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SUSTAINABILITY OF RURAL LIVELIHOOD ACTIVITIES:AN EMPIRICAL ANALYSIS

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Abstract:-In the literature, economic development has been defined as “a process of improving the quality of all human lives’ (Todaro, 1994), which emphasizes three important aspects: raising income and consumption; fostering self-esteem through institutions that promote human dignity and respect and increasing people’s freedom”. Nobel laureate Professor Amartya Sen, (1999) is of the view that development is actually a process of expanding real freedoms that people can enjoy through (i) political freedoms, (ii) economic facilities, (iii) social opportunities, (iv) transparency guarantees and (v) protective security; which help progress the general capability of a person. Another Nobel laureate of Bengal, versatile Rabindranath Tagore expressed the idea of ‘freedom’ in his words as: “the departure of the foreign rulers would not give us freedom which should be made meaningful by rural reconstruction.”

Keywords: Economic Value Added, Market Value Added, Public Sector Banks.

INTRODUCTION

According to him, there are some principles of reconstruction of rural society: self-confidence, recognition of the value of joy in their life with aesthetic manifestations, usage of modern machines in production and removal of the mental barrier between affluent, educated elites and poor villagers. It is, therefore, important to focus our attention on the failure of rural economy to achieve proper target of development planning vis-à-vis the ever-widening rural-urban gap. Thus to reconstruct the rural society, the urgent need is felt for the steady transformation of every aspect of village life, social, economic, political and cultural. But the economic prosperity is the basic pre-requisite for a flourishing social and cultural life (Desai, 1997).

Rural non-farm economy plays a significant role for the diversification of rural livelihood by providing permanent source of employment and income for the poor in the land-scarce and labour abundant developing countries. Micro finance since its inception had been accepted as perhaps the most important means to reduce poverty through the provision micro credit. It had gained much credence worldwide in the decade of nineties due to the failure of formal credit institutions and informal lending systems in fulfilling the objective. This was perhaps due to the reasons of political interference, bureaucratic functioning, high degree of regulatory control, poor industrial relations, lack of customer- driven functioning, ignorance of local socio-economic conditions, lack of participation of clients in management, and the absence of realization regarding local problems and potentials. In this backdrop, micro enterprises were introduced as a tool of rural development to fill the lacuna left by the failure of formal credit institutions and informal lending system.

In the history of micro finance, the 1980s represented a turning point with the shift in the paradigm from old to new: from supply-led micro-credit (small loan) programme to demand-based microfinance (credit plus services) programme (Robinson, 2001). The new microfinance operates on the basis of the principle that ‘borrower knows best’. One of the expectations from the introduction of this new microfinance approach was that it would facilitate the start of new businesses by investing in viable micro-enterprises and from those new ventures people would earn profit through the use of local resources and local market opportunities and finally they would be able to reinvest a

part of this profit in enterprises for their growth and capital accumulation. It was also expected that the other share of the profit would be spent on health, education, housing, sanitation, etc, towards an improved standard of living for their households.

This issue has gained momentum in the development policy dialogue of Third World Economies since the year 2000 with the announcement of Millennium Development Goals (MDGs) by the United Nations Organisation (UNO). The most critical Millennium Development Goal under the UNDP (United Nations Development Programme) is to reduce extreme poverty and hunger by half within 2015 around the globe. Several approaches have been promoted by the UNDP emphasizing the significance of equity, financial and social inclusion, empowerment and human rights for poverty reduction. An efficient financial system would ensure that a large number of poor and vulnerable people would enjoy consistent access to financial services through which they would be included in the mainstream of development. This access can be a tool of poverty alleviation and hence a key element of economic growth where micro-finance presents itself as a mechanism with a set of financial services towards meeting MDGs especially in the developing world.

Thus the policy of microentrepreneurship development under rural development programmes has been gained popularity in the developing world due to capital crunch and acute unemployment problem of these countries. But with the expansion of microenterprise development under different programmes, the question of sustainability and desired impact are generally agreed to be important to the policy makers, donors, practitioners, financial institutions and of course to the researchers of social sciences.

2. RELEVANCE IN INDIAN CONTEXT

The leading feature of Indian economy is the large number of unemployed rural youth traditionally dependent on agriculture and gradually becoming redundant owing to introduction of labour saving technologies in agriculture one hand and the continued fragmentation of agricultural land due to population pressure on the other. Lacking the motivation and skills needed to earn a decent livelihood, many of them opt to migrate to urban areas. Employment is one of the most significant issues in terms of the living conditions of the people of rural India to-day but there are not enough jobs for all the people who are willing to work. The rate of employment generation, in terms of aggregate main work, has been lower compared to the rate of expansion of the population, and substantially, lower than the rate of growth in income. This aggravated situation has not been controlled through the application of percolation theory of social development since independence.

The only scope for employment generation in non-farm sector can be an way out of this problem by providing a permanent income source instead of seasonal income in rural microenterprise sector. Firstly, it is regarded as a weapon to resist rural-urban migration that leads to higher wages for unskilled urban workers. Secondly, successful operation of rural non-farm enterprises helps to minimize rural migration and thus to control urban congestion and pollution (IFAD, 2004).

Against this backdrop, NABARD visualized a greater role for developing the labour-intensive rural non-farm sector. Development of rural artisans; tiny, village & cottage industries; agro-industries; handicrafts; handlooms; other small scale industries and service enterprises in rural areas is, therefore, given thrust by NABARD through formulation of a package of refinance schemes for banks and promotional programmes for all stakeholders including facilitators like NGOs so that balanced rural development can be achieved (Menon, et.al, 2009). With a view to providing supplementary credit for this purpose to the poorest of the poor in rural area, NABARD introduced the pilot project in 1992-93 for linking Self Help Groups (SHGs) with formal credit institution. NABARD realized that along with credit support, the growth and development of Rural Non Farm Sector (RNFS) significantly depends upon building up / supply of competent entrepreneurs who catalyze resources and manage them to establish viable and sustainable employment generating ventures in rural areas. With this credo in mind, Rural Entrepreneurship Development Programmes (REDPs) have been supported by NABARD during more than past two decades. It has been recognized as a decentralized, more cost effective and faster growing microfinance process in the world that enabled over 103 million of poor households under 8 million SHGs to get access to a variety of financial services from the banks (NABARD, 2011-12). This linkage has provided not only savings and/ or credit but also created a platform in Micro Small and Medium Enterprise (MSME) sector through which they could earn a decent livelihood.

Non-farm sources of income are important for the rural poor in the economy of West Bengal for two reasons. Firstly, the direct agricultural income of the poor is not enough to sustain their livelihoods, either because of being landless or because of leasing marginal land. Secondly, wage employment in agriculture is so far highly seasonal in most of the rural areas in West Bengal, so that the employment is the only source of supplementations in income. In the absence of viable investments in nonfarm enterprises, the pattern of job creation has shifted towards more casual, marginal, part-time and insecure contracts or self-employment (W.B, 2004). Thus the government of West Bengal has been taken serious initiatives for industrialization through the development of nonfarm enterprises by providing infrastructure facilities and support services since 1990's onwards. State Government has been tried to strengthen the self employment projects through the establishment of modern microenterprise in the past decades, specifically for the rural people.

According to West Bengal Development Report (2010), 93.22 per cent of the total workers in West Bengal find their livelihood in the unorganized sector, while the proportion of the nonagricultural workers in the state belonging to unorganized sector is over 90 percent. The manufacturing sector in West Bengal, being a combination of unorganized workers and unorganized units, is constituted with small and micro units. Since in the absence of growth in unorganized manufacturing industries in the State, this sector, with its low capital base, lower scale of operation, local resources with local market and mostly with family labours is left to play a crucial role in sustainable development of rural Bengal, improved micro finance services become an important way of providing the means for acquiring sustainable livelihood of rural society.

The Micro and Small Enterprises sector (MSEs) in West Bengal is one of the key sectors in the State's economy. The Directorate of Micro & Small Scale Enterprises under the Department of Micro & Small Enterprises and Textile, Government of West Bengal is an important agency for the growth and promotion of MSEs in West Bengal. The main objective of the Directorate is to facilitate growth and promote MSEs and to impart training to new and old entrepreneurs. There is enormous potential for employment generation in this sector, about 9.63 percent of the total MSEs of the country is in operation in West Bengal and it accounts for 9.81 percent of the total employment in this sector of the country (W.B, 2011). As regards entrepreneurs, matured SHGs with female and male members in West Bengal are working in self employed traditional village and household enterprises.

After the introduction of MSMED Act, the process of registration was replaced with the filing of Entrepreneur Memorandum (EM). EM-I relates to proposed units and EM-II relates to established units. As on 31.03 2010, there were 25.56 lakh units of MSEs which provide employment to 62.84 lakh persons. There are 85,336 EM-II field registered MSEs, generating employment for 8,17,290 persons. There are further 24.71 lakh units of unregistered MSEs generating employment for 54.66 lakh persons. The share of medium enterprises in MSME sector is only 0.25 per cent. The following table-6 denotes the district wise progress of EM –II for microenterprises in West Bengal.

4. CONCEPTS OF MICROENTERPRISE AND SUSTAINABILITY

Microenterprise

A micro-enterprise has been defined in a variety of ways using such factors as the number of employees, the volume of sales, the capital value of an endeavour, and the level of capital costs per workplace (Harper, 1984). Microenterprise is "very small-scale business, especially owner-operated, with few employees" (Websters New Millenium Dictionary of English, 2003-2005). The term "micro enterprise" refers to a very small or tiny, informally organized business activity undertaken by the people of lower income group. According to Schreiner and Woller (2003), "Micro enterprises are tiny businesses; most have one employee, the owner".

Rural microenterprises are small, informal and privately owned by poor people and exclude crop production by convention. The entrepreneurs have only rudimentary skills in management; technologies used are a mix of traditional and modern; access to capital is often a limitation, as is market access and the level of employment, ranging up to 10 workers. Enterprises that fall under the purview of this definition may be described as 'pre-enterprises' that cater to the basic needs of low-income consumers and are characterized by simple products, low prices, local markets, simple marketing channels, low barriers to entry, traditional technology and dependence on informal credit (Nair, 1998).

According to Indian Micro, Small and Medium Enterprise Development (MSMED) Act, 2006, in the category of manufacturing enterprises, micro enterprise is an enterprise where investment in plant and machinery does not exceed Rs. 25 lakh; while in the service category, the investment of micro enterprise does not exceed Rs. 10 lakh; Sometimes, microenterprise is defined as an economic endeavour which is: (1) operated and managed by one or two persons; (2) usually based within a family; and (3) usually functions within the informal sector of the society, outside of bureaucratic regulations and government controls. Typical micro-enterprises include such income-generating activities as fruit/vegetable vending, dressmaking, wood and metalworking, mechanical and electrical repair, weaving, and small food services. These income-generating activities, which include both service and manufacturing, typically address the consumer needs of the poor.

Sustainability

Though it is not easy to define the concept of sustainability, various social thinkers expressed the concept from different points of view. Sustainability is permanence (Navajas, et.al 2000). It matters because society cares about the poor now as well as for the future (Schreiner, 2000). Its dimensions include continued flow of benefits, longevity and ability to cover recurrent cost and institutional capacity and performance (Ereda, 2007). Sustainable development implies that the progress in poverty reduction would be lasting and households would not depend on external support (Conning, 1999). World Business Council for Sustainable Development (WBCSD) defines sustainable entrepreneurship as the "continuing commitment of business to behave in an ethical way and contribute

towards economic development while improving the quality of life of the workforce, their families, and the local and global community, as well as future generations". Thus, the concept sustainability has different dimensions - financial or economic, social, political, cultural, legal, environmental and technological (ILO, 2007). But, it should be mentioned here that in most of the research undertaken in this field environmental sustainability is not so important. This is perhaps due to the nature of the livelihood microenterprises operated in rural areas which usually have little harmful effects on the environment (IDB, 2003).

5. SCOPE OF THE STUDY AND RESEARCH QUESTION

Worldwide expansion of microenterprise development programme as a strategy for rural development introduction of sustainable livelihood by raising the level of financial support provided to these programmes, calls for an in depth evaluation of the questions of sustainability and desired impacts of these programmes. Donors want to know whether their support to microfinance institutions conforms to the poverty alleviation and whether the impacts justify the financial support given. Practitioners desire to know whether they are reaching their programme objectives and how to improve their services to their clients for their sustainability. The researchers have visited this issue repeatedly thereby forcing the concerned institutional or organizational authorities to make an honest effort to this end. The concerns of policy makers, donors, practitioners and researchers coincide in the sense that they all want each and every unit of microenterprise or income generating activities under sustainable rural livelihood programme through microfinance to be lasting and to essentially have a positive impact on their family. Thus, in order to achieve sustainable rural development goals and obviously to achieve the MDG, it is necessary to maintain sustainability of micro entrepreneurs and their organisations beyond the short run.

6. OBJECTIVE

In the light of the above research questions, objective of the study is to measure as well as to compare the level of sustainability of rural micro enterprises in West Bengal and identification of determinants of sustainability.

7. SURVEY DESIGN AND DATA

The study has been conducted on the basis of primary data. Primary data have been collected from microentrepreneurs through sample survey using simple random selection method with structured questionnaires in 6 districts of West Bengal- Howrah, Hooghly, North 24 parganas, Birbhum, Coochbehar and Nadia. Districts have been selected as per the secondary data of district-wise progress of Entrepreneurship Memorandum (EM)-II in West Bengal (2011-12). (After the introduction of MSMED Act 2006, the process of registration was replaced with the filing of Entrepreneur Memorandum (EM). There are two types of Memorandum; EM-I that relates to proposed units where as EM-II relates to established units.) The selection has been done keeping in mind that at least one district should be selected in the study area from each of the four industrial zones (Howrah, Durgapur, Siliguri and Berhampur) of West Bengal and all most major categories of unorganized rural microenterprises should be captured in the primary survey. The selected microenterprise owner households for survey are those who have been operating for five years or more.

7: METHODOLOGY

In order to assess the level of "sustainability of microenterprises", the following methodologies were used.

Identification of Indicators: Thirty indicators (e.g. financial, human capital and socio-economic) under six attributes of the enterprise and the entrepreneur have been identified in order to assess the sustainability of the micro enterprises.

Construction of 'Sustainability Indices' and the "Composite Sustainability Index" (CSI): Six sub indices as well as the CSI have been constructed in two different stages by using the statistical technique of "Principal Component Analysis" (Dunteman, 1989; OECD, 2008; Mehta. and Siddiqui, 2005-06; Appendix)

The attributes are specific on the basis of 30 characteristic indicators that qualify entrepreneurs as well as enterprises. Every qualitative indicator of sustainability has been measured in the five-point Likert Scale: very high (5), high (4), medium (3), fair (2) and low (1). All the attributes leading to sustainability are assumed to have equal weights (i.e., exogenous weights). The sustainability index has been determined by aggregating these 30 indicators under six attributes. As for example, an individual entrepreneur who scores "very high" on all indicators of "sustainability", he/she has a total maximum score of 150 (5 multiplied by 30), while that who scores "low" on all indicators of "sustainability", has a total score of 30 (1 multiplied 30). The level of sustainability, however, is measured by the average score (simple arithmetic mean) for each individual. The average score for the former is 5 (total score: 150, divided by total number of indicators of sustainability: 30), while the latter is 1 (total score: 30

divided by total number of indicators of sustainability: 30). The study assumes that if the level of sustainability be greater than or equal to 4 (80% or more), the enterprises would be considered to be “highly sustainable”. If the level of sustainability be less than 4 but greater than 3 (60% or more but less than 80% of the scale), the enterprises would be regarded as “moderately sustainable”. Otherwise, the enterprises would be considered as “unsustainable” (having lower level of sustainability), having an index value less than 3.

However, the method of assigning equal weights in the indicators has often been criticized for its arbitrariness. The practical experience tells us that all the indicators do not have equal weights, and equal weighting implies perfect substitutability between components of a composite index. For example, when a composite index of sustainability is constructed by giving equal weights to all the indicators, it implies that any variable, say, education is exactly as important as another, say, risk taking power or operational efficiency. But it need not always be true. On the other hand, it may also happen that by combining variables with a high degree of correlation, an element of double counting may be introduced into the index. We, therefore, require a method that can assign weights to the different components of a composite index in an objective manner and find out the factors responsible for achieving high level of sustainability of enterprises. The statistical technique such as the Principal Component Analysis (PCA) provides a convenient way of aggregating the indicators into a composite index where the weights assigned to the indicators are determined ‘endogenously’ on the basis of the given data set.

The PCA has been used in the present study in two stages to determine the composite index of sustainability. At the first stage, with the help of PCA six (6) sub-indices have been constructed on the basis of 30 indicators (those have been treated as variables in PCA) of sustainability by dividing these into 6 categories according to their nature of relation with enterprise and entrepreneur. These indices include-Entrepreneurial Quality Index (EQI), Entrepreneurial Ability Index (EAI), Entrepreneurial Power Index (EPI), Entrepreneurial Trait Index (ETI), Enterprise Capability Index (ECPI) and Enterprise Competency Index (ECMI). Finally, in the second stage, Composite Sustainability Index (CSI*) is determined on the basis of the value of the above six sub-indices. In constructing these indices, seven PCA have been run and only one principal component (PC) has been extracted with 50% or more variance in all the cases. So the weights have been calculated on the basis of loadings of the first component alone. The structure of CSI* of the present analysis have been expressed in Appendix.

The PCA in the present study has been performed by using the Statistical Package for Social Sciences (SPSS). The procedures and steps of measurement of the level of composite sustainability index of microenterprises required for undertaking PCA have been performed by using the SPSS software version – 10.

Categorization of Enterprises: In order to compare the performance of sustainability indices, micro enterprises have been categorized according to (i) nature of labour used: establishment and own account; (ii) type of activities: animal husbandry, food-processing, handicraft, pottery-terracotta, ready-made garments, manufacturing and service.

Binary Logistic Regression: Even though “sustainability” of enterprises was constructed with the help of several variables, economic and social, it is hypothesized that any variation in the level of sustainability may be explained by some other factors, both quantitative and qualitative. A statistical exercise by using binary logistic regression was carried out to identify the determinants as represented by the composite sustainability index (CSI*). Here the study had focused on the some demographic and socio-economic factors of sustainability those have not been incorporated into CSI at the previous stage. The methodology used CSI* as the dependent variable.

8. ANALYSIS AND RESULTS

A) Sustainability Indices

I. Nature of Labour Used

The first classification, involves categorization of all enterprises according to the nature of labour used. It appears that there are 74.5% enterprises with only “family labour” (own account) and 25.5% enterprises with “hired labour” (establishment). The CSI* (Table-1) reveals that 65.7% of enterprises running with hired labour (establishment) are considered as sustainable (i.e. combining high and medium sustainability, where CSI* = 3). But on the contrary, 53.8% of enterprises using only family labour (own account enterprises) are measured as sustainable. Even in all the sub indices (Table-1) the percentage of sustainable enterprises are greater in number under the group running with hired labour than that of the other group. The result also indicates that 30.4% of the hired labour enterprises achieved “high” level of sustainability which is almost twice of 15.7% (highly sustainable i.e. CSI* = 4) of family labour or own account enterprises.

Table-2, depicts that average value of six sub-indices and CSI* are quite better for enterprises with hired labour compared to own account enterprises (with family labour), although in most of the cases, the average values of both group are in the same range (medium-M) of sustainability. The disparity regarding value of indices arises as enterprises running with hired labour operate relatively in a large scale (i.e efficient scale of operation) and are driven

especially by male entrepreneurs which signify that the entrepreneurial qualities, abilities, powers etc. are relatively high in 'enterprises with hired labour'. The determination of Entrepreneurial Trait Index (ETI) demonstrates that the performance of establishment category is far better regarding the variables 'attitude', 'self confidence' and 'commitment' than those in own account enterprises.

As far as 'Enterprise Capability' is concerned the enterprises having hired labour, being of relatively large scale, always make a survey before starting the enterprise. They also try to get sufficient advice regarding price, marketing, how to mitigate risk, as well as legal advice which would help to sustain their enterprises. As far as 'enterprise competency' in use of scale and production technique are concerned, the enterprises run with hired labour are more capable and more conscious about applying modern tools and techniques for the qualitative and quantitative improvement of the product and services compared to those of the own account enterprises. So the ECPI and ECMI carry (Table-2) better level of sustainability for hired labour enterprises compared to that of family based.

II. Nature of Activities

Secondly, enterprises are subdivided on the basis of the nature of microenterprise activities. It comprises seven types micro enterprise activities, namely: i) animal husbandry; ii) food processing; iii) handicrafts; iv) manufacturing; v) pottery- terracotta-clay modeling; vi) readymade garments and vii) service. Table -3 portrays that manufacturing enterprises ranked first (73%) followed by service (66%), handicrafts, food processing, readymade garments, pottery-terracotta and clay modeling and animal husbandry in terms of percentage of sustainable enterprises.

The important observation (Table-3) is that the percentage of highly (CSI* ≥ 4) sustainable enterprises of pottery is highest (28.2%) though it secured sixth position as far as percentage of CSI* rank is concerned. This disparity arises due to various reasons. The infrastructure of the pottery enterprises is better and most of them produce highly exportable product that results in high profitability and hence reinvestment of profit becomes easy. Moreover, these enterprises are growth oriented in nature and hence they have enjoyed the benefits of viability though in some cases the pottery enterprises are very small and subsistent in nature (For example microenterprises in North 24 parganas and Hooghly). On the other hand the performance of Animal husbandry and food processing are very poor, as the majority of these enterprises have poor scale of operation.

As far as the average level of sustainability (Table-4) is concerned, manufacturing enterprises are in the first (CSI*=3.40) position followed by the other six types of enterprises – service (3.27), handicrafts (3.14), pottery (3.06), food processing & readymade garments (3.05) and animal husbandry (2.92) in descending order. The findings suggest that all types of enterprises except the enterprise of animal husbandry (CSI* < 3) scored the moderate level ($3 < \text{CSI}^* < 4$) of sustainability. The poor performance of animal husbandry, food processing and others is due to their employment of lower capital, lower marketing ability and poor scientific knowledge under own account enterprises. It is also remarkable to note that the manufacturing enterprises stood first not only in terms of the value of CSI* but also in terms of the value of almost all sub indices. The distinguishing feature of manufacturing enterprises arises due to its growth oriented nature, large scale production, use of modern technique and efficient marketing of products.

B) Determinants of Sustainability

In the present sub-section we have analyzed some demographic and socio-economic factors of sustainability those have not been incorporated in previous stage. Moreover, in this analysis an attempt has been made to identify some quantitative determinants of sustainability through the binary logistic regression analysis on the basis of the value of composite sustainability index (CSI*) obtained from previous stage. It is also important to mention here that this analysis explains the significance of qualitative character of both enterprise and entrepreneurs' that were vital for the construction of sustainability indices.

Binary Logistic Regression

Binary logistic regression has been employed to identify the determinants of sustainability of microenterprises. It is hypothesized that "sustainability" of 'ith' enterprise depends on a number of independent variables.

The model:

$$Y_i = \beta_0 + \sum_{j=1}^2 \beta_j X_j + u_i ; \text{ where, } Y_i : \text{Sustainability of 'i}^{\text{th}} \text{ enterprise.}$$

Where, X_1 : capital intensity (CINTNST)

X_2 : Loan amount (LOAN)

X₃: Subsidy (SUBSIDY),
X₄: Market infrastructure (MINFRA),
X₅: Access to information (INFORM),
X₆: Education (HFEDU),
X₇: Number of dependents (DEPDNT),
X₈: Age (AGE),
X₉: sex (SEX)
X₁₀: Religion (RELGN)

Variables:

Dependent Variable: The dependent variable for the logit model is sustainability of microenterprises and it takes a value of '1' for microenterprises having the sustainability index greater than or equal to '3' (CSI* 3 and '0' otherwise.

Independent Variables

The independent variables used in the logit model are:

(i) Capital Intensity of Enterprise (CINTNST)

Categories:

0: for low capital intensity;
1: for moderate capital intensity;
2: for high capital intensity

(ii) Loan Amount (LOAN)

Categories:

0: for Rs. 0-5000-0;
1: for Rs. 5001-25000;
2: for Rs. 25001-50000;
3: for Rs. 50001 and above

iii) Amount of Subsidy (SUBSIDY)

Categories:

0: for without subsidy;
1: for with subsidy

(iv) Market Infrastructure (MINFRA)

Categories:

0: for limited infrastructure;
1: for moderate infrastructure;
2: for high level of infrastructure

(v) Access to Information of Entrepreneur (INFORM)

Categories:

0: for poor infrastructure;
1: for semi developed infrastructure;
2: for good infrastructure.

(vi) Highest Level of Education in the Household (HFEDU)

Categories:

- 0: for up to primary;
- 1: for above primary to madhyamik;
- 2: for above madhyamik;

(vii) Number of Dependents in the Household (DEPDNT)

Categories:

- 0: for 0 to 2 persons;
- 1: more than 2 persons

(viii) Age of Entrepreneur (AGE)

Categories:

- 0: for up to 30 years of age;
- 1: for age 31 years to 45 years of age;
- 2: for above 45 years.

(ix) Sex of Entrepreneurs' (SEX)

Categories:

- 0: for male;
- 1: for female

(x) Religion of Household (RELGN)

Categories:

- 0: for Others;
- 1: for hindu

The following table presents the a priori expectations regarding the sign of the coefficients.

Expected Signs of Coefficients

	CINTNT	LOAN	SUBSIDY	MINFRA	INFORM	HFEDU	DEPDNT
SUSTAIN	+	+	+	+	+	+	(-)

To check whether the predictors are not highly correlated the multicollinearity test is run between the independent variables. The values of tolerance not less than 0.1 and Variance Inflation Factor (VIF) not greater than 10 show that there is no problem of co linearity between the predictors. The model as a whole explains 52.1% (Cox and Snell R²) and 69.5% (Nagelkerke R²) of the variance in sustainability index and correctly predicts 86.8% as a whole. As per literature, in Hosmer and Lemeshow Test, the non significance of chi-square test indicates that the model is good to fit.

According to the literature, it is expected that the increased capital intensity of the product would help the enterprises to earn higher profit through the improvement of output in terms of both quantity and quality and, therefore it would ultimately increase the level of sustainability. Hence the sign of the coefficient of capital intensity is expected to be positive. In the study, the results (Table-5) depict that the coefficients of the variable 'Capital Intensity (1,2)' has been found to be positive, as expected, and also significant at 6 % and 1% level respectively. The odd ratios reflect that the enterprises with medium capital intensity are 2.13 times (odd ratio 2.133) and those with high capital intensity are 19 times (odd ratio 19.116) more likely to increase the sustainability of enterprises as compared to the enterprises with very low capital intensity (0). It is based on the intuition that the microenterprises with higher level of capital labour ratio are able to employ skilled labour, use modern machinery and improved

technique of production that results in more output both in terms of quantity and quality. As a result of this, the income and hence profit of the enterprises with higher capital intensity outweigh those of the microenterprises with low capital base. These results are supported by

The variable 'loan' assumes significance in regard to sustainability of the microentrepreneurs. Generally, greater access to loan helps the microentrepreneurs to reap the advantage of scale of operation as well as market size over the long run and the sign of the coefficients of 'loan' variable, therefore, is expected to be positive. The table-5 reveals that the coefficient of 'loan amount (1, 2)' is positive. The coefficient of 'loan amount (2)' has been found to be significant at 1% level, although that of 'loan amount (1)' is significant at almost 7% level. The odd ratio reflects that the entrepreneurs taking loan (1) of Rs. 5001-25000 are almost twice (odd ratio 1.961) and those taking loan (2) of Rs.25001-50000 are almost 4 times (odd ratio 3.893) more likely to increase the sustainability of the entrepreneurs taking loan up to Rs.5000 (0). The coefficient of 'loan (3)' is also positive (the odd ratio being only 1.669), though not statistically significant. The findings suggest that although the microentrepreneurs taking loan (1) and loan (2) enjoy the aforesaid advantage of scale of operation, those taking loan (3) have to bear the burden of loan to a higher extent. The fact is that most of the microenterprises operate under the survival categories and hence they cannot accumulate wealth through their savings from their present income. Therefore, the microentrepreneurs taking very high amount of loan (i.e. loan amount being exceeding Rs.50, 000) are sometimes found to be trapped in perpetual indebtedness without any significant rise in their present income level. Thus access to credit at a higher level may not trigger a continuous improvement in technical aspect, output or employment. The findings are supported by the studies of Nair (1998).

So far as the variable 'Access to Information' is concerned, the entrepreneurs having relatively better and adequate information are supposed to compete in the market efficiently compared to those having poor information and therefore, additional information and its proper implementation would help them make more sustainable, reflecting that the expected sign of the coefficient of the variable would be positive. Our findings (Table-5) suggest that the coefficient of 'Access to Information (2)' has been found to be positive and significant at 1% level. The odd ratio indicates that the enterprises having high access to information are 45 times (odd ratio 45.00) are more likely to increase the sustainability of enterprises compared to the enterprises having negligible access to information (0). Apart from this, the coefficient of 'Access to Information (1)' has also been found to be positive though significant at 10% level. In order to run the enterprises, the entrepreneurs require information on the market potential of their finished products, the potential of diversification of their products, the whole sale price at which the inputs are being purchased, the price at which their products are being sold and also the information regarding government schemes launched for their welfare. They also require the networks or connections into other types of microenterprises outside their field that can aware as well as motivate them to run enterprises in a sustainable way. These findings are supported by Solanki (2008).

The microentrepreneurs are faced by the problems generating from the non availability of proper and specific markets as well as the infrastructural facilities like roads and bridges in local and national level. The development of market infrastructure can be viewed as a significant instrument of running enterprises in a sustainable way. The sign of the coefficient of 'Market Infrastructure' is, therefore, expected to be positive. The study demonstrates that the coefficients of the variable 'Market Infrastructure' (1,2) have been found to be positive, as expected, at 1% and 8% level respectively. The enterprises using 'infrastructure (1)' i.e. moderate level of market infrastructure are 4 times (odd ratio 3.923) and those using 'infrastructure (2)' i.e. high level of infrastructure are 8 times (odd ratio 8.104) more likely to increase the sustainability of the enterprises compared to those using very low level of infrastructure(0). Market infrastructure, on the one hand, reduces transaction cost and on the other, the rural competitiveness can be improved and the linkage effect can be enhanced through the trade fairs, product development and diversification, market information and entrepreneur's association. But it is worthwhile to mention that some enterprises cannot fully exploit the advantage of using high level of market infrastructure due to their limited knowledge and skill related to market, resulting in the fall in the level of significance (from 1% to 8%).

In the table-5, the coefficient of the variable 'Religion' indicates that the probability of sustainability of microenterprise is higher for Muslim community than for Hindu community at 1% level. The odd ratio of 'Religion' being 0.24 (which is less than 1) indicates that the enterprises related to 'Hindu community' are 0.24 times more likely to report the sustainability of enterprises as compared to 'Muslim community'. The reason may be perhaps due to the underlying features of the sample-enterprises used in our study. In the present study, most of the enterprises run by Muslim community are especially engaged in the production of handicraft products (mainly, Zari and Kunthastitch) which is recognized as only one way of their earning. These enterprises are very small in size, run by their successors only and require low levels of skill and capital. Most of these entrepreneurs, belonging to a poorer section of the society, cannot think of alternative sources of income. Since, in our sample, such types of enterprises require unskilled labour, they have been found employing their children and women as labourers. As a consequence of this, average cost of production has been found to be lower compared to the enterprises run by the Hindu community, thus making the enterprises (run by Muslim community) more sustainable.

Higher levels of education and larger amount of subsidy provided to the enterprise help improve entrepreneurial ability and facilitate to reduce cost of production respectively, making the enterprises more

sustainable. The sign of the coefficients of the variables 'HFEDU' and 'SUBSIDY' are expected to be positive. Also, more will be the number of dependents, lesser will be the probability of sustainability of enterprises, making the expected sign of the coefficient of the variable 'DEPDENT' negative. The table-5 also tells that the coefficients of 'highest family education', 'amount of subsidy' and 'number of dependents' are of expected sign though not statistically significant.

9. CONCLUSION AND POLICY IMPLICATION

The concept of sustainable microentrepreneurship is neither formal, nor derived, but rather a development process that combines the three aspects: microfinance, entrepreneurship and sustainability. An attempt has been made here to point out the critical issues and challenges regarding these three aspects of development through the present empirical analysis. There is no doubt that, with the intervention of the microfinance programme, access to formal credit by the vulnerable section of rural society increases in a significant manner and thereby participation in microenterprise or income generating activities increases progressively. But from the empirical results it is evident that major percentages of microenterprises are unsustainable.

The unsustainability of entrepreneurs, rather than enterprises, is the main challenge to microfinance programme. Thus the policies should be framed in such a specific manner that entrepreneurship activity would be long-lasting which will ultimately help to reconstruct the rural society by attaining a sustainable livelihood.

The present study provides some insights that can be woven together to formulate an evocative part of a significant development-cum-entrepreneurship policy. Some of these strands of a policy package are presented here:

i) There are different entrepreneurship development programmes run by the central government, state authorities and NGOs side by side. But the co-ordination at the institutional level is very poor and it is also surprising that the training programmes are not designed on the basis of local resource base, local market, local problems and potentials. Thus, to enhance employment opportunity through development of microentrepreneurship and to widen longevity the microenterprise development project should be designed regionally, as per the requirements and constraints of not only different sectors but also different subsectors within sectors and activities within subsectors.

ii) Most of the microentrepreneurs face problem of non availability of formal loan according to their need. Thus, the formal financial institutions should provide credit in simple terms and conditions. Moreover, the provision of repeat loans and even consumption loan to the tiny entrepreneurs during their emergencies and flexible range of financial services to the non-borrowers should necessarily be included in the policy.

iii) Rural microentrepreneurs often look as if entrepreneurship as a way of buying job (self employment) rather than a creative venture to develop an enterprise. Thus, the different types of training and skill development programme have played little role to create an efficient entrepreneur due to the lack of enthusiasm and entrepreneurial urge rather than lack of knowledge. Therefore, the training programme should be reoriented in such a way that not only the growth-oriented entrepreneurs are benefitted but also the survival entrepreneurs be upgraded in terms of productivity through the implementation of product diversification and modern production technique and sometimes only by simple tips like do's and don'ts regarding entrepreneurship.

iv) As a consequence of world-wide change in technology, globalization and market integration of the economy, survival of microentrepreneurs in the market competition is a big challenge. Government should intervene by providing technical assistance and market infrastructure at a reasonable cost to them that helps sustain in long run.

v) Finally, the study has explored that unsustainability of microenterprises as well as microentrepreneurs lying in different problems like non availability of market facility, market information and support services according to their need. These constraints vary not only across sectors but also across region. Sometimes big companies have penetrated in rural market and occupy a large portion of market by applying their monopoly power. As a result of this intervention, most of the rural entrepreneurs cannot survive independently. The government should intervene into the market to support marketing of products and consequently, frame a policy at macro level in such a way that the interest of rural microentrepreneurs be protected by any means.

APPENDIX

Principal Component Analysis

Principal Component Analysis (PCA) is a statistical technique that linearly transforms an original set of variables into a substantially smaller set of uncorrelated variables. Its goals are to reduce the dimensionality of original data set, to reduce high correlation among variables and to assign weights to different variables in an

objective manner instead of equal weighting (Dunteman, 1989; OECD, 2008; Mehta. and Siddiqui, 2005-06).The idea was originally conceived by Pearson (1901) and independently by Hotelling (1933).

If X_1, X_2, \dots, X_p are the original set of indicators such as education, training and experience, knowledge of book keeping, scientific knowledge, family background etc, that can be linearly transformed into Y , where Y is linear combination of the original variables such that it captures the largest proportion of the variance in the original variables. The principal component (PC) Y can be characterized as a p-dimensional random vector and can be written as $Y = a_1X_1 + a_2X_2 + \dots + a_pX_p$ where a_1, a_2, \dots, a_p are the weights of original variables that are mathematically determined to maximize the variation of the linear composite or, equivalently, to maximize the sum of the squared correlations of the principal component with the original variables. The second PC would capture the largest part of the residual variance and so on.

The derived PCs have the following properties

- (i) $Cov(Y_i, Y_j) = 0$, for all $i \neq j$, i.e., the PCs are orthogonal to each other; and
- (ii) $Var.(Y_i) = \sum Var.(X_i)$, i.e., sum of the variation of the PCs is equal to the sum of the variation of the original variables.
- (iii) The values of a_j i.e., weights that maximize the variance of Y_i are the elements of the i-th eigen vector associated with the correlation matrix of the original variables and the maximum variance of Y_i is the i-th eigen value of the same matrix. Thus the first PC takes its weights from the eigen vector associated with the largest eigen value: the second PC takes weights from the eigen vector associated with the second largest eigen value and so on (sage book)

The correlation between the original variables and principal components are called component loadings. One can calculate the weights of the components by using these loadings which are nothing but the proportion of component loading of a particular indicator to the sum of all the loadings. These weights can then be used to compute component scores that are desired composite indices. If the first PC alone explains a major part (50% or more) of the total variance, then one set of component scores is enough to analyze the matter of fact. But if first PC fails to explain at least 50% of total variance, then it would not be proper to calculate component scores based on the first PC alone. In such cases, combined component scores would be calculated based on the first two PCs or more.

Structure of Composite Sustainability Index (CSI*)

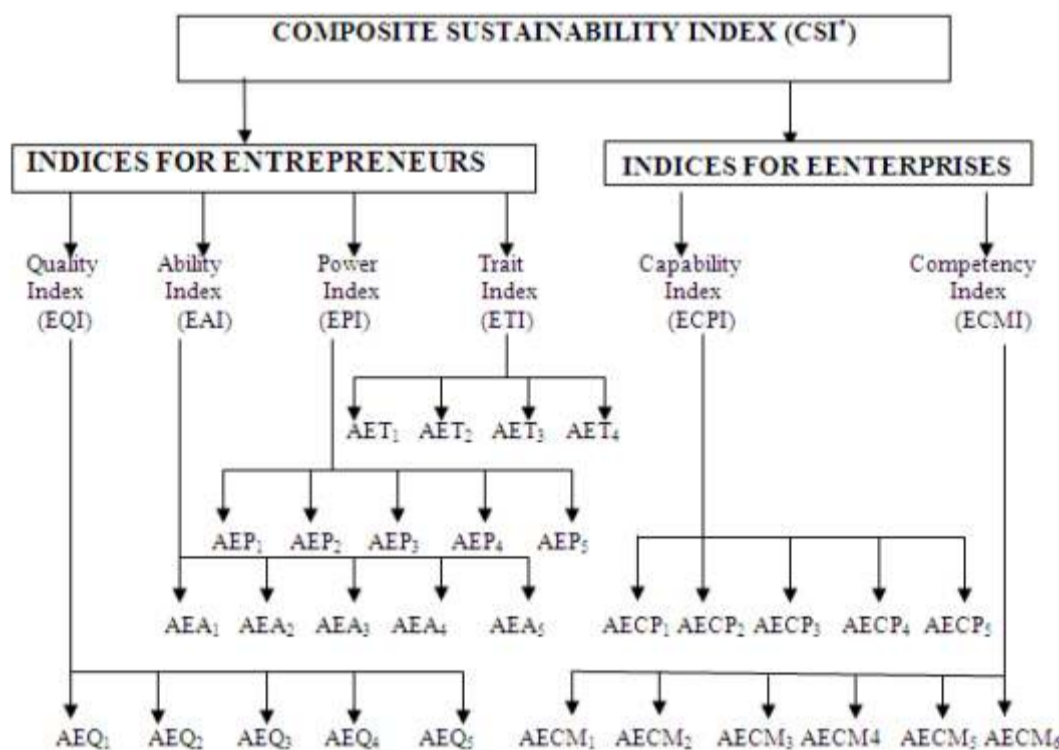


Table-1
Percentage Distribution of Enterprises with Different Levels of Sustainability into Own Account and Establishment Enterprises

Percentage Indices	Own Account Enterprises				Establishment Enterprises			
	Total	High	Moderate	Low	Total	High	Moderate	Low
EQI	100	19.4	41.1	39.5	100	27.5	40.1	32.4
EAI	100	34.8	28.7	36.5	100	47.1	22.5	30.4
EPI	100	24.1	26.1	49.8	100	32.4	33.3	34.3
ETI	100	35.8	36.1	28.1	100	50.0	30.4	19.6
ECPI	100	09.7	26.1	64.2	100	22.5	28.5	49.0
ECMI	100	03.7	22.1	74.2	100	08.8	40.2	51.0
CSI*	100	15.7	38.1	46.2	100	30.4	35.3	34.3

Source: Sample Survey

Level of Indices: High > 4 > Moderate < 4; Low < 3

Table-2
Average Level of Sustainability of Enterprises into Own Account Enterprises and Establishment Enterprises

Average Indices	Own Account Enterprises			Establishment Enterprises		
	High	Moderate	Low	High	Moderate	Low
EQI	-	3.12(3)	-	-	3.40(4)	-
EAI	-	3.35(2)	-	-	3.62(2)	-
EPI	-	3.03(4)	-	-	3.41(3)	-
ETI	-	3.48(1)	-	-	3.78(1)	-
ECPI	-	-	2.76(5)	-	3.18(5)	-
ECMI	-	-	2.59(6)	-	-	2.95(6)
CSI*	-	3.06	-	-	3.39	-

Source: Sample Survey

Level of Indices: High > 4 > Moderate < 4; Low < 3

Figures in parentheses indicate rank of s

Table-3
Percentage Distribution of Enterprises with Different Levels of Sustainability into Various Types of Activities

Indices Enterprises	Level of Sustainability	EQI	EAI	EPI	ETI	ECPI	ECMI	CSI*	CSI* Rank
Animal Husbandry	High	16.2	21.6	18.9	27.0	02.7	00.0	13.5	7 (43.2)
	Moderate	29.7	29.7	27.0	37.9	32.4	27.0	29.7	
	Low	54.1	49.7	54.1	35.1	64.9	70.1	56.8	
	Total	100	100	100	100	100	100	100	
Food Processing	High	20.4	37.0	27.8	38.9	07.4	03.7	14.8	4 (55.6)
	Moderate	37.0	31.5	29.6	31.5	29.6	16.7	40.8	
	Low	42.6	31.5	42.6	29.6	67	79.6	44.4	
	Total	100	100	100	100	100	100	100	

Handicrafts	High	20.7	35.7	25.0	35.7	14.3	04.7	19.3	3 (56.4)
	Moderate	44.3	30.0	27.9	37.9	29.9	25.0	37.1	
	Low	35.0	34.3	47.1	26.4	55.8	70.3	43.6	
	Total	100	100	100	100	100	100	100	
Manufacturing	High	24.3	51.4	29.7	56.8	16.2	02.7	27.0	1 (73.0)
	Moderate	46.0	24.3	40.6	29.7	27.0	43.2	46.0	
	Low	29.7	24.3	29.7	13.5	56.8	54.1	27.0	
	Total	100	100	100	100	100	100	100	
Pottery, Terracotta and Clay Modeling	High	30.8	35.9	35.9	38.5	20.5	02.6	28.2	6 (51.3)
	Moderate	30.7	30.8	10.3	30.7	12.8	33.3	23.1	
	Low	38.5	33.3	53.8	30.8	66.7	64.1	48.7	
	Total	100	100	100	100	100	100	100	
Readymade Garments	High	14.3	37.5	19.6	39.3	03.6	03.6	12.5	5 (53.6)
	Moderate	46.4	19.6	25.0	32.1	30.3	16.0	41.1	
	Low	39.3	42.9	54.4	28.6	66.1	80.4	46.4	
	Total	100	100	100	100	100	100	100	
Service	High	25.5	51.1	34.0	44.7	17.0	12.8	21.3	2 (66.0)
	Moderate	38.3	19.1	25.6	36.2	23.4	27.6	44.7	
	Low	36.2	29.8	40.4	19.1	59.6	59.6	34.0	
	Total	100	100	100	100	100	100	100	

Source: Sample Survey;

Level of Indices: High 4 3 Moderate < 4; Low < 3

Table-4
Average Level of Sustainability into Different Types of Activities

Indices	EQI	EAI	EPI	ETI	ECPI	ECMI	CSI [†]
Types of Enterprises							
Animal Husbandry	2.86(L)	2.99(L)	2.97(L)	3.30(M)	2.80(L)	2.61(L)	2.92(L)
Rank	7(4)	7(2)	5(3)	7(1)	5(5)	5(6)	7
Food Processing	3.05(M)	3.33(M)	3.19(M)	3.46(M)	2.77(L)	2.52(L)	3.05(M)
Rank	6(4)	5(2)	3(3)	5(1)	6(5)	7(6)	5.5
Handicrafts	3.21(M)	3.44(M)	3.06(M)	3.54(M)	2.94(L)	2.66(L)	3.14(M)
Rank	4.5(3)	3(2)	4(4)	3(1)	2(5)	3(6)	3
Manufacturing	3.41(M)	3.78(M)	3.47(M)	3.94(M)	2.99(L)	2.83(L)	3.40(M)
Rank	1(4)	1(2)	1(3)	1(1)	1(5)	2(6)	1
Pottery, Terracotta and Clay Modeling	3.21(M)	3.32(M)	2.95(L)	3.43(M)	2.82(L)	2.65(L)	3.06(M)
Rank	4.5(3)	6(2)	7(4)	6(1)	4(5)	4(6)	4
Readymade Garments	3.23(M)	3.40(M)	2.96(L)	3.49(M)	2.63(L)	2.60(L)	3.05(M)
Rank	3(3)	4(2)	6(4)	4(1)	7(5)	6(6)	5.5
Service	3.29(M)	3.57(M)	3.35(M)	3.73(M)	2.83(L)	2.84(L)	3.27(M)
Rank	2(4)	2(2)	2(3)	2(1)	3(6)	1(5)	2

Source: Sample Survey

Level of Indices: High 4 3 Moderate < 4; Low < 3

Figures in parentheses indicate rank in row wise (intra enterprise rank of sub-indices)

Table-5
Determinants of Sustainability of Enterprises

Independent Variable	Estimated Coefficient	Standard Error	Significance Level	Odd-ratio
CINTNST (1)	0.758	0.405	0.061**	2.133
CINTNST (2)	2.951	0.990	0.003***	19.116
LOAN (1)	0.673	0.371	0.069**	1.961
LOAN (2)	1.359	0.551	0.014***	3.893
LOAN (3)	0.848	0.657	0.196	2.335
SUBSIDY (1)	0.898	0.615	0.144	2.455
MINFRA (1)	1.367	0.435	.002***	3.923
MINFRA (2)	2.092	1.179	0.076*	8.104
INFORM (1)	1.104	0.674	0.101*	3.015
INFORM (2)	3.807	0.757	0.000***	45.000
HFEDU (1)	2.815	2.675	0.293	16.692
HFEDU (2)	3.888	2.685	0.148	48.792
DEPDNT (1)	-0.252	0.504	0.617	0.777
AGE (1)	0.506	0.393	0.198	1.659
AGE (2)	-0.592	0.543	0.276	0.553
SEX (1)	0.561	0.346	0.105	1.752
RELGN (1)	-1.408	0.524	0.007***	0.245
Constant	-6.219	2.772	0.025	0.002

Omnibus Tests of Model Coefficients				Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.	Step	Chi-square	df	Sig.
Step1	step 294.111	17	.000	1	6.050	8	0.642
	Block 294.111	17	.000				
	Model 294.111	17	.000				

Significance Level: * for 10%; ** for 5%; And *** for 1%				Model Summary			
Step	-2 Log likelihood	Cox & Nagelkerke	Snell R Square	R			
1	258.155	0.521	0.695				

Source: Sample Survey

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