

# Analysis of Risk Management Practices by using Ordinary Least Squares Regression (OLS) method in the case of select Micro Finance Institutions(MFIs) in Telangana State of India

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*Abstract:-* Microfinance institutions have emerged as an alternative solution by targeting the poor through innovative lending approaches, including group lending, progressive lending, regular repayment schedules, and collateral substitutes. The Micro finance sector in India is fast growing with a branch network of 9894 branches, and employee base of 75, 085 provided credit to over 2.85 crore clients with loan outstanding of Rs. 37,988 crores and Par 30 under 1 % ( Microscope, FY 2014-15) The main challenge of microfinance is to create social benefits and promote low income households by providing financial services without any suitable guarantees. It is in this context that the risk management practices gain priority in maintaining financial health of these institutions. This study attempts to find relationship between Risk management practices of select microfinance institutions and risk variables. Understanding risk and risk management, Risk identifications, Risk assessment and analysis, Risk monitoring and control and Credit risk management are the independent variables while Risk management practices is the dependent variable. The Ordinary least squares method (OLS) method of regression was used in this study in order to investigate this relationship and it is observed that there is a positive relationship between Risk variables of RAA( Risk analysis and Assessment), RMC (Risk monitoring and Control) and RI (Risk Identification) and Risk management practices of microfinance Institutions of Telangana state (India) while there is negative relationship between URRM (understanding risk and risk management ) and Credit risk management practices and Risk management practices in general. In addition it is observed that Risk Monitoring and control is making the most contribution in explaining the dependent variable. These are infact partially in line with the findings of Hussien & Faris (2007) Sifunjo & Robert (2014), Mwangi (2013), Norell (2001).

*Key words:* Risk management , Micro finance , Micro credit & Credit risk management

## 1. Introduction

The micro finance sector in India today is on a path of steady growth and is undergoing substantial change building on regulatory support and the common shared industry infrastructure ( such as credit information system, publicly available industry information/ data analysis and self

regulatory among others). During financial year 2014/2015, the NBFC-MFI industry has shown strong growth and strengthened its position to provide much needed credit to the under/ unbanked population in the country. In the year 2014/2015 NBFC-MFIs with a branch network of 9894 branches, and employee base of 75, 085 provided credit to over 2.85 crore clients with loan

outstanding of Rs. 37,988 crores and Par 30 under 1 % ( Microscape, FY 2014-15) The concept of micro credit – extension of small loans without collateral, based on Joint liability was pioneered by Dr. Muhammed Yunus in 1976 in Bangladesh. Ever since nations look towards microfinance as a means to alleviate poverty.

Along with risk management practices it is imperative to stress on credit risk management. A study in United Kingdom concluded that where sound credit management practices are in place and training is carried out, portfolio quality is improved (Wilson 2008). When a microfinance institution's growth is too rapid, staff were concerned with meeting targets for growth as set by management. This relaxes lending discipline which results in increase in risk, especially credit risk.

Microfinance institutions have emerged as an alternative solution by targeting the poor through innovative lending approaches, including group lending, progressive lending, regular repayment schedules, and collateral substitutes (Thapa, 2006). According to Churchill and Frankiewicz (2006, 21-22) the most common microfinance products include Income-generating loans (for the aforementioned entrepreneurial activities), emergency and consumption loans (in case of natural catastrophes or family deaths), housing loans, leasing (new forms of micro leasing e.g.: cattle), savings, insurance, payment services and nonfinancial services such as social intermediation, business development, social service and consulting or technical assistance. Robinson says that microfinance services in general can help low-income people reduce the personal risk of going default, improve management capabilities, raise productivity, obtain higher returns on investments, increase their incomes and improve the quality of their lives and those of their dependents such as children and other family members (Robinson, 2001).

## 2. Microfinance business in India

The number of households facing financial exclusion in India is around 129 million. Micro finance institutions are uniquely positioned to facilitate financial inclusion and provide financial services to a clientele poorer and more vulnerable

than the traditional bank clientele. Microcredit being the most common product offering ( CRISIL, 2008). Most MFIs in India are solely engaged in extending micro credit; a few also extend savings, thrift, insurance, pension and remittance facilities.

Micro credit in India is synonymous with microcredit . This is because savings, thrift and micro insurance constitute a miniscule segment of microfinance space. In India most microfinance loans are in the range of Rs. 5000 and Rs. 20,000 ( the development and regulation bill, 2007, defines micro finance loans as loans with amounts not exceeding Rs. 50,000 in aggregate per individual/ small enterprise). MFIs usually adopt the group based lending model which are of two types, the Self help group (SHG) and the Joint liability group (JLG)

Once the world's leader, India's microfinance industry went through a severe crisis, when the state of Andhra Pradesh witnessed a mass default of microfinance borrowers in 2010. Combined with allegations of over-indebtedness and coercive recovery practices, this reflected poorly on microfinance institutions (MFIs) and the industry at large, undermining investor and consumer trust in the sector(IFC world bank group, 2013)

Andhra Pradesh was the most penetrated state for microfinance loans during FY 95 – FY 10. Even under SHG – Bank linkage model, AP had over 50% share in a number of credit SHGs. In 2010, MFIs exposure to AP was 29% ( INR 52.1 bn on 31<sup>st</sup> March 2010). A poor household in AP in FY10 held about INR87,728 as debt, out of which about INR27,000 was borrowed from MFIs. Considering the average outstanding of INR8,270(Bharat Microfinance Reports, FY10,FY11 –Sa-Dhan), each average poor household borrowed from at least three MFIs at a time.

As a result of the AP crisis and reluctance of banks to sanction fresh loans to MFIs, the sector's outreach has come down to 20 million clients and portfolio has dipped to Rs14,700 crore ( < \$3 billion) from a high of Rs22,500 crore (\$4.5 billion) in October 2010. This crisis has led to the loss of financial inclusion for nearly 7 million clients (Memorandum: Third Annual Seminar onRisk in Indian Microfinance at the College of Agricultural Banking, Reserve Bank of India campus, Pune 18 February 2013)

After AP crisis the Reserve Bank of India (RBI) set up a committee called the Malegam committee to investigate the various activities and impact of MFIs across the country and to make relevant recommendations on improving their performance. After Malegam committee report, RBI issued a set of guidelines to cover the operations of NBFCs functioning as MFIs in 2012. As a result of these new guidelines a new category NBFC-MFI was created. Further it was specified that all NBFCs undertaking microfinance business and having a capitalization of 5 crores and having 85% or more of their exposure in microfinance portfolio should immediately apply for NBFC – MFI (<http://rbidocs.rbi.org.in/rdocs/notification/PDFs/49010713MFIFL.pdf>)

According to Sa-Dhan report (2015) 80% of MFIs have PAR (portfolio at Risk) < 1 for 30days and only about 8% of MFIs have a PAR of more than 5%. Approximately 12% of MFIs have PAR in the range of 1 -3%. Another important indication of portfolio quality is overdue installments beyond 180 days. The pending installment amount is Rs. 2860 crore as of march 2015 which is higher compared to march 2014 (1424 crores).

### 3.Review of relevant Literature

#### Meaning of Micro Finance-

Microfinance is defined as the attempt to improve access to small deposits and loans for poor household neglected by banks (Schreiner and Colombet 2001). “Microfinance is commonly associated with small, working capital loans that are invested in microenterprises or income-generating activities” (Churchill and Frankiewicz, 2006, 18).

According to Otero (1999) Micro finance is ‘the provision of financial services to low income poor and very poor self employed people. Since microfinance is a system that distributes small loans to poor people in order for them to generate income and start their own small businesses, it has the ability to lessen poverty as well as promote entrepreneurship, social and economic development in poor communities (Lazar 2008).

Today however microfinance is referred to more generally as the provision of financial services to those excluded from the formal financial system ( UNCDF, 2002)

Microfinance institutions have emerged as an alternative solution by targeting the poor through innovative lending approaches, including group lending, progressive lending, regular repayment schedules, and collateral substitutes (Thapa, 2006). Micro-finance institutions (MFIs) offer loans and/or technical assistance in business development to low-income community in developing countries. Therefore, MFI should be an effective development agent and alleviate poverty (OECD, 1996).

The Reserve Bank of India (RBI) and National Bank for Agriculture and Rural Development (NABARD) define microfinance as Provision of thrift, credit and other financial services and products of very small amounts to the poor in rural, semi-urban or urban areas for enabling them to raise their income levels and in improving living standards. Further RBI defines an NBFC MFI as “ a non-deposit taking NBFC (other than a company licensed under Section 25 of the Indian Companies Act, 1956) with Minimum Net Owned Funds of Rs.5 crore (for NBFC-MFIs registered in the North Eastern Region of the country, it will be Rs. 2 crore) and having not less than 85% of its net assets as “qualifying assets”. The Micro finance Institutions ( Development and regulation) Bill, 2012 of India, defines Micro finance Institution as

- a society registered under the Societies Registration Act, 1860; or
- a company registered under section 3 of the Companies Act, 1956; or
- a trust established under any law for the time being in force; or
- a body corporate; or
- any other organization, as may be specified by the Reserve Bank,

The object of which is to provide micro finance services in such manner as may be specified by regulations. Further, "micro finance services" means any one or more of the following financial services provided by any micro finance institution, namely:

(A) micro credit facilities involving such amount, not exceeding in aggregate five lakh rupees for each individual and for such special purposes, as may be specified by the Reserve Bank from time to time, such higher amount, not exceeding ten lakh rupees, as may be prescribed;

(B) collection of thrift;

- (C) pension or insurance services;  
 (D) remittance of funds to individuals within India subject to prior approval of the Reserve Bank and such other terms and conditions, as may be specified by regulations;  
 (E) any other such services, as may be specified.

### Types of Micro finance

There are different categories of microfinance institutions as numerated by different authors. Lafourcade et al.(2005) has identified three categories of that is regulated ( banks, regulated non – bank financial intermediaries, and regulated NGOs), cooperatives ( financial cooperatives and credit unions)and unregulated ( NGOs, Non bank intermediaries, MFI projects and others).

Ayayi (2008) has conducted a study on MFIs of Vietnam and categorized MFIs into three main categories, formal , semi formal and informal based on the type of institution, regulations and strategies involved.

Greuning et al. (1999) categorized MFIs into three broad categories (i) MFIs which depend on other people's money, (ii) MFIs which depend on members money and (iii) MFIs which leverage public money

Crisil (2008) discusses the grouping of microfinance institutions with respect to the legal structure into Not for profit MFIs, Mutual benefit MFIs and For profit MFIs.

Yvonne Mawuko(2013) introduced five key structures or categories of microfinance institutions identified: these are Rotating Savings and Credit Associations (ROSCAs); the Grameen Solidarity Group Model; the Village Banking Structure; Microfinance Integrated with Social Services (MFISS) and Credit with Education.

As per the Directory of Microfinance institutions (MFIs) in India (2014), incorporation of MFIs under different acts of the country determines the legal form. The common legal forms include Society, trust, Cooperative, section 25 company, Non banking finance company (NBFC).

Empirical literature on risk management practice and credit risk management of microfinance institutions

In the study titled” An Appraisal of Risk Management Practices of Microfinance Institutions in Ghana” conducted by Akwasi A. Boateng & Gilbert O. Boateng( 2014), It was discovered that

the barriers to microfinance institutions success includes numerous and varied obstacles. Studies conducted confirmed microfinance institutions managements are ignorant pertaining to the risks their organizations face with risk management techniques deployed reactively and ineffectively. By embedding a structured approach to enterprise risk management within MFIs, potential benefits such as reducing the over-management of risks and organizational alignment towards the microfinance institution's mission can be realized. This study used secondary data sources for drawing these conclusions.

The study titled “Banks risk management : A comparison of UAE national and foreign banks” by , Hussein A. Hassan Al-Tamimi & Faris Mohammed Al-Mazrooei(2007) tried to examine the degree to which UAE banks use risk management practices and techniques in dealing with different types of risk. This study has used Cronbach's alpha, descriptive statistics, regression analysis and one-way ANOVA

Another study titled “Risk management practices among commercial banks in Ghana”, conducted by Seyram Pearl Kumah1\* Yakubu Awudu Sare (2013) studied the determinants risk management practices among commercial banks in Ghana using a multiple regression model with risk management practices as the dependent variable and Understanding risk, risk identification, risk assessment and analysis and risk monitoring as the independent variable.

In a study conducted by Oguntoyinbo M. (2011), titled “Credit risk assessment of the microfinance Industry in Nigeria: An application to Accion Microfinance Bank Limited”, Use of a ‘Daily Collection Board , Collections in Group Meetings, Rotation of Loan Accounts, Periodic Review of Passbooks, and . Disbursements Made from Branch Offices are methods adopted by Microfinance Banks to meliorate risks inherent to their mode of operations.

In a study titled ‘factors affecting microfinance institutions credit risk management practices in Kenya’, the researcher **Daniel . L.Mwangi studied** the credit risk management practices in micro finance institutions in Kenya using market concentration , portfolio quality and market infrastructure as independent variables and credit

risk management practices as dependent variables". This study used descriptive analysis and correlation. **Nagarajan (2011)** in his study of credit risk management practices for microfinance institutions in Mozambique found that risk management is a dynamic process that could ideally be developed during normal times and tested at the wake of risk. The study concluded that financial institutions needed to minimize risks related losses through diligent management of portfolio and cash-flow by building robust institutional infrastructure with skilled human resources and inculcating client discipline, through effective coordination of stakeholders.

In study on Credit risk management strategies for Malaysian financial institutions Fun Ho and Yusoff (2009) found that loan diversification, risk mitigation, credit reminder, credit criteria, credit culture and staff training are the most popular strategies.

A close analysis of literature reveals that there are several studies conducted in banking and other financial areas in risk management practices and credit risk management (Akwasi et.al( 2014), Seyram Pearl et.al,(2014), Hussien & Faris (2007), Hassan (2007), and very few on risk management in microfinance sector. Similarly there are several studies conducted relating to microfinance institutions, however most of these studies are concentrated around outreach, sustainability and profitability(Berhanu (2007), Alemayehu (2008) Letenah (2009) Aklilu (2002) Gashaw Tsegaye Ayele ( 2014) Borchgrevink and et. al (2005)). These studies examined performance of MFIs with little or no indication of risk involved and strategies adopted especially in relation to credit risk management, There are several other studies such as Yonas(2012), Sima (2013), Melkamu (2012) all examining out reach and financial performance but none about risk management practices of microfinance institutions. Moreover most of these studies are masters thesis with limited scope.

Thus, to surmise there are several studies focused on the risk management practices of commercial banks and other financial institutions Similarly a number of studies have been conducted on outreach, sustainability and financial performance of microfinance institutions.

Further **Waweru and Spraakman( 2012)** carried out a case study on the use of performance measures in three Microfinance institutions and found that the commercial or bank like nature of microfinance institutions suggests that techniques used in banking can also apply to microfinance sector

There is no empirical study conducted on the risk management practices of microfinance institutions in Telangana state especially with special reference to credit risk management to the best of the researcher's knowledge. Having identified this major gap in research and realized the importance of identifying and assessing risk management practices, this study attempts to explore and assess the various risk management practices that are adopted by select microfinance institutions in Telangana state, India

#### **4.Research Methodology followed in this study**

The purpose of this study is to assess the relationship between variables contributing towards risk management and risk management practices of microfinance institutions in the state of Telangana India. Accordingly a descriptive research design is used to focus on the credit risk management practices of microfinance institutions headquartered in Telangana state. Research methodology followed is summarized in the following sections

i. **Research design** : A descriptive research design is used in this study.. A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Claire Selltiz 1962). Descriptive research design utilizes elements of both quantitative and qualitative research methodologies to offer description of the state of affairs as it exists at present (Creswell, 2007). As such a descriptive research design is found suitable for this study.

ii. **Research Objectives & Hypothesis** The main objective of this study is to focus on the risk management practices of microfinance institutions in India, especially of those that are headquartered in Telangana state.

The study has the following specific research objectives –

1. To study the relationship between risk variables ( risk assessment and analysis,

Risk identification, understanding risk and risk management, risk monitoring and control and credit risk management practices) and Risk management practices of microfinance institutions in in India (Telangana state)

2. To identify the most contributing variable towards risk management
3. To identify the various types of risk categories facing the microfinance institutions

**iii. Hypothesis**

On the basis of relevant literature review and specific and general objectives of the study, the following hypothesis are derived

*Hypothesis 1*

*H1<sub>0</sub>: There is a positive relationship between Risk Management practices and risk variables across select microfinance institutions(MFIs)in Telangana.*

*H1<sub>1</sub>: There is no positive relationship between Risk management practices and risk variables across select microfinance institutions(MFIs)in Telangana*

*Hypothesis 2*

*H2<sub>0</sub>: Credit risk management is the strongest contributing factor in explaining Risk management practices among the risk variables across select microfinance institutions(MFIs)in Telangana*

*H2<sub>1</sub>: Credit risk management is not the strongest contributing factor in explaining Risk management practices among the risk variables across select microfinance institutions(MFIs)in Telangana*

These hypothesis attempts to assess the impact of risk variables on risk management practices across select micro finance institutions (MFIs) in Telangana state. The independent variables that are identified are : ( risk assessment and analysis, Risk identification, understanding risk and risk management, risk monitoring and control and credit risk management practices

**iv. Model specification**

This study uses Ordinary least squares(OLS) regression model specified below –

*For Hypothesis H<sub>1</sub>:*

$$Rmp_i = \beta_0 + \beta_1(RAA)_i + \beta_2(RI)_i + \beta_3(URRM)_i + \beta_4(RMC)_i + \beta_5(CRM)_i + \epsilon_i$$

*i=1 . . . n*

where *Rmp<sub>i</sub>* - Risk management practices  
*RAA* = Risk assessment and analysis  
*RI* = Risk identification  
*URRM* = Understanding risk and risk management  
*RMC* = Risk monitoring and control  
*CRM* = Credit risk management practices  
*subscript i* denote the cross sectional dimension and *n* represents the number of respondents

**v. Variables used in the study:**

This study is focused on the Risk management practices of select microfinance institutions therefore, Risk management is the dependent variable. The description of the dependent and independent variable is presented briefly as follows( table 1):

**Table 1: Showing variable description**

Dependent Variables	Independent Variable	Variable Description
Risk Management Practices	Risk assessment and analysis (RAA)	<ul style="list-style-type: none"> <li>• Use of qualitative and quantitative methods</li> <li>• Assessment of costs and benefits of addressing risks</li> <li>• Prioritization of risks</li> </ul>
	Risk Identification(RI)	<ul style="list-style-type: none"> <li>• Comprehensive and systematic identification of risks</li> <li>• Identification of changes in risk and MFI's roles and responsibilities.</li> <li>• Strengths and weaknesses of the risk management systems of other</li> </ul>

	MFI	
<b>Understanding risk and risk management (URRM)</b>	<ul style="list-style-type: none"> <li>• Understanding of risk management across the MFI</li> <li>• Awareness of risk and risk categories</li> <li>• Responsibility and accountability of risk management</li> <li>• Importance of managing risk</li> </ul>	
<b>Risk monitoring and control (RMC).</b>	<ul style="list-style-type: none"> <li>• Reporting and communication processes</li> <li>• Action plans, Costs and benefits of addressing risks</li> </ul>	
<b>Credit risk management</b>	<ul style="list-style-type: none"> <li>• Having an enterprise risk data infrastructure in place</li> <li>• Policy is supported at board of directors or executive level</li> <li>• Adequate training of employees, Hiring qualified staff</li> <li>• Documented records, Implementation of technology</li> </ul>	

(Source: Researchers own computation from literature)

#### vi. Population of the study

The population of the study includes all microfinance institutions existing in India and there are 268 MFI as per the **directory of microfinance institutions (2014)**. A **state wise** distribution of these MFIs is given in table 2

**Table 2: Showing No. of MFIs across states**

Andhra Pradesh	10	Assam	18
Bihar	11	Delhi	7
Haryana	1	Gujarat	7
Jharkhand	8	Karnataka	18
Kerala	13	Madhya Pradesh	10
Maharashtra	13	Manipur	8
Odisha	29	Punjab	1
Rajasthan	9	Tamil Nadu	33
Telangana	11	Uttar Pradesh	14
Uttrakhand	2	West Bengal	45
<b>Total</b>	<b>268</b>		

(Source : Directory of Microfinance Institutions (MFIs) in India, available at <http://www.sa-dhan.net>).

#### vii. Sample of the study :

This study intended to use all the microfinance institutions that are located in the state of Telangana. Accordingly there were 11 microfinance institutions headquartered in the state of Telangana viz., Asmitha Microfin Ltd.( NBFC) Aware Macs Ltd.( Cooperative), Bhartiya Samruddhi Finance Ltd(Basix) (NBFC), Development Organization for Village Environment (DOVE)(Society), Indur Intideepam Macs Federation Ltd.(Cooperative), Pragathi Seva Samithi Macs Federation(Cooperative), Share Microfin Ltd.( NBFC), SKS Microfinance Ltd.(NBFC) , Spandana Sphoorty Financial Ltd.(NBFC), Swaws Credit Corporation India Pvt. Ltd.(NBFC), Trident Microfin Pvt. Ltd.(NBFC). However subsequent to microfinance crisis 2011, most MFIs have either reduced their business spread or else have completely moved to other lines of finance business. Currently there are only six MFIs, that is Asmitha Microfin Ltd.( NBFC) Bhartiya Samruddhi Finance Ltd(Basix) (NBFC), Pragathi Seva Samithi Macs Federation(Cooperative), Share Microfin Ltd.( NBFC), SKS Microfinance Ltd.(NBFC), Spandana Sphoorty Financial Ltd.(NBFC) are currently into microfinance business.

This study used purposive random sampling and selected two managers, two credit/loan manager/officers and two executives from all the

sample MFIs. The manager, credit officer and executives were purposively but randomly selected to become a part of the study as it is the manager and credit officers/ executives who can provide the right information needed for this study.

viii. **Data sources:** A comprehensive modified questionnaire (from Hussein and Faris, 2007) was used for collecting primary data in order to test the extent of risk management practices. . The secondary data sources include Financial statements and reports of designated micro finance institutions, Directory of Microfinance institutions (MFIs) in India, Reserve bank of India reports, Crisil agency reports and other documents.

ix. **Instruments used:**

Questionnaire is primarily used as an instrument for collecting primary data. For this purpose a comprehensive modified questionnaire (from Hussein and Faris, 2007) is adopted and interview questions were framed to cover those aspects that are not dealt in the questionnaire. The questionnaire is pilot tested and modified from earlier studies.

Questionnaire consisted of questions to cover Risk assessment and analysis (RAA), Risk identification(RI) , Understanding risk and risk management (URRM ) Risk monitoring and control (RMC) and Credit risk management. This questionnaire consisted of close ended questions based on both interval scale and ordinal scale. A likert style scale of 1 to 5 was used to address closed ended questions on risk management and credit risk management practices. Cronbach's alpha was used to test the reliability of the scale.

## 5. Analysis of Data

The data obtained by using a likert like scale of 1 – 5 was analyzed using descriptive as well as quantitative analysis. Reliability of the scales is tested using Cronbach's alpha while multiple linear regression model is used to estimate the impact of risk variables of Risk Assessment and Analysis(RAA). Risk Identification(RI), Understanding Risk and Risk Management(URRM), Risk Monitoring and Control (RMC) and Credit risk management on Risk Management Practices(RMP). Analysis of data is presented in the following sections.

### i. Testing of reliability of scales used

As a first step of analysing data Cronbach's alpha was used to test the reliability of the scale that was used for the purpose of testing Hypothesis. Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability(Cronbach, 1970). A commonly accepted rule for describing internal consistency using Cronbach's alpha of 0.7 is considered acceptable and anything more than 0.7 is considered a good indication of reliability of constructs. The calculated Cronbach's alpha was 0.79 as shown in table 3 which is a good indication of constructs reliability. A total number of 56 questions are used in this study and cronbach's alpha is used to assess the reliability of scale

**Table3 : Showing Cronbach's Alpha for the part of the questionnaire relating to risk management practices and credit risk management**

Cronbach's Alpha	N of Items
0.79	56

(Source: Primary data)

### ii. Analysis of Descriptive Statistics

A brief analysis of descriptive values of raw data is provided in Table 4 below

**Table 4: Showing Descriptive Statistics**

Variable	Min	Max	Mean	Std. Deviation
URRM	3.420	5.000	4.21389	.330292
RI	3.170	4.500	3.82972	.408709
RAA	3.290	4.570	3.94806	.384186
RMC	3.170	5.000	4.28667	.416317
CRM	3.27	4.45	3.7833	.28993

(Source: Primary data)

**Table 4** Shows the descriptives across various risk variables. This table provides summary of various variables with respect to the respondents such as mean standard deviation and minimum and maximum scores. It is observed that Risk monitoring and Control(RMC) has a mean score of 4.28 while Understanding risk and risk management (URRM) has a mean score of 4.21, where as Risk Assessment and Analysis(RAA) has 3.95 and Risk



Identification (RI) has 3.82 while Credit risk management (CRM) has 3.78 which implies that the respondents have a clear understanding of risk management and risk variables across micro finance institutions in Telangana state

### iii. Testing of Hypothesis

The two stated hypothesis are- *Hypothesis 1*

Hypothesis 1 states that there is a positive relationship between Risk management practices and risk variables including credit risk management across selected MFIs in Telangana state.

*H1: There is a positive relationship between Risk Management practices and risk variables across select microfinance institutions(MFIs)in Telangana*

#### *Hypothesis 2*

Hypothesis 2 stated that portfolio quality is the strongest contributor in explaining CRM practices among the selected variables.

*H2: Credit risk management is the strongest contributing factor in explaining Risk management practices among the risk variables across select microfinance institutions(MFIs)in Telangana*

This study uses ordinary least squares(OLS) method to test these hypothesis. Prior to using the OLS method, it is essential to check if multicollinearity exists between explanatory variables. A correlation coefficient of more than 0.70 implies that there exists collinearity between variables.

**Table 5: Showing Pearson's Correlation analysis**

Variable	URRM	RI	RAA	RMC	CRM	RMP
URRM	1					
RI	0.003	1				
RAA	-0.035	0.534	1			
RMC	0.532	-0.021	0.030	1		
CRM	-0.193	-0.096	0.216	0.218	1	
RMP	0.112	0.308	0.488	0.520	0.095	1

(Source: Primary data)

Table 5 shows correlation coefficients between variables. As it is observed, coefficients do not exceed 0.7 and as such the problem of multicollinearity between variables is excluded. Tabachnick and Fidell (2001) suggest that you 'think carefully before including two variables with a bivariate correlation of, say, .7 or more in the same analysis'.. Further the above observation of non existence of multicollinearity is also supported by 'tolerance' and 'VIF' value ( as shown in Table no. 8). The tolerance value for each independent variable is above .6, (which is not less than .10); therefore, we have not violated the multicollinearity assumption. This is also supported by the VIF value, that is ranging between 1.3 to 1.6, which is well below the cut-off of 10. Having concluded that there is no multicollinearity between variables, the next step is to evaluate the regression results

### Regression Analysis

**Table 6 : Showing Regression Analysis**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.750	.562	.489	270039

(Source: Primary data)

Table 6 shows the regression results. It can be seen from the table that adjusted R square is 0.489. This indicates that the five independent variables explain about 48.9 % of variations in risk management practices of micro finance institutions. When a small sample is involved, the R square value in the sample tends to be a rather optimistic overestimation of the true value in the population (Tabachnick & Fidell, 2001). The Adjusted R square statistic 'corrects' this value to provide a better estimate of the true population value. The adjusted R square in this case is .489 indicating that 48.9% of variation in risk management practices is explained by this model.

Table 7 indicates that the regression model predicts the dependent variable significantly well. In this case  $p = 0.000$ , which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data).

**Table 7 : Showing ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	2.804	5	.561	7.691	.000
Residual	2.188	30	.073		
Total	4.992	35			

(Source: Primary data)

### Interpretation of Coefficients

**Table 8: Showing standardized and unstandardised Coefficients**

Model	Un std Coeff		Std Coeff	t	Sig.	Collinearity Statistics	
	B	Std. Error				Beta	Tol
1(Cons)	1.814	1.061		1.710	.098		
URRM	-.328	.176	-.287	-1.865	.072	.616	1.624
RI	.045	.137	.049	.330	.744	.666	1.501
RAA	.468	.148	.476	3.155	.004	.641	1.560
RMC	.640	.140	.706	4.557	.000	.609	1.642
CRM	-.277	.184	-.212	-1.506	.142	.735	1.360

(Source: Primary data)

The estimated coefficient of Risk Analysis and Assessment(RAA) and Risk Monitoring and Control (RMC) are positive and significant at 5% level of significance where as Risk Identification is positive but insignificant at 5% level of significance. Similarly Understanding risk and risk management (URRM) and Credit risk management (CRM) are negative and insignificant.

Thus the hypothesis 1 that there is a positive relationship between risk variables and risk management practices cannot be confirmed( positive and significant in case of RAA as  $p = 0.004$  that is  $p < 0.05$ , RMC as  $p = 0.000$  that is  $p < 0.05$ , positive but not significant in case of RI where  $p = 0.744$  further negative but not significant in case of URRM and CRM where  $p = 0.72$  that is  $< 0.05$ , and  $0.142$  that ins  $< 0.05$  respectively).

In order to find out which of the variables included in the model contributed to the prediction of the dependent variable, we consider Standardized beta coefficients. As shown in table 8, the standardized beta coefficients reveal that RMC (Risk monitoring and Control) makes the strongest unique contribution to explaining the dependent variable (0.706), when the variance explained by all other variables in the model is controlled for. The Beta values of RAA(Risk Analysis and Assessment) of 0.476 makes the second best contribution to explaining the dependent variable, followed by URRM(Understanding risk and risk management) which is at 0.287 and CRM (Credit risk management) 0.212 and RI (Risk identification) 0.049. Thus hypothesis 2 that 'Credit risk management' is the strongest contributor in explaining Risk management practices among the selected variables' is not confirmed

### 6. Conclusions

The main conclusions made in this study are that there is a positive relationship between Risk variables of RAA( Risk analysis and Assessment), RMC (Risk monitoring and Control) and RI (Risk Identification) and Risk management practices of microfinance Institutions of Telangana state (India) while there is negative relationship between URRM (understanding risk and risk management ) and Credit risk management practices and Risk management practices in general. In addition it is observed that Risk Monitoring and control is making the most contribution. These are infact partially in line with the findings of Hussien & Faris (2007) Sifunjo & Robert (2014), Mwangi (2013), Norell (2001), etc Further another vital reason attributed to the current state of affairs is the Andhra Pradesh micro finance crisis of 2011 and these institutions are still in a state of retrospection and adjustments thus opening doors for further research in this area.

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