Amity Journal of Entrepreneurship
1(1), (62-70)

A Factor Analysis Based Study on Microenterprises

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(Received : 27/10/2015; Accepted: 03/03/2016)

Abstract

Microenterprises are very critical to any economy as they support the masses in terms of employment, competition and often results in innovation also. They are also good examples of sound economics at the micro level. Particularly in developing countries, these microenterprises become more important as they are a source of earning for the poor and uneducated. A study of these microenterprises provides an opportunity to understand them and effectively encourage them in the macro policies. This research paper is derived from a research project on microenterprises and focuses on identifying factors which are imperative to microenterprises. It uses factor analysis and regression analysis to achieve the objective. Five factors were found and analyzed. The findings of the research would surely be useful for corporates and the policymakers, apart from giving inputs to researchers.

Keywords: Microenterprises, Entrepreneurship, Poverty Alleviation, Business model, Factor analysis

JEL Classification: Z13, R12, P42, M1, D6

Paper Classification: Research Paper

Introduction

As per eleventh five year plan 2007-2012 of the Government of India, unemployment rate in India was targeted at 4.83% by 2012, which was reported as 4.9% in 2013 by www.tradingeconomics.com. Considering the size of Indian population, achieving such a target poses a great challenge. Microenterprises, in such a scenario, are very critical to any economy as they support the masses in terms of employment, competition and often results in useful innovations. These enterprises are good examples of sound economics at micro level and for below-the-pyramid strata. Particularly in developing countries, these microenterprises become more important as they are a source of earning mostly for the poor, uneducated and unbanked. A study of these microenterprises provides an opportunity to understand them and effectively encourage them by developing relevant and prolific policies. To understand the traits of microenterprises it becomes imperative, to identify factors which are inherent to microenterprises. These, Very Small Businesses (VSB) or microenterprises can help in creating employment. According to a report of task force on MSMEs in India, about 94% of these MSMEs operate on sole proprietary basis. This point has been validated by findings of the current research also.

Self-employment, as a concept, is evolving as a prospective option for income generation and poverty alleviation, particularly in developing economies like India (Bharti, 2014). Microenterprises bolster and encourage the self-employment concept in a real and applied sense. This study uses the factor analysis based approach to identify some relevant factors and goes on to apply regression analysis to study the dependencies amongst the factors and variables.

This research paper is derived from a research project funded by Jaipuria Institute of Management, Noida in 2012 on microenterprises.

Literature Review

Gunu (2010) states that the problem of Nigeria's mass poverty cannot be solved by any specific top-down, one-size-fits-all solution, conceived by elite experts, no matter how well conceived and how experienced the experts. He, however, states that there exist millions of micro solutions, which can only be discovered and implemented by the masses themselves from the grassroots level. To mobilize the masses to increase their individual productivity requires the development of entrepreneurship in micro enterprises. The assumption, according to him, is that if emphasis is placed on the promotion of micro enterprises, they will encourage and nurture self-employment. Nag and Das (2014) in their paper emphasize that microenterprises play a critical role in the economic development of a country. They further state that the role played by these microenterprises in India is immense as they are effective tools for sustainable livelihood; they help in employment generation and empowerment of women and thus contribute to the country's economy and social upliftment of the society. In their study, they found that economic status of 90% of the respondents has increased after they started their business. This is a very significant finding as this bolsters the belief and logic that entrepreneurship helps in alleviation of poverty (Ahmad, 2015). Nag and Das (2015) also concluded that there are four important sociocultural and skill related factors, such as, leadership skills, communication skills, education and prior experience, that affect the success of a micro entrepreneurial venture.

Barczyk, Husain and Green (2007) define a 'Very Small Enterprise' as an organization engaged in the creation of products or the provision of services for profit that employs 10 or fewer employees. For the purpose of this research, Microenterprise or Very Small Business (VSB) has been defined as an organization with number employees/partners as five or less. Elizabeth and Alan (2004) in their research suggest that both financial and non-financial lifestyle criteria are important and should be used to judge business success where the latter being considered more important. They suggest that personal satisfaction and achievement, pride in the job and a flexible lifestyle are generally valued higher than wealth creation, Personal factors such as age and also business characteristics, influenced perceptions on the importance of these factors. Referring to the study of Elizabeth and Alan (2004), parameters such as age of business, age of promoter and type of business are used in this study also.

Dunn, Kogut and Short (2011) studied the pricing policies and practices by small business managers/owners in northeast Louisiana and concluded that very small businesses generally follow the basic principles of economic theory in setting and maintaining prices for their products and services. A contrasting study by Hurst and Pugsley (2011) showed that most small business owners are very different from the entrepreneurs that economic models and policymakers often have in mind and showed that few small businesses intend to bring a new idea to market or to enter a non-served market. Instead, most intend to provide an existing service to an existing market. Aktas, Bellettre and Cousin (2011) found out that Very Small Businesses (VSB) experience financing constraints unlike those encountered by larger companies; however, they are rarely studied.

Rwigema and Karungu (1999) bolster the case of Small, Medium and Micro Enterprises (SMMEs) and conclude that, (i) small enterprises have shown high capacity to absorb labour; (ii) assistance to microenterprises has indicated sensitivity to poverty mitigation; (iii) such enterprises are locally owned and controlled and thus strengthen the social system and culture; (iv) the products of such enterprises are based on indigenous craft traditions and are more likely to support the need of the poor and deserving; and (v) microenterprises provide a nursery and bolster entrepreneurship and innovation.

Research Gap

One of the research gaps identified from review of previous works is the identification of microenterprises factors in the Indian context, which are focusing on functional areas of management in these enterprises. This study attempts to address this research gap.

Research Objectives

1. The primary objective of the present study is to identify and study various aspects of microenterprises and converge on few factors which are integral to any microenterprise.
2. A secondary objective of the study is to study and analyze the interdependence of factors and draw conclusions based on the same.

Research Methodology

Considering the identified research gap and the stated objectives based on the same, a research methodology was formulated. Since this research paper is based on a previous research project, the methodology in this paper is influenced by the original methodology.

Sampling and Data

The research project was completed in two phases, pilot survey phase and the final survey phase. The study was decided to be based on primary data collected through questionnaires from respondents who run very small businesses (1-5 employees) in towns and small cities. Inputs received from the pilot survey were incorporated to develop a final questionnaire. The revised questionnaire included 30 questions, out of which 24 were quantified and out of these 15 relevant questions were used for factor analysis in this research. The final survey was conducted in the districts of Barabanki and Lucknow in North India during the months of March and April, 2012. The sampling type used was convenience sampling. A total of 110 filled and correct questionnaires were received. SPSS 16.0 software was used for data analysis. The mean present age of respondents falls in the age group of 30-40 years and most of them are Intermediate pass. The type of the business is spread across manufacturing, trading and services with a bit of accumulation towards manufacturing and the mean age of business is 3 to 5 years. A total of 15 variables were used in this research as given in Table 1. These variables were then analyzed for factors and subsequently regression analysis was done on the factors.

Table 1: Description of Variables used in the Study

S. No.	Question/Variable	Variable code
1	Highest Qualification of the respondent	Qualifications
2	Business family or not	FAMLY.bus
3	Present age of respondent/promoter	Current.Age

(Continued)

4	Age of respondent/promoter when started the business	Initial.Age
5	Type of business	Business.Type
6	Age of Business	Age.Business
7	Number of owners/partners as of now	No.Owners
8	Number of employees when the business was started	Emply.Start
9	Number of employees now	Emply.current
10	Association of employees with business	Loyalty.Period
11	Amount of capital invested initially	Capital.Start
12	Total amount of capital invested till date	Capital.Total
13	Monthly sales	Sales.M
14	Monthly profit	Profit.M
15	Expenses on promotion	Advt.Expenses

Hypothesis

Null hypothesis 1 (H01): Functional areas are NOT prominent in microenterprises.

Null hypothesis 2 (H02): Entrepreneur does NOT play an important role in microenterprises.

The first hypothesis checks whether the functional areas are prominent and useful in microenterprises and the second hypothesis checks the significance of entrepreneur, as a person, in a microenterprise.

Data Analysis

Statistical Tools

The Cronbach's Alpha for the questionnaire of 24 variables came out to be 0.616 and for the 15 variable used for factor analysis in this research it was 0.47, which is acceptable. The Variance Inflation Factor (VIF) is analyzed in multivariate regression for multi-collinearity and Durbin-Watson (DW) statistic is analyzed for autocorrelation. A VIF statistic of more than 10 indicates the presence of multicollinearity. The DW statistic should be near '2' to indicate absence of auto correlation.

The Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy (Table 2) was 0.557 which is above the acceptable limit of 0.5 and Bartlett's test of sphericity was significant which indicates rejection of null hypothesis of 'Variables not related'. These two tests on the 15 variables were found favorable and thus the research became a case for factor analysis.

Table 2: KMO and Bartlett test results

KMO		0.557
Bartlett's Test of Sphericity	Chi-Square	271.69
	Degree of freedom	105
	Significance	.000

The communalities of variables (Table 3) indicate the explained variance in each variable by factors where maximum variance was found to be for 'starting age of entrepreneur'.

Table 3: Communalities of variables

Variables	Extraction
Qualifications	.536
FAMLY.bus	.706
Current.Age	.748
Initial.Age	.924
Business.Type	.623
Age.Business	.883
No.Owners	.827
Emply.Start	.732
Emply.current	.576
Loyalty.Period	.853
Capital.Start	.771
Capital.Total	.709
Sales.M	.791
Profit.M	.655
Advt.Expenses	.751

Analyzing the Eigen values in Table 4, five components or factors were extracted with Eigen values of more than 1 and total explained variance of 73.9%. A steep fall was observed in variance from component 3 to component 4 and component 5 was observed to be almost 1 at Eigen value of 1.075. Principal Component Analysis and VARIMAX rotation were used to extract the factors and rotated component matrix (Table 5) was used for factor loadings and deciding on factors. Since number of factors are five, more variables were required to cluster factors and thus all variables with loadings more than +0.3 and less than -0.3 were considered. The five factors and their variables are given below.

- Factor 1: (General Management): Qualifications, Current age of owner, Age of business, Loyalty period
- Factor 2: (Human Resources): Number of owners, Employees at start, Current employees, Total Capital
- Factor 3: (Finance): Starting Capital, Total Capital, Sales and Profit
- Factor 4: (Operations): Family Business , Business type, Number of owners, Profit
- Factor 5: (Promoter): Initial age of owner, Number of owners

Advertisement expense, as a variable, because of its nature was not captured in any of the five factors.

Table 4: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.325	22.167	22.167	3.325	22.167	22.167	2.845	18.968	18.968
2	2.786	18.574	40.741	2.786	18.574	40.741	2.798	18.656	37.625

(Continued)

3	2.508	16.717	57.458	2.508	16.717	57.458	2.310	15.401	53.025
4	1.393	9.285	66.743	1.393	9.285	66.743	1.640	10.933	63.959
5	1.075	7.166	73.909	1.075	7.166	73.909	1.493	9.951	73.909
6	.910	6.067	79.976						
7	.770	5.132	85.108						
8	.630	4.200	89.308						
9	.461	3.074	92.382						
10	.330	2.198	94.580						
11	.257	1.716	96.296						
12	.200	1.331	97.627						
13	.152	1.014	98.641						
14	.139	.930	99.571						
15	.064	.429	100.000						

Table 5: Rotated Component Matrix

	Components				
Variables	**1 (General Management)**	**2 (Human Resource)**	**3 (Finance)**	**4 (Operations)**	**5 (Promoter)**
Qualifications	-.567	-.001	.432	.003	.167
FAMLY.bus	.158	-.122	-.117	-.804	.081
Current.Age	.761	.292	.055	-.118	-.259
Initial.Age	-.049	-.063	-.077	-.010	-.955
Business.Type	.092	.134	-.178	.739	.138
Age.Business	.881	.088	.155	.045	.269
No.Owners	-.219	.739	.031	.329	.351
Emply.Start	.038	.840	-.011	-.112	-.113
Emply.current	-.021	.685	.044	.178	.270
Loyalty.Period	.777	-.245	.334	.024	.278
Capital.Start	-.658	.233	.491	.132	.157
Capital.Total	-.007	.396	.716	.142	.139
Sales.M	.138	-.201	.850	-.031	-.090
Profit.M	.018	-.153	.663	-.429	.094
Advt.Expenses	.160	.783	-.125	.237	-.203

The results of factor analysis reject both the null hypotheses (H01 and H02) indicating that functional factors are prominent in microenterprises and that 'Entrepreneur' as a person is also an important component of a microenterprise.

Regression Analysis

After extracting five factors from 15 variables, regression analysis was done amongst each of the five factors to understand the factors more in detail. Thus, five regression equations were generated with one relevant variable in each factor as the output variable and the remaining variables as input variables.

Regression for Factor 1. The dependent variable is Loyalty period and the predictors are qualifications, age of business and current age of promoter. The R-Squared is 47.5% and D-W statistic is 2.09. Regression equation is given in Table 6. Age of business was found to be significant at 1% significance level and positively associated with loyalty period indicating that in mature microenterprises attrition is low as loyalty is high.

Table 6: Regression and multi-collinearity statistic for Regression 1

Variables	Coefficients	Significance	VIF
Constant	1.311	.004	
Current.Age	-.084	.507	1.504
Age.Business	.694	.000	1.392
Qualifications	-.027	.800	1.134

Regression for Factor 2. The dependent variable is total capital and the predictors are number of owners, employees at start, current employees. The R-Squared is 21.3% and D-W statistic is 1.66. Regression equation is given in table 7. Total capital used in microenterprise was found to be positively correlated with number of current employees and number of owners, and are significant at 10% significance level.

Table 7: Regression and multi-collinearity statistic for Regression 2

Variables	Coefficients	Significance	VIF
Constant	2.348	.000	
Emply.Start	.063	.781	1.270
Emply.current	.220	.053	1.304
No.Owners	.396	.083	1.270

Regression for Factor 3. The dependent variable is profit and the predictors are sales, capital at start and total capital. The R-Squared is 45.6% and D-W statistic is 2.0. Regression equation is given in Table 8. The results show that there is a positive relation between monthly profit and monthly sales and is significant at 1% level. There is also a positive relation between monthly profit and total capital which is significant at 10% level. However, there is a negative but insignificant relation between monthly profit and starting capital which can be attributed to 'noise' in data and can be explored in further research.

Table 8: Regression and Multi-Collinearity Statistic for Regression 3

Variables	Coefficients	Significance	VIF
Constant	.844	.000	
Capital.Start	-.077	.298	1.386
Capital.Total	.146	.069	1.772
Sales.M	.516	.000	1.450

Regression for Factor 4. The dependent variable is profit and the predictors are family business, number of owners and business type. The R-Squared is 2.8% and D-W statistic is 1.36. Regression equation is given in Table 9.

Table 9: Regression and Multi-Collinearity Statistic for Regression 4

Variables	Coefficients	Significance	VIF
Constant	2.267	.000	
No.Owners	.130	.580	1.113
Business.Type	.144	.192	1.133
FAMLY.bus	.057	.742	1.127

In regression 4, all the input variables were found to be positively correlated with the output variables but insignificant.

Regression for Factor 5. The dependent variable is the initial age of owner and the predictor variable is the number of owners. The R-Squared is 4.1% and D-W statistic is 1.769.

The regression model is: *Initial age of owner= 2.398 -0.256* Number of owners*

It is observed that in regression 5 the age of starting a business is negatively associated with number of owners. Here the assumption is that of a scenario where there are more than one promoters and one of them is the entrepreneur. Thus, if there are more people backing an entrepreneur, he/she is more likely to start the business at a young age.

Discussion and Conclusion

The research objective of this paper was to look for another perspective on microenterprises and study the organizational traits. This was achieved using factor analysis where five broad factors were extracted. It can be concluded that like any other business organization, these microenterprises also possess the key traits of Human Resources, Finance and General Management. Apart from the common business organizational factors, a distinct factor of 'Entrepreneur' as a person was also derived which highlights the importance of the 'person' behind any entrepreneurial venture. This soft skill or personality trait has been highlighted by Nag and Das (2014, 2015) in two of their researches. Regression analysis revealed that an entrepreneur backed by more number of promoters tend to start at an early age and that the age of business was found to be significant and positively associated with loyalty period indicating that in mature microenterprises, attrition is low as loyalty is high. Also it was validated that capital is dependent on number of employees and number of promoters in a microenterprise. It is expected that the findings from this research would provide a background to policy makers to formulate effective policies for microenterprises.

Limitations and Scope for Further Research

One limitation of the research is that it is based on a previous project and thus the research methodology used is influenced by original methodology. The geographical area covered for survey was limited which can be extended in further studies. A study can be conducted to find a common link (trait) between microenterprises and small, medium, large enterprises. In regression 3, monthly profit was found to be high and positively associated with monthly sales and positively associated with total capital. A strange observation was found where profit was low but negatively associated with starting capital which can be explored in further research.

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Author's Profile

Moid U Ahmad is an author, researcher and a trainer and possesses a total work experience of 14 years, out of which 12 years have been into academics and research. He has an educational background in finance, statistics and mathematics. He has about 40 publications in national and international journals, apart from attending conferences at various international platforms. His areas of interest are banking, corporate finance, corporate valuation and entrepreneurship. He is a life member of the Indian Econometrics Society and a member of The Econometrics Society. He is on the review board of three journals of Emerald publications and is associated with number of other journals as well. He has taken up a few research projects and has authored a well appreciated business fiction 'An Uncommon Life'.
