because of the categorical data.

#### **5.3.1 Drawing hypotheses for the perspectives of unbanked**

We assumed two hypotheses based on the literacy and employment to analyze the capacity of unbanked and they are:

$H_{19}$ : The unbanked in Myanmar have low capacity because they possess low literate level.

$H_{20}$ : The unbanked in Myanmar have low capacity because they own impermanent employment.

#### **5.3.2 Results of hypotheses**

These two hypotheses are proved by the survey data collected in September 2012. For proving hypothesis 19,

$H_{19}$ : The unbanked in Myanmar have low capacity because they possess low literate level.

$H_0$ : The unbanked in Myanmar have high capacity depending on their literacy.

Rejection region for  $H_0$

$$\chi^2 \geq \chi^2_{\alpha}$$

Where  $\chi^2_{\alpha}$  is the upper  $\alpha$  point of the  $\chi^2$  distribution with d.f.= k-1=5,  $\alpha = 0.05$

$$22.041 \geq 11.07$$

Therefore,  $H_0$  is rejected and we can conclude that the unbanked in Myanmar have low capacity rest on their literacy. See Table 5.1.

For proving hypothesis 20,

$H_{20}$ : The unbanked in Myanmar have low capacity because they own impermanent employment.

$H_0$ : The unbanked in Myanmar have high capacity center on their employment.

Rejection region for  $H_0$

$$\chi^2 \geq \chi^2_{\alpha}$$

Where  $\chi^2_{\alpha}$  is the upper  $\alpha$  point of the  $\chi^2$  distribution with d.f.= k-1= 3,  $\alpha = 0.05$   
 $16.073 \geq 7.815$

Therefore,  $H_0$  is rejected and we can conclude that the unbanked in Myanmar have low capacity focus on their employment. See Table 5.2.

Because of these two results of hypotheses 19 and 20, we conclude that unbanked in Myanmar occupy low capacity.

Table 5.1.  $H_{19}$ : The unbanked in Myanmar have low capacity because they possess low literate level.

Cell	Uneducated	Monastery	Primary	Secondary	Upper-secondary	Bachelor	total
Observation frequency <b>O</b>	28	30	28	10	9	1	106
Probability under $H_0$	0.264	0.283	0.264	0.094	0.085	0.01	1
Expected frequency <b>E</b>	27.984	29.998	27.984	9.964	9.01	1.06	106
$\frac{(O - E)^2}{E}$	9.148	1.333	9.148	1.3	1.109	0.003	22.041 = $\chi^2$ d.f.=5

Table 5.2.  $H_{20}$ : The unbanked in Myanmar have low capacity because they own impermanent employment.

Cell	Farmer	SME	Part-time & Migrant	Unemployment	Total
Observation frequency O	4	32	58	12	106
Probability under $H_0$	0.038	0.302	0.547	0.113	1
Expected frequency E	4.028	32.012	57.982	11.978	106
$\frac{(O - E)^2}{E}$	1.946	4.498	5.588	4.041	16.073= $\chi^2$ d.f.=3

## 5.4 Imagination dimension: the ideas for the service to provide unbanked in Myanmar

Although microfinance institutions provided the loan to the poor who needed cash assistance, some of the poor could not increase their incomes and manage their income for loan repayment. Then, the poor defaulted loan repayment and met indebtedness because they have low capacity. In addition, defaulted loan negatively effects on the security of financial system of MFIs. The unbanked in Myanmar lack the capacity by the results of hypotheses 14, 19 and 20. To protect the financial security of MFIs and over-indebtedness of unbanked, skill development training should be provided to the unbanked to improve their livelihoods.

At the imagination dimension of i-System, we explored the idea for the skilled development-training hang on the current occupation of the unbanked because the poor have low capacity to increase their incomes or improve their business and the objectives of MF is to improve the livelihoods of the poor(Oxenham, 2002).

While contributing the training, trainers should contribute just not only demonstrating but also participating actually together with the unbanked. Trainers should monitor the obstacles that unbanked can meet in actual work place. Then, trainers should teach the unbanked how to solve these obstacles. The trainers should evaluate whether the trainees, unbanked, can increase their income and business or not.

The employments of unbanked in Myanmar in the survey area are landholder farmers, small and micro business, part-time and migrant, and unemployment. For landholder farmers, trainers should sustain the agricultural knowledge that can increase the yield of crops, technology to utilize the agricultural machineries, and arrangement for hire or purchase the agricultural machineries by installment settlement system if the farmers cannot buy. Next, the trainers should offer the knowledge and technology that the farmers can produce their crops until the finished goods for example farmers can produce the rice by themselves and sell the rice in their local market instead of selling paddy, and a farmer can be a distributor for their

products in the local market. Moreover, trainers should support the knowledge and technology to produce export quality agricultural finished goods and export in international market by farmers.

For small and micro enterprise owners, the trainers should provide the suitable knowledge and technology to grow the current business and income, and develop new businesses. Next, the trainers should afford the knowledge to collaborate the same kinds of SME to be a medium business or cooperative group, produce quality product and penetrate in the local market. Then, the trainers should supply knowledge and technology to strengthen cooperative groups to be a cooperative society, produce export quality products as a representative of Myanmar and enter in the foreign market.

For part-time and migrant workers and unemployment, they have no permanent occupation and income. Therefore, at first, trainers should provide the knowledge to become self-employed in the non-farm sector: animal husbandry, art and craft, food, lacquered ware, porcelain, painting on the textile, weave of traditional textile etc. Next, the trainers should support the knowledge to unite the self-employee who performs the same kinds of business to become self-help groups. Then, the trainers should sustain the knowledge for the self-help groups can organize a cooperative group, penetrate in the local market and can produce quality products. Moreover, trainers should contribute knowledge for cooperative groups combine as a cooperative society, produce export quality products and penetrate in the foreign market.

In summary, among the three employment types, part-time and migrant and unemployment workers have impermanent labor. For this kind of unbanked should commence with the knowledge how to become self-employment. For other kinds of employment should launch with the knowledge and technology to grow their businesses. Only if unbanked, trainees can utilize this knowledge and technology in their businesses, trainers should provide the trainees with more upgraded training until they can penetrate in the foreign markets. Therefore, we summarize all the idea for three kinds of employment, and divide four levels of skill development training for the non-financial service: introductory, basic, intermediate and advanced level. Introductory level is for the impermanent jobholders to support the knowledge how to create the employment in non-farm activities. The basic level contributes the knowledge that can improve the current businesses of trainees and can penetrate in the market of the city near their villages. The knowledge contributed at the intermediate level can strengthen the businesses of the trainees by collaboration the same businesses, increase the quality of products and penetrate in the local market of the country. The advanced level distributes the knowledge to create successful economic cooperative society as a representative of the country and penetrate in the transnational market. See Table 5.3.

Table 5.3 The idea of nonfinancial service for unbanked in Myanmar

	Levels of Lecture				
	Employments	Knowledge, technology and machine			
		The market of city		Local market of the country	International market
		Intro	Basic	Intermediate	Advance
Lectures	1.Landholder farmers		-Increase the yield of crops	-Organize agricultural cooperative groups -Produce finished agricultural products -Penetrate in the local market	-Organize an agricultural cooperative society -Produce export quality product as a remark of Myanmar -Penetrate to the foreign market
	2. Small & micro enterprise		-Improve current business -Build new business	-Organize medium business or cooperative groups -Produce quality products -Penetrate in the local market	-Organize a successful cooperative society -Produce export quality products as a representative of Myanmar Penetrate in the foreign market
	3. Part-time & Migrant workers, Unemployment	Self-employed	-Build self-help groups	-Organize cooperative groups -Produce quality products -Penetrate in the local market	-Organize cooperative society -Produce export quality product -Penetrate in the foreign market



## **5.5 Integration dimension: the inspiration of the service system of microfinance for unbanked in Myanmar**

Integration dimension of the i-System summarize the data collected at the three dimensions of i-System with the purpose to constructed a service system defending the over indebtedness of unbanked and delinquency rate of MFI. The service system is created on these data, such as the causes of over indebtedness, the strategy to protect over indebtedness, the capacity of unbanked in Myanmar and the idea to improve the livelihoods of unbanked collected at the three dimension of i-System.

We chose to construct the service centered on the current occupations of unbanked for they own the ability to grow their businesses. Therefore, we need to know about their biography included occupation and literacy. Depending on the biography, we require to search the related knowledge, technology and teaching methods to distribute to the trainees, unbanked, at the first phase (Laird *et al.*, 2003).

After collected all the essential knowledge and technology, the knowledge should be categorized at the second phase because we intend to distribute the knowledge to trainees from the current situations of the trainees until becoming successful business men and representative persons of the country, and trainees have different kinds of occupation. While searching the ideas for service, we divided three kinds of lecture and four levels for each lecture.

After arranging the lectures, when the trainers distribute the knowledge to trainees, trainers should distribute by demonstration and practical training for the trainees cannot meet obstacles in the actual work place. Distribution methods to distribute lectures effectively to trainee are considered as the third phase.

After supporting the lecture, we need to monitor the effectiveness and weakness of the lectures, and evaluate whether the lectures are useful for the trainees in actual work places. Therefore, the monitor and evaluation are added at the fourth phase.

After collecting the feedbacks of unbanked and weakness of the training, the knowledge is researched again to solve the weakness of the training at the fifth phase.

The training syllabuses are modified to remove weakness at the six phases.

This process with six phases, such as searching the knowledge, organizing the knowledge, distributing the knowledge, monitoring and evaluating, researching the knowledge and reorganizing the knowledge, runs the service subsystem of the access system. See Figure 5.2.

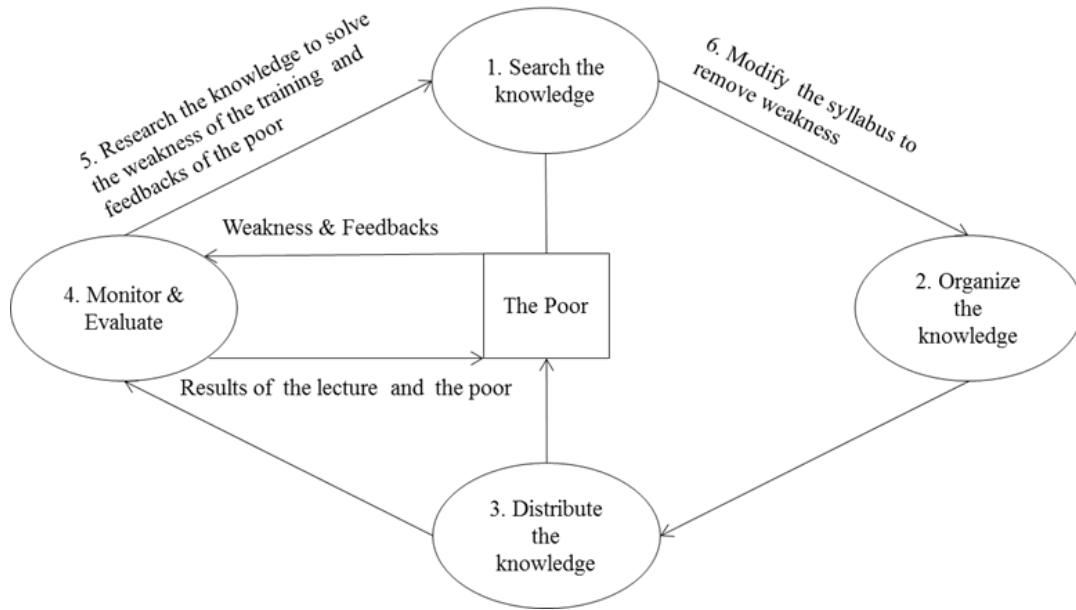


Figure 5.2. A proposed service system for unbanked in Myanmar

## Chapter 6

### Discussion

The current system of MFI comprises three portions, such as information contribution, loans and legal policies. MFI communicate to the unbanked by clarifying the way to approach to MFI from the information contribution. Rural unbanked connect by borrowing the loans together with the following the legal policies to MFI. The communication between two parties, MFI and its customers, circulated from MFI to unbanked, and from unbanked to MFI interactively. The affiliation between these two parties is the current system. The obstacles in this current system appeared for the some unbanked. Consequently, half of the targeted people in the project area of MFI were unable to participate in the microfinance programs because of the happening of the conflicts between the employment situations of unbanked and the current system of MFI. A system is created based on selected ideal strategies for each obstacle in the current system. The current system involves the strategy for access to MFI; however, it does not encompass the strategy for solving the problems. Hence, access system reducing the incident in the current system of MFI is surrounded at the current system of MFI. This system intends to improve the current system of MFI and the relationship between MFI and its customers.

Although the reliability for impact assessment subsystem is poor, other four reliabilities are good and excellent. Around 33% of non-clients and dropouts have desire to participate in the MFI when MFI changes some inconsistent legal policies by running the access system. Therefore, the access system has ability to improve the relationship between the MFI and its customers, and support customer satisfaction for MFI. However, we will require to prepare the functions of service subsystem and to protect the financial security of the MFI as the emergence of new concepts from the criticism of officials and it will carry out as the future work.

The chapter 5 proposed a service system involved in the access system that is created to protect the security of financial system of microfinance and over-indebtedness of the unbanked by improving the capacity of unbanked. Although MFI provide the loans to the poor for the development of the poor, the poor were unable to improve their livelihoods and confront over indebtedness because of the low capacity of the poor. This over indebtedness effects on the MFI as the delinquency rate increment. The reasonable strategy for cover these two negative effects are to endorse the skilled development training to the poor. We imagine three kinds of lectures and four levels for each lecture depending on three kinds of employment from the current situations of unbanked to be a representative person of the country. Then, the process for nonfinancial service training based on the ideas is prepared as a service system included six phases such as searching knowledge, organizing knowledge, distributing knowledge, monitoring and evaluating, researching knowledge, and reorganizing knowledge.

## Chapter 7

### Conclusion and Future Work

#### 7.1 Conclusion

This research is carried out with three portions: construction of access system, justification of access system and preparing the service system. The construction of access system is the first objective of this research and the justification of access system is the second objective of this research. The preparing service system is the emergence of new concepts from justifying the access system by the evolutionary constructive objectivism.

This research started with the aims to construct a system reducing the inconsistency policies in the current system of microfinance institution for facilitating the approach of unbanked in Myanmar. We studied the legal policies from the vision of the local unbanked to reduce the obstacles in the current system of microfinance institution as the originality of this research while many authors studied the legal policies of microfinance from the view of the microfinance institutions for the security of financial system of microfinance institutions. The *i*-System methodology together with a survey was applied for collecting the data constructing a system. In September 2013, a pilot survey was held with the officials and a survey was held with the unbanked in the two township of Central Myanmar. The current system of microfinance institution involve three portions for performing the credits with the unbanked and it is a single relationship between microfinance institution and unbanked in Myanmar. When the conflicts occurred between the current system and the situations of unbanked, half of the targeted people lose the opportunities to join in the microfinance programs and became dropouts and non-clients. Regarding the pilot survey, we appreciated thirteen obstacles in the current system of MFI for the unbanked. Moreover, these obstacles are related with the employment situations of unbanked. When these obstacles are confirmed with the survey data of unbanked, we can accept these obstacles. The current system has no functions for problem searching and problem solving improved the relationship between two parties: MFI and its customers. A system included four sub-systems is created with the idea of officials and idea from the literature review, and complemented in the current system to expand the functions of the current system of MFI and the relationship between MFI and its clients. The access system reducing the incident in the current system of MFI is surrounded at the current system of MFI.

After constructing a conceptual system, we require to test whether it is applicable or not. We chose justification to keep the time. The access system is justified from the two perspectives of officials and unbanked. Evolutionary falsification principle and emergence principle in the evolutionary constructive objectivism are utilized as the research method for justifying the access system from the perspective of officials. A survey and four steps of justification process are operated for justifying from the view of unbanked. Although the reliability for impact assessment subsystem is poor, other five reliabilities are good and excellent. The officials believe that access system enable to improve the current system of microfinance institution. When MFI changes some inconsistent legal policies by running the access system, around 33% of non-clients and

dropouts have desire to participate in the MFI. Therefore, the access system has ability to improve the relationship between the MFI and its customers, and support customer satisfaction for MFI. However, there are some necessities for preparing the functions of service subsystem and for protecting the financial security of the MFI as the emergence of new concepts from the criticism of officials.

We prepare a service system as the emergence of new concepts from justifying the access system by the evolutionary constructive objectivism for controlling both the delinquency rate increment and the over indebtedness by improving the capacity of unbanked. The service system is one of the sub-systems of the access system and the access system includes four sub-systems. If the inquisition and adjustment subsystem of the access system diminish the hard legal policies of MFI for facilitating the approach of unbanked to a microfinance institution and unbanked in Myanmar own low capacity, the delinquency increment and over indebtedness occurred. The service subsystem keeps the security of financial system of MFI and over indebtedness of the clients. We created a service system by operating *i*-System methodology again. The idea for skilled development training are three kinds of lectures and four levels for each lecture depending on three kinds of employment of unbanked for improving the livelihoods of unbanked. Then, the process for nonfinancial service training based on these ideas is prepared as a service system included six phases such as searching knowledge, organizing knowledge, distributing knowledge, monitoring and evaluating, researching knowledge, and reorganizing knowledge.

We hope the access system can contribute the improvement in the relationship between MFI and its customers, defense both the delinquency rate increment of MFI and the over indebtedness of the unbanked in Myanmar, and progress the livelihood of rural unbanked in Myanmar.

## **7.2 Future research**

This service system will be verified by comparing the socioeconomic factors of unbanked in Myanmar before and after participating in the microfinance programs as the future research because the aim of service system is to protect the security of financial system of microfinance by providing the skill development training and to improve the livelihoods of unbanked in Myanmar.

**“For Constructing the Access System”  
Pilot Survey’s Questionnaires for Officials**

Township name :

1. What kinds of marital status are found in your village?
2. What kinds of literate level do the rural unbanked possess?
3. How many levels of poverty can be assigned for the rural unbanked?
4. What kinds of employment do rural unbanked possess?
5. Why are the unbanked unable to participate in MFI? (or) What kinds of obstacles do rural unbanked face in the current system of MFI?

**“For constructing the Access System”**

**Questionnaires For Dormant or Dropouts**

Township name :

Village name :

Household headed name:

**(A)** What is your marital status? Please choose one from the followings.

- 1. Married
- 2. Single

**(B)** What is your literate level? Please choose one from the followings.

- 1.Uneducated
- 2.Monastery
- 3.Primary
- 4.Secondary
- 5.Upper secondary
- 6.Bachelor

**(C)** What is your household-headed name?

(We search their poverty level in the data of rural appraisal of PACT office with the household-headed name)

- 1.A
- 2.B
- 3.C
- 4.D

**(D)** What is your employment or business?

- 1.Landholder Farmer
- 2.Small and micro enterprise
- 3.Part-time & migrant (included landless farmer, casual seller and casual worker)
- 4.Dependent or unemployment

**(E)** Which factors in the current system are inconsistency with you for participating in MF programs? Choose one conflict among the following conflicts.

Current System	Conflicts	Yes	Neutral	No
		1	2	3
Loans	<input type="checkbox"/> 1.Unneeded cash assistance			
	<input type="checkbox"/> 2.Small loan amount			
Criteria	<input type="checkbox"/> 3.Over age			
	<input type="checkbox"/> 4.Impermanent resident			
	<input type="checkbox"/> 5.Health problem			
Rule	<input type="checkbox"/> 6.Rule defaulter			
	<input type="checkbox"/> 7.Loan defaulter			
Regulations	<input type="checkbox"/> 8.Obligation for loan defaulters in the groups			
Others	<input type="checkbox"/> 9.Rigorto be a group member			



## "For Constructing the Access System"

### Questionnaires for non-clients

Township name :

Village name :

Household headed name:

**(A)** How do you know PACT MFI?

- 1.Hearing from others in the village
- 2.Attended Pact's meeting
- 3.Others\_ Please Specify\_\_\_\_\_

**(B)** Why are you absent to attend the meeting of PACT holding at your village?

- 1.Unknown
- 2.Meeting time when I was at my work
- 3.Uninteresting
- 4.Unneeded cash assistance

**(C)** What is your marital status? Please choose one from the followings.

- 1. Married
- 2. Single

**(D)** What is your literate level? Please choose one from the followings.

- 1.Uneducated
- 2.Monastery
- 3.Primary
- 4.Secondary
- 5.Upper secondary
- 6.Bachelor

**(E)** What is your household-headed name?

(We search their poverty level in the data of rural appraisal of PACT office with the household-headed name)

- 1.A
- 2.B
- 3.C
- 4.D

**(F)** What is your employment or business?

- 1.Landholder Farmer
- 2.Small and micro enterprise
- 3.Part-time & migrant (included landless farmer, casual seller and casual worker)
- 4.Dependent or unemployment

**(G)** Which factors in the current system are inconsistency with you for participating in MF programs? Choose one conflict among the following conflicts.

Current System	Conflicts	Yes	Neutral	No
		1	2	3
Loans	<input type="checkbox"/> 1.Unneeded cash assistance			
	<input type="checkbox"/> 2.Small loan amount			
Criteria	<input type="checkbox"/> 3.Over age			
	<input type="checkbox"/> 4.Impermanent resident			
	<input type="checkbox"/> 5.Health problem			
Rule	<input type="checkbox"/> 6.Rule defaulter			
	<input type="checkbox"/> 7.Loan defaulter			
Regulations	<input type="checkbox"/> 8.Obligation for loan defaulters in the groups			
Others	<input type="checkbox"/> 9.Rigorto be a group member			

**“For Constructing the Access System”**

**Questionnaires for gathering the ideas from the officials to solve the conflicts in the current system**

1. What kinds of information contribution system should operative in Myanmar?

Because we found that, the current information contribution is ineffective and inconsistent with the rural unbanked in Myanmar.

-----  
-----  
-----  
-----

2. How would you like to solve the following conflicts in the current system of MFI?

Conflicts in the current system	Idea
1. Ineffective information contribution system	
2. Unneeded cash assistance	
3. Small loans	
4. Over age	
5. Impermanent resident	
6. Health issue	
7. Ruler defaulter	
8. Loan defaulter	
9. Obligation for loan defaulter	
10. Obstacle for receiving group recommendation	

**“For justification”**

**Questionnaires for ideal system of MFI (Officials)**

I would like to obtain your opinion for my proposed access system of MFI for utility in Myanmar. IF this system has any deficits or weak points, pleas point out the weak point and give your comments. Impossible 2. Poor 3. Fair 4. Good 5. Excellent

No.	Particular	1	2	3	4	5
H12	Inquisition subsystem is appropriate for the MFI in Myanmar.					
12a	We require to find the biography of unbanked as the facts causing the problem.					
12b	We require to find the inconsistent legal policies in the current system of MFI as the facts causing the problem.					
12c	We require to consider the causes of conflict for solving the obstacles in the MFI.					
H13	Adjustment subsystem is suitable for applying at the MFI in Myanmar.					
13a.	We need to explore the ideas and strategies relieving the barriers of unbanked.					
13b.	We need to substitute these ideas and strategies in the hard current policies, barriers of unbanked.					
13c.	After these two are functioned, the unbanked satisfy and enter in the MFI.					
H14	Service subsystem is valuable for the MFI in Myanmar.					
14a	Unbanked are low capacity and unable to increase their income by providing credit					
14b	Unbanked are low financial literacy to manage their income					
14c	Because of the above two statements, MFI require to sustain the training to unbanked.					
H15	Impact assessment subsystem is needed for the MFI in Myanmar.					
15a.	We ought to monitor whether the activities of the three subsystem is effective or not.					

15b.	We ought to evaluate the results of above three subsystems.					
H16	Access system requires for the MFI in Myanmar.					
16a	We necessitate to facilitate the approach of unbanked to the MFI or not.					
16b	We necessitate to improve the livelihoods and capacity of the unbanked.					

If you have any other comments, please write

-----  
-----  
-----  
-----

Thanks for your answer.

**“For justification”**

**Questionnaires for Door-to-door visit system (Non-clients)**

After finish door-to-door visit system,

Assumptions for hypothesis 17	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
The unbanked clearly recognize about the many kinds of loans disbursing by MFI.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The unbanked obviously understand about the legal policies of MFI.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The unbanked evidently comprehend about the advantages of participating in the MFI.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The unbanked like to join in MFI after appreciating about microfinance programs undoubtedly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**“For justification”**

**Questionnaires for ideal system of MFI excluded the information contribution system**

**(Non-clients & Dropouts)**

1. What is your occupation?

- 1. Farmer
- 2. Small and micro enterprise owner
- 3. Part-time & migrant
- 4. Unemployment or dependent

2. What one do you prefer among the following statements or ideal policies of MFI?

- a. Increase agricultural loan amount to cover farm’s expense per acre
- b. Revoke the time limitation for borrowing the SME loans by substituting other grants from the unbanked
- c. Rescind the group based lending method for unbanked who can submit collateral (Harper, 2003)
- d. Alter the policy for the attendance of meeting on time
- e. Support the skilled development training

3. If you chose one from the questions 2, please answer the three questions in questions number 3.

Assumptions for hypothesis 18		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
18a	How much do you like the above adjustments of MFI, which you choose?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18b	Do you think these modified policies facilitate for your accessibility to the MFI?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18c	After amending in the current system of MFI, would you like to join in the MFI?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Appendix

Table A: Data of non-clients for constructing an access system

A	B	C	D	E	F	G								
						Loans		Criteria			Rules			Others
						1	2	3	4	5	6	7	8	9
1	4	1	2	1	1	1	2							
1	4	2	2	1	1	1	3							
1	4	1	5	1	1	1	3							
1	3	1	3	1	2		1						3	
1	3	1	3	1	2		1						3	
1	3	1	5	2	2		1						2	
1	3	1	5	2	2		1						3	
1	2	1	1	2	2		2						1	
1	2	1	1	2	2		2						1	
1	2	1	1	2	2		2						1	
1	2	1	1	2	2		3						1	
1	2	1	1	3	2		3						1	
1	2	1	3	3	2		3						1	
1	2	1	3	3	2		3						1	
1	2	1	3	3	2		3						1	
1	2	1	4	3	2		3						1	
1	2	2	4	3	2		3						1	
1	2	1	3	3	2		3						1	
1	2	1	3	3	2		3						1	
1	2	1	5	3	2		3						1	
1	2	1	3	3	3			3	1		3	3		
1	2	1	1	3	3			3	1		3	3		
1	2	1	1	3	3			3	1		3	3		
1	2	1	3	3	3			3	1		3	3		
1	3	2	3	3	3			3	1		3	3		
1	2	1	3	3	3			3	1		3	3		
1	2	1	5	3	3			3	1		3	3		
1	2	2	5	3	3			3	1		3	3		
1	2	1	3	3	3			3	3		1	3		
1	2	1	3	3	3			3	3		1	3		
1	2	1	3	3	3			3	3		1	3		
1	2	1	3	3	3			3	3		1	3		
1	2	1	1	3	3			3	3		1	3		



1	1	1	1	4	3			3	3		1	3		
1	2	1	2	4	3			3	3		1	3		
1	2	1	1	4	3			3	3		1	3		
1	2	1	3	4	3			3	3		1	3		
1	2	1	3	4	3			3	3		1	3		
1	2	1	2	4	3			3	3		1	3		
2		1	1	3	3			3	3		1	3		
2		1	3	3	3			3	3		1	3		
2		1	4	3	3			3	3		1	3		
2		1	3	3	3			3	3		1	3		
2		1	1	3	3			3	3		1	3		
1	3	1	1	2	4			1		3				3
1	3	1	1	3	4			1		3				3
1	3	1	3	3	4			1		3				3
1	3	1	4	3	4			3		3				1
1	3	1	3	3	4			3		3				1
1	3	1	5	3	4			3		3				1

Table B: Data of dropouts for constructing an access system

A	B	C	D	E									
				Loans		Criteria			Rules			Others	
				1	2	3	4	5	6	7	8	9	
1	2	1	1	3	1								
1	2	1	2		1							3	
1	2	1	2		1							3	
1	2	1	2		1							3	
1	3	2	2		2							1	
2	6	2	2		2							1	
1	4	2	2		2							1	
1	3	2	2		3							1	
1	2	2	2		3							1	
1	2	2	2		3							1	
1	2	2	2		3							1	
1	2	2	2		3							1	
1	2	2	2		3							1	
1	2	3	2		3							1	
1	2	3	2		3							1	
1	4	3	2		3							1	
1	4	3	3			3	1		3	3			
1	1	3	3			3	1		3	3			
1	4	3	3			3	1		3	3			
1	2	3	3			3	1		3	3			
1	4	3	3			3	1		3	3			
1	2	3	3			3	1		3	3			
1	2	3	3			3	1		3	3			
1	5	4	3			3	1		3	3			
1	1	4	3			3	1		3	3			
1	1	3	3			1	3		3	3			
2	1	3	3			1	3		3	3			
1	4	3	3			1	3		3	3			
1	2	4	3			1	3		3	3			
1	1	4	3			1	3		3	3			
2	1	4	3			1	3		3	3			
1	1	3	3			3	3		1	3			
1	1	3	3			3	3		1	3			
1	1	3	3			3	3		1	3			
1	5	3	3			3	3		1	3			

1	3	3	3			3	3		1	3		
1	2	3	3			3	3		1	3		
1	2	3	3			3	3		1	3		
1	2	3	3			3	3		1	3		
1	3	3	3			3	3		1	3		
1	3	3	3			3	3		1	3		
1	2	3	3			3	3		1	3		
2	2	3	3			3	3		1	3		
1	3	3	3			3	3		1	3		
2	1	3	3			3	3		1	3		
1	2	3	3			3	3		1	3		
1	3	4	3			3	3		1	3		
1	1	4	3			3	3		1	3		
1	2	3	3			3	3		0	1		
1	2	3	3			3	3		0	1		
1	1	3	4			1			0	0		
1	2	3	4			1			0	0		
1	2	3	4			1			0	0		
1	1	2	4					1	0	0		
1	2	3	4					1	0	0		
1	1	4	4					1	0	0		

TableC: Hypothesis 12: Inquisition subsystem is useful for MFI in Myanmar

No.	Claims for hypothesis 12			X-Total	$\sigma_X^2$
	1a	1b	1c		
1	5	5	5	15	
2	4	5	5	14	
3	5	5	5	15	
4	5	5	5	15	
5	4	4	5	13	
6	5	5	5	15	
7	5	5	5	15	
8	5	5	5	15	
9	4	4	4	12	
10	4	5	5	14	
11	5	5	5	15	
12	5	5	5	15	
13	5	5	5	15	
14	5	5	5	15	0.9733333
15	5	5	5	15	
16	4	4	4	12	
17	4	5	5	14	
18	4	5	5	14	
19	5	5	5	15	
20	5	5	5	15	
21	4	4	4	12	
22	4	5	5	14	
23	4	4	5	13	
24	5	5	5	15	
25	5	5	5	15	
26	5	5	5	15	
27	5	5	5	15	
28	5	5	5	15	
29	5	5	5	15	
30	5	5	5	15	
Y-Total	140	145	147	432	
$\sigma_Y^2$	0.2298851	0.1436782	0.0931034	0.4666667	

TableD: Hypothesis 13: Adjustment subsystem is suitable for applying at the MFI in Myanmar.

No.	Assumptions for hypothesis 13			X-Total	$\sigma_x^2$
	13a	13b	13c		
1	4	4	4	12	0.912
2	4	4	4	12	
3	5	5	4	14	
4	4	5	5	14	
5	4	4	4	12	
6	5	5	5	15	
7	4	4	4	12	
8	4	4	4	12	
9	4	4	5	13	
10	4	4	5	13	
11	4	4	4	12	
12	4	4	4	12	
13	4	4	4	12	
14	5	4	5	14	
15	4	4	4	12	
16	4	4	4	12	
17	4	4	4	12	
18	4	4	4	12	
19	5	5	5	15	
20	5	4	4	13	
21	4	4	4	12	
22	4	4	4	12	
23	4	4	4	12	
24	4	5	5	14	
25	4	4	4	12	
26	4	4	4	12	
27	4	4	4	12	
28	4	4	4	12	
29	4	4	4	12	
30	4	4	4	12	
Y-Total	125	125	127	377	
$\sigma_Y^2$	0.139	0.139	0.179	0.457	

Table E: Hypothesis 14: Service subsystem is valuable for the MFI in Myanmar.

No.	Assumption of hypothesis 14			X-total	$\sigma_x^2$
	3a	3b	3c		
1	4	5	4	13	1.623
2	5	5	5	15	
3	5	5	5	15	
4	4	4	4	12	
5	5	5	5	15	
6	5	5	5	15	
7	5	5	5	15	
8	5	5	5	15	
9	5	5	5	15	
10	5	5	5	15	
11	4	5	5	14	
12	5	5	5	15	
13	5	5	5	15	
14	4	4	4	12	
15	5	4	5	14	
16	5	5	5	15	
17	4	4	4	12	
18	4	4	4	12	
19	4	4	4	12	
20	4	4	4	12	
21	5	5	5	15	
22	4	4	4	12	
23	5	5	5	15	
24	4	4	5	13	
25	5	5	5	15	
26	5	5	5	15	
27	5	5	5	15	
28	5	5	5	15	
29	5	5	5	15	
30	5	5	5	15	
Y-total	140	141	142	423	
$\sigma_y^2$	0.222	0.21	0.196	0.628	

Table F: Hypothesis 15: Impact assessment subsystem is needed for the MFI in Myanmar.

No.	Assumptions for hypothesis 15		X-total	$\sigma_x^2$
	15a	15b		
1	4	4	8	0.517
2	4	4	8	
3	5	5	10	
4	4	5	9	
5	4	4	8	
6	4	4	8	
7	4	4	8	
8	4	4	8	
9	4	4	8	
10	4	4	8	
11	4	4	8	
12	4	4	8	
13	4	5	9	
14	5	5	10	
15	5	5	10	
16	5	5	10	
17	4	5	9	
18	4	4	8	
19	4	4	8	
20	5	4	9	
21	4	4	8	
22	4	4	8	
23	4	4	8	
24	4	4	8	
25	4	4	8	
26	4	5	9	
27	4	5	9	
28	4	4	8	
29	5	4	9	
30	4	4	8	
Y-total	126	129	255	
$\sigma_y^2$	0.16	0.21	0.37	

Table G : Hypothesis 16: Access system requires for the MFI in Myanmar.

No.	Assumptions of hypothesis 16			$\sigma_X^2$
	5a	5b	X-total	
1	4	4	8	1.129
2	5	5	10	
3	4	4	8	
4	4	4	8	
5	4	4	8	
6	4	4	8	
7	4	4	8	
8	4	4	8	
9	4	4	8	
10	4	4	8	
11	4	4	8	
12	4	4	8	
13	4	4	8	
14	5	5	10	
15	5	4	9	
16	5	5	10	
17	4	4	8	
18	4	4	8	
19	5	5	10	
20	5	5	10	
21	5	4	9	
22	4	4	8	
23	4	4	8	
24	4	4	8	
25	4	4	8	
26	3	3	6	
27	3	3	6	
28	3	3	6	
29	4	5	9	
30	5	4	9	
Y-total	125	123	248	
$\sigma_Y^2$	0.339	0.29	0.629	



Table H: Hypothesis 17: Door-to-door visit system can effectively distribute the information of microfinance programs.

No.	Assumptions for hypothesis 17					$\sigma_x^2$
	17a	17b	17c	17d	total	
1	5	4	4	2	15	3.9056
2	4	4	4	2	14	
3	5	5	5	2	17	
4	5	5	4	5	19	
5	5	4	4	5	18	
6	5	4	4	5	18	
7	5	4	4	5	18	
8	5	4	4	5	18	
9	5	4	4	5	18	
10	5	4	5	5	19	
11	5	4	5	5	19	
12	5	4	5	5	19	
13	5	4	4	5	18	
14	5	4	4	5	18	
15	5	4	4	5	18	
16	5	5	5	5	20	
17	5	5	5	5	20	
18	5	5	4	5	19	
19	5	5	4	5	19	
20	5	5	4	5	19	
21	5	4	4	5	18	
22	5	4	4	5	18	
23	5	4	4	5	18	
24	5	4	4	5	18	
25	5	5	4	5	19	
26	5	4	4	5	18	
27	5	4	4	5	18	
28	5	4	4	5	18	
29	5	5	4	5	19	
30	5	5	4	5	19	
31	5	5	4	5	19	
32	5	5	4	5	19	
33	5	4	4	5	18	
34	5	4	4	5	18	
35	5	4	4	5	18	
36	5	4	4	5	18	

37	5	5	4	5	19	
38	5	5	4	5	19	
39	5	5	5	5	20	
40	5	5	5	5	20	
41	5	5	5	5	20	
42	5	5	4	5	19	
43	5	5	4	5	19	
44	5	5	5	5	20	
45	4	4	4	2	14	
46	3	3	3	2	11	
47	4	3	3	2	12	
48	4	4	4	4	16	
49	3	4	3	4	14	
50	4	3	4	4	15	
Total	241	217	207	229	894	
$\sigma^2$	0.228	0.344	0.240	0.964	<b>1.776</b>	
$\sigma$				0.982		
$\mu$				4.58		

Table I: Hypothesis 18: The ideal system supports ease and opportunity for the unbanked in Myanmar.

No.	Assumptions for hypothesis 18			X-total	$\sigma_x^2$
	18a	18b	18c		
NC1	4	4	2	10	3.474
2	4	4	2	10	
3	3	3	2	8	
4	5	5	5	15	
5	5	4	4	13	
6	4	4	5	13	
7	4	4	4	12	
8	5	4	5	14	
9	5	4	5	14	
10	4	4	5	13	
11	4	4	5	13	
12	5	5	5	15	
13	4	5	5	14	
14	5	5	5	15	
15	5	4	5	14	
16	4	4	5	13	
17	5	4	5	14	
18	4	5	5	14	
19	5	5	4	14	
20	5	4	4	13	
21	5	4	5	14	
22	5	4	5	14	
23	5	4	5	14	
24	5	4	5	14	
25	5	5	5	15	
26	4	5	5	14	
27	4	5	5	14	
28	5	4	5	14	
29	5	4	5	14	
30	5	4	5	14	
31	5	4	5	14	
32	5	4	5	14	
33	5	5	5	15	
34	5	5	5	15	
35	5	4	5	14	
36	4	4	5	13	
37	4	4	4	12	

38	5	5	5	15	
39	5	4	5	14	
40	5	4	5	14	
41	4	4	5	13	
42	4	4	4	12	
43	5	4	5	14	
44	5	5	5	15	
45	3	4	2	9	
46	3	3	2	8	
47	3	3	2	8	
48	5	4	4	13	
49	5	4	4	13	
50	4	5	4	13	
DO-51	5	4	4	13	
52	4	5	4	13	
53	5	5	4	14	
54	5	4	5	14	
55	5	4	5	14	
56	4	4	5	13	
57	5	5	5	15	
58	4	5	5	14	
59	4	5	5	14	
60	5	5	5	15	
61	5	4	5	14	
62	5	4	5	14	
63	5	5	5	15	
64	4	5	4	13	
65	4	5	4	13	
66	4	4	4	12	
67	4	4	5	13	
68	4	4	5	13	
69	4	4	5	13	
70	4	4	5	13	
71	4	5	5	14	
72	5	5	5	15	
73	5	5	4	14	
74	5	4	5	14	
75	4	4	5	13	
76	4	4	2	10	
77	4	4	2	10	

78	3	3	3	9	
79	4	4	3	11	
80	3	4	2	9	
81	3	3	2	8	
82	5	5	5	15	
83	5	4	5	14	
84	5	5	5	15	
85	4	5	5	14	
86	4	5	5	14	
87	5	5	5	15	
88	5	5	4	14	
89	5	5	5	15	
90	5	5	5	15	
91	5	5	5	15	
92	4	4	5	13	
93	5	4	5	14	
94	4	5	5	14	
95	5	5	4	14	
96	5	5	4	14	
97	5	5	4	14	
98	4	5	5	14	
99	4	4	5	13	
100	4	4	5	13	
101	4	4	2	10	
102	4	4	2	10	
103	4	4	2	10	
104	3	4	2	9	
105	4	4	3	11	
106	3	4	2	9	
Y-total	469	459	459	1387	
$\sigma_Y^2$	0.414	0.316	1.127	1.856	
$\sigma$			1.06152		
$\mu$			4.33		

## References

1. Adams, D. W., Graham, D. H., & Von Pischke, J. D. (1983). *Limitations of cheap credit in promoting rural development*. World Bank, EDI Training Materials, Washington, D.C.
2. Adams, D. W., & Fitchett, D. A. (Eds.). (1992). *Informal finance in low-income countries* (p. 393). Boulder, CO: Westview Press.
3. Andersen, B. (Ed.). (2000). *Knowledge and Innovation in the New service economy*. Edward Elgar Publishing.
4. Atkinson, A. B. (1987). On the measurement of poverty. *Econometrica: Journal of the Econometric Society*, 749-764.
5. Binswanger, H. P., & Landell-Mills, P. (1995). *The World Bank's strategy for reducing poverty and hunger: a report to the development community*. Environ. Sustainable Dev.(ESD) Stud. Monogr. Ser. No. 4. Washington, DC: World Bank.
6. Braverman, A., & Guasch, J. L. (1986). "Rural credit markets and institutions in developing countries: Lessons for policy analysis from practice and modern theory". *World Development*, 14(10), 1253-1267.
7. CGAP (Consultative Group to Assist the Poorest). (1997). "A Review of the World Bank's Microfinance Portfolio, 1991-1996" World Bank: Washington, D.C.
8. Checkland, P.B. (1981), *Systems Thinking, Systems Practice*, John Wiley & Sons, New York.
9. Checkland, P. (1999). *Soft Systems Methodology: a 30-year retrospective*, John Wiley & Sons, New York.
10. Chhikara, K.S., and Kodan, A.S. (2012). Farmers Indebtedness in Haryana: An Assessment, *International Journal of Advanced Research in Management and Social Sciences* 1(1), 81-100.
11. Chiumya, C. (2006), "The Regulation of Microfinance Institutions: A Zambian Case Study", Thesis (PhD), University of Manchester, available at: [http://www.microfinancegateway.org/gm/document-1.9.24551/46210\\_file\\_complete\\_thesis.pdf](http://www.microfinancegateway.org/gm/document-1.9.24551/46210_file_complete_thesis.pdf) (accessed 20 December 2011).
12. Cronbach LJ (1951). "Coefficient alpha and the internal structure of tests". *Psychometrika* 16(3): 297-334. [doi:10.1007/bf02310555](https://doi.org/10.1007/bf02310555).
13. Daley-Harris, S. (2002). *Pathways out of poverty: Innovations in microfinance for the poorest families*. Kum.
14. Field, E., & Pande, R. (2008). Repayment frequency and default in microfinance: Evidence from India. *Journal of the European Economic Association*, 6(2 - 3), 501-509.
15. Fuchs, V. R. (1968). *The Service Economy*, New York: National Bureau of Economic Research, Columbia University Press.
16. Gallardo, J. (2001), *A Framework for Regulating Microfinance Institutions: The Experience in Ghana and the Philippines*, Financial Sector Development Department, World Bank, available at: <http://elibrary.worldbank.org/doi/book/10.1596/1813-9450-2755?queryID=40%2F4170089> (accessed 20 December 2011).

17. Ghate, P. (1992). *Informal finance: some findings from Asia*. London: Oxford University Press.
18. Hardy, D.C., Holden, P., and Prokopenko, V. (2002), "Microfinance Institutions and Public Policy", International Monetary Fund WP/02/159, New York, USA, available at: <http://papers.ssrn.com/sol3/papers.cfm> (accessed 20 January 2012).
19. Harper, M. (2003), *Practical Microfinance-A Training Manual*, Southampton, London.
20. Hill, T. P. (1977). On goods and services. *Review of income and wealth*, 23(4), 315-338.
21. Hoff, K., & Stiglitz, J. E. (1990). "Introduction: Imperfect information and rural credit markets: Puzzles and policy perspectives". *The World Bank Economic Review* 4(3): 235-250.
22. Hulme, D. (2000). Impact assessment methodologies for microfinance: theory, experience and better practice. *World development*, 28(1), 79-98.
23. Johnson, R. A., and Bhattacharyya, G.K. (1996). *Statistics: principles and methods*. John Wiley & Sons.
24. Kappel, V., Krauss, A., & Lontzek, L. (2010). *Over-Indebtedness and Microfinance—Constructing an Early Warning Index* (UMM Workshop Report). University of Zurich.
25. Khandker, S. R., Khalily, M. B., & Khan, Z. H. (1995). *Grameen Bank: performance and sustainability* (Vol. 306). World Bank Publications.
26. Khandker, S.R. (1996). "Grameen Bank: Impact, Costs, and Program Sustainability". *Asian Development Review* 14 (1), 97-130.
27. Khandker, S. R., & Khalily, M. B. (1996). *The Bangladesh rural advancement committee's credit programs: performance and sustainability* (Vol. 324). World Bank Publications.
28. Khandker, S.R. (1998). *Fighting Poverty with Microcredit: Experience in Bangladesh*, Oxford University, New York.
29. King, K., & Palmer, R. (2006). Skills development and poverty reduction: the state of the art. *Postbasic education and training working paper*, (7).
30. Laird, D., Holton, E. F., & Naquin, S. S. (2003). *Approaches To Training And Development: Revised And Updated*. Basic Books.
31. Lhing, N.N., Shinkai, S., Hotta, K. and Nanseki, T. (2010), "The Effects of PACT Microfinance Program in the Dry Zone Area of Central Myanmar", *Journal of Faculty of Agriculture, Kyushu University*, Vol.55 No.1, pp. 173-180.
32. Littlefield, E., Morduch, J., & Hashemi, S. (2003). Is microfinance an effective strategy to reach the Millennium Development Goals? *Focus Note*, 24(2003), 1-11.
33. Liv, D. (2013), "Study on the Drivers of Over-Indebtedness of Microfinance Borrowers in Cambodia: An In-depth Investigation of Saturated Areas", Final Report, Cambodia Institute of Development Study, March, available at: <http://www.blueorchard.com/wp-content/uploads/2013/05/OID-Final-Report.pdf> (accessed 10 June 2013).
34. MacEwan, A. (2007). *The Meaning of Poverty*. Department of Economics, University of Massachusetts Boston.
35. Maurer, K., & Pytkowska, J. (2010). Indebtedness of Microcredit Clients in Bosnia and Herzegovina, Results from a comprehensive field study. *European Fund for Southeast*

- Europe (EFSE), from <http://www.efse.lu/likecms.php?site=site.html&nav=77&siteid=163&entryid=0&sp=0>
36. Meagher, P. (2002), "Microfinance Regulation in Developing Countries: A Comparative Review of Current Practice", IRIS Center, University of Maryland, available at: <http://scholar.google.co.jp/scholar> (accessed 5 December 2011).
  37. Morduch, J., and Haley, B. (2002), "Analysis of the Effects of Microfinance on Poverty Reduction", working paper no. 1014, New York University Wagner Working Paper, 28 June, available at: <http://www.nyu.edu/wanger/workingpapers.html> (accessed 27 October 2011).
  38. Nogales, X.E. (2011). Social Performance Management at BlueOrchard. Retrieved December 10, 2011, from <http://www.blueorchard.com>
  39. Nakamori, Y., Wierzbicki, A. P., & Zhu, Z. (2011). A theory of knowledge construction systems. *Systems Research and Behavioral Science*, 28(1), 15-39.
  40. Nakamori, Y. (Ed.). (2011). *Knowledge Science: Modeling the Knowledge Creation Process*. CRC Press.
  41. Nakamori, Y. (2012), *Knowledge Science-Modeling the Knowledge Creation Process*, Taylor& Francis Group, New York.
  42. Nakamori, Y. (2013). *Knowledge and Systems Science: Enabling Systemic Knowledge Synthesis*. CRC Press.
  43. Nakamori, Y. (2013). Knowledge reconstruction and justification for regional vitalization. *Journal of Systems Science and Systems Engineering*, 22(4), 457-468.
  44. Ogwumike, F. O. (2002). An appraisal of poverty reduction strategies in Nigeria. *CBN Economic and Financial Review*, 39(4), 1-17.
  45. Oxenham, J. (2002). Skills and literacy training for better livelihoods: a review of approaches and experiences.
  46. PACT (Private Agency Collaborations Together). (2010). *40 Years Annual Report 2010*. available at: <http://www.pactworld.org/cs/asia/myanmar> (accessed 16 February 2012).
  47. PACT (Private Agency Collaborations Together), (2010). *Sustainable Microfinance to Improve the Livelihoods of the Poor (MYA/01/004) Project*, Annual Report 2010.
  48. PACT (Private Agency Collaborations Together), (2012). *Synthesis Report: Impact Evaluation Report*, Annual Report 2012.
  49. Palmer, R. (2007). Skills for work?: From skills development to decent livelihoods in Ghana's rural informal economy. *International Journal of Educational Development*, 27(4), 397-420.
  50. Polak, P. (2008). *Out of poverty. What Works When Traditional Approaches Fail*, Berrett-Koehler publishers, San Francisco.
  51. Rahman, R. I., Mondal, A. H., & Islam, R. (2012). *Mapping and analysis of growth-oriented industrial sub-sectors and their skill requirements in Bangladesh* (Employment sector employment. Report no. 17). Geneva, Switzerland: International Labor Office. Retrieved April 5, 2014, from [http://www.skillsforemployment.org/KSP/en/Details/?dn=FM11G\\_012416](http://www.skillsforemployment.org/KSP/en/Details/?dn=FM11G_012416)
  52. Ray, J. K. (1987). *To chase a miracle: A study of the Grameen Bank of Bangladesh*. University Press.



53. Schicks, J. (2010). Microfinance Over-Indebtedness: Understanding its drivers and challenging the common myths. *Bruxelles: Centre Emilee Bergheim, Solvay School of Business, CEB Working Paper*, (10/048).
54. Singelmann, J. (1978). *From agriculture to services: The transformation of industrial employment* (Vol. 69), Beverly Hills and London: Sage Publications.
55. Saha, S. R. (2011). Working Through Ambiguity: International NGOs in Myanmar. *The Hauser Center for Nonprofit Organizations, Harvard University*.
56. Turnell, S. R. (2005). A survey of microfinance institutions in Burma. *Burma Economic Watch*, 1, 26-50.
57. UNCTAD (United Nations Conference on Trade and Development), (2011), *The Least Developed Countries Report 2011*, UN, New York and Geneva, available at: <http://www.unctad.org/ldcr> (accessed 12 January 2012).
58. UNDP (United Nations Development Program), (2011), *Poverty Profile*, UNDP, Myanmar, available at <http://www.mm.undp.org/content/myanmar/en/home/library/poverty/publication> (accessed 15 December 2011).
59. UNDP (United Nations Development Program), (2011), *MDG DATA Report*, UNDP, Myanmar, available at: <http://www.mm.undp.org/content/myanmar/en/home/library/poverty/mdgdatareport> (accessed 15 December 2011)
60. UNDP (United Nations Development Program), (2011), *Poverty Dynamics Report*, UNDP, Myanmar, available at: <http://www.mm.undp.org/content/myanmar/en/home/library/poverty/povertydynamic> (accessed 15 December 2011).
61. DESA (Department of Economic and Social Affairs). *The Twin Challenges of Reducing Poverty and Creating Employment*, UN publication, UN: New York.
62. Wierzbicki, A.P., and Nakamori, Y. (2007), *Testing knowledge creating theories*. Presented at IFIP-TC7 Conference. Krakow, Poland, July 23-27.
63. World Bank, (1990), *World development report 1990: Poverty*. New York: Oxford University press.
64. World Bank, (1992), *Successful Rural Finance Institutions*. World Bank Discussion Paper 150. Washington, D. C.
65. World Bank, (2012), *World Development Indicators 2012*, World Bank Publications, USA, available at: <http://data.worldbank.org/news/world-development-indicators-2012-now-available> (15 January 2014).
66. World Bank (2004), *World Development Report: Making Services Work for Poor People*, World Bank and Oxford University Press. Retrieved January 10, 2012, from <http://elibrary.worldbank.org/doi/abs/10.1596/0-8213-5637-2>
67. Yunus, M. (1984). Group-based savings and credit for the rural poor: the Grameen Bank in Bangladesh. In *Group-based savings and credit for the rural poor: papers & proceedings of a workshop, Bogra, Bangladesh, 6-10 November 1983/sponsored by the United Nations Inter-Agency Panel on People's Participation*.

68. Yunus, M., and Welber, K. (2007), *Creating a world without poverty: Social business and the future of capitalism*, Public Affairs, New York.
69. Retrieved February 12, 2012, from [http://en.wikipedia.org/wiki/Service\\_%28economics%29](http://en.wikipedia.org/wiki/Service_%28economics%29)
70. Retrieved February 12, 2012, from [http://en.wikipedia.org/wiki/Service\\_economy](http://en.wikipedia.org/wiki/Service_economy)
71. Retrieved February 12, 2012, from [http://en.wikipedia.org/wiki/Financial\\_services](http://en.wikipedia.org/wiki/Financial_services)
72. Retrieved February 12, 2012, from [http://en.wikipedia.org/wiki/Social\\_work](http://en.wikipedia.org/wiki/Social_work)
73. Retrieved February 12, 2012, from [http://en.wikipedia.org/wiki/Service\\_system](http://en.wikipedia.org/wiki/Service_system)
74. Retrieved February 12, 2012, from [http://en.wikipedia.org/wiki/Service\\_design](http://en.wikipedia.org/wiki/Service_design)
75. Retrieved May 4, 2014, from <http://en.wikipedia.org/wiki/System>

## **Publication**

### **Journal papers:**

Aye, H.P., and Nakamori, Y., Preparing a Service System of Microfinance for Unbanked in Myanmar, *International Journal of Knowledge and Systems Science, International Journal of Knowledge and Systems Science (IJKSS)* , 5 (2).

Aye, H.P., and Nakamori, Y., Constructing an Access System of Myanmar Unbanked People to a Microfinance Institution, *Journal of Systems Science and Systems Engineering*, submitted in July 9, 2013, under review.

### **Conference paper:**

Aye, H.P., and Nakamori, Y. (2013), "Constructing a Client Recruitment System for Rural Myanmar Unbanked to Access PACT Microfinance Institution", paper presented at *The 57th World Conference of the International Society for the Systems Sciences*, 14-19 July 2013, Hai Phong, Viet Nam. 2013-2010.