REGRESSION MODELING APPROACH TO WOMEN ENTREPRENEUR'S FINANCIAL INDEPENDENCE IN RURAL UTTAR PRADESH: A MICRO FINANCE INSTITUTION PERSPECTIVE

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ABSTRACT

The core objective of the study is to ascertain the factors that shape and sustain micro finance derived financial independence and empowerment. The study evaluated the impact of women entrepreneur's 'inclusion', 'market knowledge', 'entrepreneurial skill', 'resource usage', 'social awareness' and 'procedural simplicity' on prospective beneficiary's financial independence across rural areas. The study observed that inclusion (0.237^{***}), market knowledge (0.080^{**}), entrepreneurial skill (0.071^{***}), resource usage (0.086^{*}) reported significant influence. Further analysis of cross factor interaction revealed that considered socio-demographic aspects seem to interact significantly across time period of research.

Keywords: Regression, Women entrepreneur, Micro Finance beneficiaries, financial independence, Rural.

INTRODUCTION

Women entrepreneur's financial independence could mean different perspectives in different situations. The gender based financial independence has often incited literary and academic attention in diverse and multiple propositions. A section of literature (Shakodra, 2021) regards the women entrepreneur's financial independence in rural perspective as more characteristic than in urban areas. The regional divides identify as the core aspects that seem to lead to substantial differences in financial inclusion and prospects for financial independence. The women entrepreneur's financial independence in rural areas across developing nations identify as characteristic problem plaguing the self-employment and sustainable livelihood support. A host of literature (Chapagain, 2018) regards women driven factors as well as women entrepreneur's inclusion, market knowledge, entrepreneurial skill, resource usage, social awareness and procedural simplicity as shaping her respective 'financial independence'. The literature (Ayodeji, 2011) even reports the incidence of significant interaction across the women based personal aspects of 'literacy levels' and 'financial literacy'. A section of studies (Hameed, 2020) seem to interpret the 'entrepreneurial skills' as instrumental in determination of women entrepreneur's 'financial independence' in rural hinterlands. The studies (Ramajeyam, 2020) even report significant impact of 'market knowledge' and 'financial inclusion' in determination of 'financial independence'. Another study (Mengstie, 2020) reported the prevalence of contextual influences and governmental subsidies.

As per World Economic Forum report 2021, the gender inequality is bound to increase in post epidemic time, and this is bound to possess implications for women entrepreneur's equitable financial inclusion and financial independence. The women entrepreneur's financial empowerment and financial independence has been interpreted in terms of aids, subsidy provision, skilling, proactive entrepreneurial orientation, mindset for change and sustainable livelihood development. The study hence focuses on the rural areas across Uttar Pradesh and explores the operationalization of micro finance driven financial inclusion and empowerment across emerging women self-employed groups and segments. The paper laterally explores the prospects for MFI derived financial inclusion of women entrepreneurs in the regional perspective of rural Uttar Pradesh context. The paper defines the women entrepreneur's 'financial independence' as a phenomenon that is supported by formal financial institutions and mechanisms like micro finance bodies, networks, small scale banking models, non-banking financial mechanisms. Micro finance derived financial independence and inclusion and resultant women based financial independence has been shortlisted as the research focus area.

REVIEW OF LITERATURE

The paper relies on the basic premise that institutional finance especially the micro finance enabled funding of the skilled women does shape their financial independence. The micro finance derived empowerment not only puts money into the hands of women but also enables them to sustain their livelihood as well as develop as composite and self-dependent approach to life and economic challenges. As per literature (Ramajeyam, 2020) on subject matter, the micro finance derived financing of women's entrepreneurial dreams in tangible propositions. Despite women empowerment (Shakodra, 2021) being a social development goal, the more needs to be achieved with regard to rural centered women especially in developing economies. The theoretical proposition (Hameed, 2020) on women's financial and economic empowerment entails the resources, agency and achievements (Kabeer, 1999) perspective. The resources perspective calls for the institutional norms as guiding the resource based access to opportunities and skill application. The women's economic participation (Ayodeji, 2011) has been observed as susceptible to individual and contextual determinants across the process. The women driven factors as well as women entrepreneur's own financial inclusion, market knowledge about the commodity being produced, entrepreneurial skill and proactive decision making capabilities, resource usage notions, social awareness and procedural simplicity as does influences her respective 'financial independence'. The normative and institutional support from micro finance bodies has been observed as significant in shaping economic engagement, embedment and participation over longer periods of time. The central bank classifies the micro finance institutions as n economic development tool with aim on assisting the poor to move up the ladder and make them capable of bridging the gap between demand and supply at individual level. A subcommittee report (RBI, 2011) pointed out the need for poverty alleviation and enabling the poor to work their way out from the vicious cycle of poverty. Another task force (RBI(A), 2009) reported the incidence of formalization and institutionalization for better provision of credit and other financial products and services to rural women in order to raise their income levels and improve their current standards of living. The women entrepreneur's financial independence (Kabeer, 1999) in rural areas across developing nations identify as characteristic problem plaguing the self-employment and sustainable livelihood support. The women entrepreneur's financial empowerment and financial independence (Chapagain, 2018) has been interpreted in terms of aids, subsidy provision, skilling, proactive entrepreneurial orientation, mindset for

change and sustainable livelihood development. The beneficiary based benefit and realization of gains (MENGSTIE, 2020) seem to depend more on own personal attributes than the contingent influences from outside environment.

Hypothesis and Concept

In line with trends as evident in review of literature and overall pattern of aspects shaping the phenomenon, the conceptual approach was advocated. The conceptual approach concentrates on the women entrepreneur as a beneficiary of MFI penetration across rural areas and regards the women based intrinsic aspects as critical in shaping her resolve to achieve and sustain the financial independence. The economic empowerment and financial independence are widely regarded as an outcome of women-based indulgence in application of harnessed skills and capabilities for the productive processes. The women's access to micro finance institution's monetary and advisory resources has been observed as driven by the quantum of the confidence and self-awareness with regard to systemic inclusion, extent of penetration across bank or MFI network, extent of skill-based versatility, extent of dexterity with regard to domain expertise, social awareness and procedural simplicity. Hence, we propose these hypotheses in order to examine the cross factor impact as well as control variables as influencing the overall outcomes.

Table 1 PROPOSED HYPOTHESIS STATEMENTS	
Proposed Hypothesis	
There is significant impact of women entrepreneur's inclusion, market knowledge, entrepreneurial skill, resource usage, social awareness and procedural simplicity on 'financial independence'	H1
There is statistically significant correlation amongst the women entrepreneur's 'inclusion', 'market knowledge', 'entrepreneurial skill', 'resource usage', 'social awareness', 'procedural simplicity' and 'financial independence'	H2
There are significant differences on account of 'literacy levels' and 'financial literacy'	H3
There is significant impact of 'entrepreneurial skills' in determination of 'financial independence'	H4
There is significant impact of 'market knowledge' and 'financial inclusion' in determination of 'financial independence'	H5

METHODOLOGY

The MFI derived women entrepreneur's financial inclusion across rural areas was explored as an outcome of women entrepreneur's own social-demographic features and type of product and pattern of collateral they could offer. The data was collected from across women entrepreneurs and was analyzed with aid of SPSS software version release 24.0. The women entrepreneurs from across select entrepreneurial clusters of Uttar Pradesh concentrated across districts of Allahabad, Jaunpur, Bhadohi, Varanasi and Mirzapur.

Table 2 SAMPLE COMPOSITION		
District	Towns	Sample Size
Allahabad	Handia, Pasna, Meja, Hanumanganj,Jasra	30
Jaunpur	Badlapur, Shahganj,Kerakat	30
Bhadohi	Banai, Saroi,Pipris, Sidhwan	25
Varanasi	Ashapur,Harhua,Umaraha	20
Mirzapur	Ahrana,Harahi, Katran,	20

The detailed questionnaire was developed with the help of the literature in the field of the subject concerned. A total of 125 respondents participated in the study and the responses were examined for internal reliability with Cron Bach alpha. The reliability assessment was observed as 0.559 which is in safe range of 0.5 to 0.99.

Analysis

The respective variables were assessed for multi-collinearity with aid of analysis of values of tolerance and variance inflation factor. The tables below depict the absence of the multi-colinearity problems across the data being considered for research and analysis.

Table 3 COLLINEARITY STATISTICS		
	Collinearity Statistics	
Model	Tolerance	VIF
1 (Constant)		
ENTRE_SKILL	0.927	1.079
PROCEDURAL_SIMPLICITY	0.759	1.317
INCLUSION	0.881	1.135
MARKET_KNOWLEDGE	0.947	1.056
SOCIAL_AWARENESS	0.896	1.117
RESOURCE_USAGE	0.778	1.285
a. Dependent Variable: FIN_INDEPENDENCE		

Durbin-Watson analysis was leveraged to assess the extent of independence of error in the data as collected from the field. The observed measure of 1.985 is in satisfactory range of 1.5 to 2.50. The measure point to outcome that the behavior of one entrepreneur does not affects the behavior of other women participant in the study. The observed Durbin statistics hence seemingly observes as under the satisfactory range.

Table 4 DURBIN-WATSON STATISTICS					
Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.588[a]	0.346	0.332	0.57989	1.985
a. Predictors: (Constant), RESOURCE_USAGE, MARKET_KNOWLEDGE, INCLUSION, ENTRE_SKILL, SOCIAL_AWARENESS, PROCEDURAL_SIMPLICITY					
b. Dependent Variable: FIN_INDEPENDENCE					

In terms of hypothesis validation, the first hypothesis was explored to ascertain the possible impact of women entrepreneur's inclusion, market knowledge, entrepreneurial skill, resource usage, social awareness and procedural simplicity on 'financial independence'. The study deployed regression modeling and observed that impact as statistically significant.

H_1: *There is significant impact of women entrepreneur's inclusion, market knowledge, entrepreneurial skill, resource usage, social awareness and procedural simplicity on 'financial independence'.*

Table 5 Regression Model				
ModelSummary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.588[a]	0.346	0.332	0.57989
a. Predictors: (Constant), INCLUSION, MARKET_KNOWLEDGE, ENTRE_SKILL, RESOURCE_USAGE, SOCIAL_AWARENESS, PROCEDURAL_SIMPLICITY				

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.443	0.173		2.560	0.011
	ENTRE_SKILL	0.071	0.042	0.084	1.713	**0.088**
	PROCEDURAL_SIMPLICITY	0.145	0.036	0.221	4.075	**0.000**
	MARKET_KNOWLEDGE	0-.080	0.043	-0.091	-1.864	**0.063**
	SOCIAL_AWARENESS	0.261	0.039	0.334	6.693	**0.000**
	RESOURCE_USAGE	0-.086	0.052	-.088	-1.645	**0.101**
	INCLUSION	0.237	0.042	0.285	5.652	**0.000**
a. Dependent Variable: FIN_INDEPENDENCE						

The linear regression was calculated to predict 'beneficiary's financial independence' based on women entrepreneur's 'inclusion', 'market knowledge', 'entrepreneurial skill', 'resource usage', 'social awareness' and 'procedural simplicity'. The significant regression equation was observed [F(beneficiary's financial independence)='inclusion', 'market knowledge', 'entrepreneurial skill', 'resource usage', 'social awareness' and 'procedural simplicity'] with an observed R of 0.588.The reported empirical observations point towards the degree of freedom as 1 and equation was found [F(1(degree of freedom)=15.4(F),p<0.000), with an R of 0.588.The participating women respondents predicted the weight as equal to.443+ 0.071 (entrepreneurial skill)+ 0.145 (procedural simplicity)- 0.080(market knowledge')+0.261 (social awareness)-0.086 (resource usage)+0.237('inclusion). The R(multiple correlation coefficient) is regarded as a reliable measure of the quality of the prediction of the dependent variable(beneficiary's financial independence across rural areas in this case). The R^2 (coefficient of determination) represents the proportion of variance in the dependent variable as reported by the constituent independent variables. The observed R^2 of 0.346 depicts the 34 per cent variance in dependent on account of independent variables in determining the beneficiary's financial independence across rural areas. The reported value of 0.663 is a satisfactory measure of the multiple correlations.

Regression equation involving beneficiary's financial independence across rural areas = .443+ 0.071 (entrepreneurial skill) + 0.145 (procedural simplicity)-0.080(market knowledge')+0.261 (social awareness)-0.086 (resource usage) + 0.237('inclusion).

H_2: There is statistically significant correlation amongst the women entrepreneur's 'inclusion', 'market knowledge', 'entrepreneurial skill', 'resource usage', 'social awareness', 'procedural simplicity' and 'financial independence'.

The inter factor correlation was assessed to examine the trends. The factor 'financial independence' was observed to correlate significantly with 'entrepreneurial skills'.

The factor 'inclusion' was observed as correlating statistically and significantly with factors 'procedural simplicity', 'social awareness' and 'resource usage'. The results as illustrated in table below capture the cross-factor correlations.

		FIN_INDE PENDENC E	ENTRE_ SKILL	PROCEDU RAL_SIMP LICITY	INCLUSI ON	MARKET _KNOWL EDGE	SOCIAL _AWAR ENESS	RESOURC E_USAGE
Table 6 **SPEARMAN CORRELATIONS**								
FIN_INDEPENDENCE	Pearson Correlation	1	0.168**	0.333**	0.414**	-0.098	0.429**	0.139*
	Sig. (2-tailed)		0.003	0.000	0.000	0.091	0.000	.016
	N	300	300	300	300	300	300	300
ENTRE_SKILL	Pearson Correlation	0.168**	1	0.057	.060	-0.186**	0.147*	0.131*
	Sig. (2-tailed)	0.003		0.322	0.304	0.001	0.011	0.024
	N	300	300	300	300	300	300	300
PROCEDURAL_SIMPLICITY	Pearson Correlation	0.333**	0.057	1	0.288**	.001	0.193**	0.440**
	Sig. (2-tailed)	0.000	0.322		0.000	0.987	0.001	0.000
	N	300	300	300	300	300	300	300
INCLUSION	Pearson Correlation	0.414**	0.060	0.288**	1	-.0042	0.224**	0.199**
	Sig. (2-tailed)	0.000	0.304	0.000		0.469	0.000	0.001
	N	300	300	300	300	300	300	300
MARKET_KNOWLEDGE	Pearson Correlation	-0.098	-0.186**	0.001	-0.042	1	0.074	0.049
	Sig. (2-tailed)	0.091	0.001	.987	0.469		0.203	0.395
	N	300	300	300	300	300	300	300
SOCIAL_AWARENESS	Pearson Correlation	0.429**	0.147*	0.193**	0.224**	0.074	1	0.198**
	Sig. (2-tailed)	0.000	0.011	0.001	0.000	0.203		0.001
	N	300	300	300	300	300	300	300
RESOURCE_USAGE	Pearson Correlation	0.139*	0.131*	0.440**	0.199**	0.049	0.198**	1
	Sig. (2-tailed)	0.016	0.024	0.000	0.001	0.395	0.001	
	N	300	300	300	300	300	300	300
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

H3: There are significant differences on account of 'literacy levels' and 'financial literacy.'

In similar prospect in order to ascertain the women entrepreneur's general literacy and financial literacy as influencing the overall independence as dependent variable, the two way ANOVA was applied. The result as exhibited in table below point to the statistically significant interaction across women entrepreneur's general literacy and financial literacy as independent variables. This is tantamount to observing that women entrepreneur's general literacy and financial literacy do considerably affect the beneficiary's gains across rural areas in Uttar Pradesh across the women entrepreneurs. The illustration below captures the statistical interaction women entrepreneur's general literacy and financial literacy aspects across participating women entrepreneurs from across rural Uttar Pradesh. As evident in the SPSS outcome in table below, the significance value is less than 0.05, hence the interaction is leading

to significant impact on shaping women beneficiaries across rural areas. This is tantamount to observing that interaction is exerting impact women beneficiaries across rural areas.

Table 7
TESTS OF BETWEEN-SUBJECTS EFFECTS

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LITERACY	0.397[a]	3	0.132	3.253	0.022
	FIN_LITERACY	2.462[b]	3	0.821	4.461	0.004
Intercept	LITERACY	60.083	1	60.083	1477.148	0.000
	FIN_LITERACY	47.167	1	47.167	256.387	0.000
FIN_INDEPENDENCE	LITERACY	0.397	3	0.132	3.253	0.022
	FIN_LITERACY	2.462	3	0.821	4.461	0.004
Error	LITERACY	12.040	296	0.041		
	FIN_LITERACY	54.455	296	0.184		
Total	LITERACY	1161.000	300			
	FIN_LITERACY	1237.000	300			
Corrected Total	LITERACY	12.437	299			
	FIN_LITERACY	56.917	299			
a. R Squared = 0.032 (Adjusted R Squared = 0.022)						
b. R Squared = 0.043 (Adjusted R Squared = 0.034)						

H4: There is significant impact of 'entrepreneurial skills' in determination of 'financial independence'

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
42.858	4	0.000
Dependent Variable: FIN_INDEPENDENCE Model: (Intercept), ENTRE_SKILL		
a. Compares the fitted model against the intercept-only model.		

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	222.078	1	**.000**
ENTRE_SKILL	46.070	4	.000
Dependent Variable: FIN_INDEPENDENCE Model: (Intercept), ENTRE_SKILL			

The chi-square distributions were examined in linear generalized mode and the variables for tested for overall model with predictors as being either better or worse than an intercept only model. The intercept effect of women's entrepreneurial skills' was explored on the women's financial independence prospects. The examination of break down effects separately yielded significant impact of 'entrepreneurial skills' on the shaping of overall financial independence in women entrepreneurs in rural Uttar Pradesh.

H₅: There is significant impact of 'market knowledge' and 'financial inclusion' in determination of 'financial independence'

Omnibus Test[a]		
Likelihood Ratio Chi-Square	df	Sig.
72.986	4	.000
Dependent Variable: FIN_INDEPENDENCE Model: (Intercept), MARKET_KNOWLEDGE, INCLUSION		
a. Compares the fitted model against the intercept-only model.		

Tests of Model Effects			
	Type III		
Source	Wald Chi-Square	df	Sig.
(Intercept)	141.128	1	**.000**
MARKET_KNOWLEDGE	16.913	3	.001
INCLUSION	61.351	1	.000
Dependent Variable: FIN_INDEPENDENCE Model: (Intercept), MARKET_KNOWLEDGE, INCLUSION			

The chi-square distributions were examined in linear generalized mode and the variables for tested for overall model with predictors as being either better or worse than an intercept only model. The examination of break down effects separately yielded significant impact of 'market knowledge' and 'inclusion' on the shaping of overall financial independence in women entrepreneurs in rural Uttar Pradesh.

Observations

Assumed Hypothesis	Outcomes
There is significant impact of women entrepreneur's inclusion, market knowledge, entrepreneurial skill, resource usage, social awareness and procedural simplicity on 'financial independence'	Accepted
There is statistically significant correlation amongst the women entrepreneur's 'inclusion', 'market knowledge', 'entrepreneurial skill', 'resource usage', 'social awareness', 'procedural simplicity' and 'financial independence'	Accepted
There are significant differences on account of 'literacy levels' and 'financial literacy'	Accepted
There is significant impact of 'entrepreneurial skills' in determination of 'financial independence'	Accepted
There is significant impact of 'market knowledge' and 'financial inclusion' in determination of 'financial independence'	Accepted

Implications

The research hence concludes that there is significant impact of personal characteristics on beneficiary's financial independence across rural areas. The personal or individual driven aspects as well capabilities interfere with regard to determining the beneficiary's financial independence across the rural areas and especially across the women entrepreneurs in Uttar Pradesh. The impact was observed as instrumental in shaping the beneficiary's financial independence across women entrepreneurs in particular.

The observed outcomes are in line with earlier studies (Mengstie, 2020), (Kabeer, 1999) that call for caution with regard to women entrepreneur's financial inclusion. Instead of rushing for the random inclusion, the study based outcomes point towards customer driven systematic approach with emphasis on empowerment enhancement and financial product/service differentiation to bring real change in lives of the women entrepreneurs and enhance their self-dependence. The research outcomes further noticed considerable interaction across women entrepreneur's socio demographic background and extent of women empowerment in shaping beneficiary's financial independence across rural areas. This is tantamount to observing that personal aspects and achievements as well as personal attributes do shape the prospects for inclusion and respective MFI's penetration across women entrepreneurial ecosystem. The outcomes further reported considerable interaction across interest and collateral in beneficiary's financial independence across rural areas. The incidence of significant differences in beneficiary's financial independence on account of MFI model being leveraged for outreach. The prevalence of considerable interaction between socio demographic aspects and beneficiary's financial independence model across women entrepreneurs, calls for measured and logical approach to policy making with regard to women's consistent and sustainable financial inclusion and access to credit on regular basis.

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