CLUSTER INTERVENTIONS: THE COMPETITIVENESS REFORMS FOR SUSTAINABLE DEVELOPMENT OF MSES IN INDIA.

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Abstract:

India is gearing up to raise output of MSE sector significantly by introducing various development programmes to derive clear competitive advantages. One of the peculiar characteristics of this sector is the existence of clusters for decades and centuries. The formidable challenges created for the MSME sector after the liberalisation has generated a great deal of interest on novel approaches to development. In this endevour, UNIDO in 1996 initiated a Cluster Development Programme (CDP) in collaboration with MSME Development Organisation to intervene in the process of promoting MSE networking and to improve the competitiveness of clusters. The objective of this paper is to study the genesis of cluster interventions and developmental changes occurred in the MSEs through CDPs. For this purpose, author studied four clusters under the CDP programme to measure the total factor productivity change. The paper concludes with benefits of CDPs on MSMEs in many aspects.

Keywords: *MSME, MSE, Cluster Interventions, Cluster Development Program (CDP), Special Purpose Vehicle (SPV), Common Facility Centre (CFC).*

1. Introduction

Quite contrary to the notion that small firms are essentially a transitional phenomenon and would eventually 'wither away', paving the way for the growth of large ones, small firms have, in fact, attracted serious attention of scholars and practitioners alike due to their notable performance now close to a quarter of a century (Keshab Das, 2003). Competition remaining the lifeline of business, the prevalence of trust, reciprocity and mutualism were found to be the high points of industrial clusters (Humphrey and Schmitz 1998). In fact, much of the policy intervention to promote clusters during the 1990s and beyond derives from these positive dimensions of collectivity. One of the peculiar characteristics of this sector is the existence and persistence of clusters. The term 'cluster' indicates a sectoral and geographical concentration of enterprises, which produce and sell a range of related products and are, thus, faced with common challenges and opportunities. These clusters have been in existence for decades and sometimes even centuries and signified an early stage symptom of industrialisation. Developing countries need to look at this process and carefully nurture clusters; this is one of the methods of ushering in industrialisation, economic development and growth. India, like other developing countries have been giving fair amount of attention in this direction. MSMEs have grown in significance not only due to their continuing contribution to local income growth, job generation and export earnings, but also a unique ability to be responsive to changes in market and innovation, whether in the domestic or global spheres. (K. Das, 2008). However MSEs are now facing a tough competition from their global counterparts due to liberalization, change in manufacturing strategies, technological changes, and turbulent and uncertain market scenario (Raju K.D; 2008). So there is urgent need to look into these issues for sustainable development. One of the ways to overcome this is through Cluster Interventions. The following sections discuss the Cluster Intervention through CDPs in Indian MSE sector.

1.1 Significance of Clusters: Micro and Small Enterprises (MSEs) enjoy a share of about 65-70%

(3.2 million units) of total establishments in the country. Clustering is observed in a wide range of countries and sectors. In Italy, MSME clusters that have reached high levels of growth and leadership in profitable niches of world markets like leather goods, textile, jewellery, ceramic tiles, and spectacle frames. Similar examples exist from other developed countries such as Taiwan, China, Hong Kong, Thailand, Germany, the US and Japan. India has 388 documented industrial clusters, around 400 Handloom clusters, about 3,000 Handicraft clusters and 2,800 micro-enterprise clusters that contribute significantly to its economy, and provide employment to more than 20 million people (MSME Annual Report 2008-2009). According to an estimate, clusters account for 77 per cent units, 72 per cent employment, 61 percent investment, 59 per cent output and 76 per cent exports of small scale industries.

1.2 Handicaps of Clusters: Although MSMEs play a key role in economic growth as well as equitable development in India, this potential role is often not fulfilled because of a particular set of problems characterizing MSMEs that are related to its size:

1. Individually, MSMEs are often unable to capture market opportunities, which require large production quantities, homogenous standards and regular supply.
2. They experience difficulties in achieving economies of scale in the purchase of inputs (such as equipment, raw materials, finance, consulting services, etc.)
3. Small size constitutes a significant hindrance to the internalization of functions such as training, market intelligence, logistics and technology innovation - all of which are at the very core of firm dynamism.
4. Small and medium scale prevents the achievement of specialised and effective internal division of labour that fosters cumulative improvements in productive capabilities and innovation.

Because of the continuous and fierce struggle to preserve their narrow profit margins, small-scale entrepreneurs are often locked in their routine work and unable to introduce innovative improvements to their products and processes and cannot look beyond the boundaries of their firms to capture new market opportunities. To overcome these handicaps associated with small individual size, the Office of the Development Commissioner, MSME, Government of India, initiated a developmental approach that targeted clusters of similar industries assuming that a cluster of units acting in unison would prove much more effective than the efforts of a lone enterprise. This approach would also mitigate the cost burden of development initiatives on individual enterprises as such costs would be shared by the entire cluster.

2. Cluster Development Programmes in India

2.1 Origin: At the end of 1996, following a national workshop during which the results of a UNIDO survey of Indian SME clusters were presented, UNIDO was requested by the Ministry of SSI to promote pilot projects in selected clusters and to help the Ministry to formulate a national cluster development programme. Following the UNIDO initiative, several institutions in India, both at the national and state level have taken up cluster development as a means to undertake socio-economic development. These include, besides the Central and State Governments, organisations like National Small Industries Corporation (NSIC), National Board for Agriculture and Rural Development (NABARD), Confederation of Indian Industries (CII), Small Industry Development Bank of India (SIDBI), Textile Committee – Ministry of Textiles and many others. The State Bank of India (SBI), through its project UP-TECH for technology up-gradation of SSI units, was one of the first organisations to take up CDP as a Credit Plus strategy in their banking services in 1998.

2.2 CDP Progress: Over the period, more than 20 independent institutions have taken up cluster development across more than 1000 clusters with very wide ranging objectives and methodologies. Some of the Government supported programmes are Ministry of MSE-CDP, NABARD supported National Programme for Rural Industrialization, KVIC's Comprehensive Handicraft Cluster Development (CHCD), Ministry of Textiles supported Integrated Handloom Cluster Development Programme (IHDS), NIMSME's National Resource center for Cluster Development (NRCD), EDI/ MSME Foundation's International Center for Cluster Competitiveness Growth & Technology (IC^3GT), Department of Science & Tech. supported Promoting Innovative Clusters (PIC).

Among private institutions, the leader in undertaking CDP is the Ahmedabad–based Global Network, an international trade consulting and training firm. It was introduced to the CDP by UNIDO in 2001 and has since then worked in 66 clusters in India. It has formed a not for- profit NGO

called *Cluster Pulse* to assist SSI clusters access international markets. Another Delhi-based *Clusterkrafts,* started in 2004 is facilitating the industry in improving its competitiveness, by way of CDPs designed entirely on the basis of felt- need and providing total support solutions to various agencies and institutions in the key areas like developing models for local interventions and networking linkages, facilitating access of clusters to business development and research services. It has formed *Apex Cluster Development Services* (APDS) and worked in more than 25 clusters at national and international level with CDP approach.

As per the MSME Annual Report, 2009-10, to accelerate holistic development of clusters through MSE- CDPs, various provisions like development of Common Facility Centers, development of sites for new enterprises, up-gradation of existing industrial infrastructure and provision of Exhibition Grounds/Halls for creation and management of infrastructure-related assets in the public-private partnership mode has been made. The ceiling of project cost has been raised to Rs.15 crore with GoI contribution of 70%. Total 457 clusters have been taken for Diagnostic Study, Soft Interventions and Hard Interventions under MSE-CDP. Diagnostic Study has been taken in 43 new clusters; Soft Interventions were initiated in 41 clusters and settings up of Common Facility Centre was approved in 9 clusters. The Table 1 lists the major CDP initiatives by various implementing agencies in India since its inception in 1993.

Insert Table 1

3. Genesis of CDPs

3.1 Cluster Interventions: Three diverse models of cluster development focusing on technology, consortia and local private sector led governance have emerged in the country over the last 15 years. The broad steps towards cluster development have centered around six heads, viz, cluster selection, diagnosis, engagement of cluster actors by trust building steps, action plan preparation, implementation and monitoring cum- evaluation. While in the initial phase, cluster based interventions started with Diagnostic Studies followed by Soft Interventions, the long term objective was to undertake Hard Interventions in the form of setting up of common facility in the cluster, wherever feasible. The Cluster Development Programme follows a defined approach while introducing interventions in the selected cluster. The steps involved in the intervention process are discussed below.

3.1.1 Selection of Intervention Officials:

i) Cluster Development Executive (CDE) is an officer of the local DIC / Development Institutes or from an NGO or any other suitable organisation / person who fulfills other conditions of distance and experience. CDEs must necessarily be trained in cluster development either before taking up his job or within six months.

ii) Mentor would be good if a competent senior person (even a retired officer) could be chosen as Mentor for some specific clusters that are being proposed for intervention. NIMSME, Hyderabad and Entrepreneurship Development Institute of India (EDII), Ahmedabad are supervising and guiding the work of many clusters located hundreds of miles away from their Institutes and acting as "Mentors".

iii) MD/CEO of SPV: Before a Common Facility Centre (CFC) of a cluster comes up the beneficiaries and users need to come together to form a registered body, i.e. a Special Purpose Vehicle (SPV) - which could very well be a Registered Society, Cooperative Society, Trust or Company to transmit funds from the Government. The MD or CEO of the SPV is a full-time official employed by the SPV and he acts as the overall charge of the Hard Interventions and Infrastructure Development of the Cluster.

iv) Local Organizer or Network Development Agent: He is another critical interventionist who is to physically operate in the grass-roots level in the cluster. He should normally be selected carefully from within the cluster, to act as a local link between the CDE and the cluster.

3.1.2. Types of Interventions: (Anil C.I.2009 and MSME Report 2008-09)

i) Diagnostic Study: The objective of conducting diagnostic study in a cluster is to map all the business processes of the cluster units viz. manufacturing processes, technology, marketing, quality control, testing, purchase, outsourcing, etc to find out its strengths, weaknesses, threats and opportunities (SWOT), problems and impediments, suggestions and a well-drawn action plan for enhancing competitiveness of the units of the cluster and to position the cluster on a self sustaining trajectory of growth. The Cluster Development Programme

(CDP) envisages a Diagnostic Study to be made for each identified Cluster to identify appropriate interventions and technologies as well as their providers and phases. Diagnostic Study Report (DSR) is very important document and the study should be conducted with special attention. The Study should focus on enhanced competitiveness, technology improvement, adoption of best manufacturing practices, marketing of products, employment generation, etc. There has to be direct linkages between the problems highlighted in the report and the measures suggested for improvement.

ii) Soft Interventions: Soft activities under the programme consist of activities which lead to creation of general awareness, counseling, motivation and trust building, exposure visits, market development including exports, participation in seminars, workshops and training programmes on technology up-gradation, etc. These interventions bring about general attitudinal changes necessary to initiate improvement in the existing style of working of the MSEs in the cluster. It is necessary to prepare a Diagnostic Study Report (DSR) including validated action plan, performance indicators/milestones to evaluate the project, before undertaking Soft Interventions. Soft interventions, inter alia, include**:** Diagnostic study. Forming association-Trust building & Developing Identity, Capacity building, organizing workshops and seminars, Training & Exposure visits, Market development, Launch of Website. Common procurement, Common/complementary sales and branding.

iii) Hard Interventions: Hard Interventions under the programme consist of creation of tangible "assets" as Common Facility Centers (CFCs) like Common Production/Processing Centre for balancing/correcting/improving production line that cannot be undertaken by individual units, Mini Tool Rooms, Design Centers, Testing Facilities, Training Centre, R&D Centers, Effluent Treatment Plant, Marketing Display/Selling Centre, Common Logistics Centre, Common Raw Material Bank/Sales Depot, etc. For Hard Interventions, it is necessary to form a Special Purpose Vehicle (SPV) prior to setting up and running of the proposed Common Facility Centre. While the average range of Expenditure for Hard Interventions under MSE-CDP so far is somewhere between $ 0.5 million to $ 2.6 million, the average expenditure comes out to approx. $ 2 million. This amount should not be used for small groups of beneficiaries and prior estimates should be made regarding the cost per beneficiary while submitting proposals for Hard Interventions.

iv) Operationalisation of the Scheme and Consortiums: A Cluster Development Executive (CDE) is required for executing and monitoring all soft interventions in a cluster. The CDE is a DIC Officer/MSME-DI officer/retired expert or even hired person from Non-Government Sector. The hard intervention in a cluster and creation of physical infrastructure require to set up a user's body/special purpose vehicle which could be society/trust/ company to be formed by the cluster beneficiaries. Under the MSE-CDP guidelines, a minimum of 20 members is required to form an SPV, but normally it is proposed to have 50 executive members so as to diffuse and enlarge the benefits of the Common Facility Centre. The SPV is a democratic constitution with an inbuilt scope for increasing the membership in future. This is to ensure that the benefits of the scheme reach out to the maximum number of entrepreneurs.

***Consortium*:** The Cluster Development Programme (CDP) adopts the consortium approach to reducing costs and improving top and bottom lines. The term 'consortium' refers to a group of firms that cooperate in ways such as raw material purchase, marketing through common brand, export promotion, common effluent treatment, capacity utilisation, participation in exhibitions and marketing tours etc. Through such a consortium approach, these firms complement each other in order to overcome common problems, achieve collective efficiency and conquer markets beyond their individual reach. The consortiums initiatives for effectiveness and sustainability involve the range of cluster actors with whom the MSMEs commonly interact are: i) Suppliers of raw materials, plant & machinery ii) Consumers of goods and services from the MSMEs testing laboratories (both private and public) iii) Research and development institutions iv) Industrial associations v) Technical, marketing and management consultancy organisations vi) Training institutions vii) Regulatory bodies enforcing/monitoring rules and regulations viii) Local government ix) Financial institutions.

4. Research Framework

4.1 Data and Hypothesis: This section describes the data collection and analysis. This Study of Ahmedabad, Vadodara, Rajkot, and Jamnagar from Gujarat State is based on interactions and deliberations with the key MSE actors in the cluster i.e. the firms, the entrepreneurs with whom the key SME actors do businesses, the MSE associations and the institutions. The secondary information was

collected from various sources like books, articles, reports and statistics collected from Entrepreneurship Development Institute of India library, documentation centers, association office etc. Informal interviews were also conducted with some experienced entrepreneurs who have a very long standing in these clusters, and expert scientists from the premier research laboratories and institutions.

Based on the literature review and interactions with experts, the following hypotheses were formulated for the study.

- *Hypothesis-1a: Cluster Interventions have impact on productivity improvement of MSE clusters.*
- *Hypothesis-1b: Industrial Clusters have positive relation on productivity improvement and economic development.*

To test the hypotheses, the data for seven years from four industrial clusters was taken for analysis. Also the Cluster Development Agents (CDEs) were contacted to study the settings and operation of cluster initiatives. The clusters for present study were a part of CDP. In addition to in-depth studies of each cluster, discussions were held with functionaries of business associations, officials of the local and state governments, traders, workers through open ended interviews. MSEs exist in almost all-major sectors in the clusters such as Food Processing, Agricultural, Chemicals & Pharmaceuticals, Electrical & Electronics, Engineering and Auto Components, Textiles and Garments, Sports goods, Plastics products.

4.2 Methodology: The methodology adopted was the productivity analysis of MSE clusters using Malmquist Productivity Index–Data Envelopment Analysis. Professor Sten Malmquist, (1957) a Swedish economist and statistician, published in '*Trabajos de Estadistica'*; a quantity index for use in consumption analysis. Later Caves, Christensen & Diewert (1982) adapted Malmquist's idea for production analysis and they named their productivity change indices after Sten Malmquist. This index decomposes the productivity growth into technical efficiency change and technical progress; it has ability to shed light on the mechanism of productivity change (Ma, et al., 2002). Charnes (1978) first proposed DEA as an evaluation tool to measure and compare a Decision Making Unit's (DMU) relative efficiency. Their model which is commonly referred to as a CCR model, assumed constant returns to scale. Also, the Malmquist Index enables to explore the main sources of efficiency changes: either improvements in management practices (pure technical efficiency change) or improvements towards optimal size (scale efficiency change). The output of the programme was used to establish the relation between the three i.e. Technical Efficiency Change, Technical Change and Total Factor Productivity Change. For the analysis part of this study, the DEAP (2.1) computer program was used to construct Malmquist indices using DEA-like methods (Coelli, T et al.; 1998). DEAP is a data envelopment analysis computer program (Coelli, T; 1996).

5. Findings of the Study

This section revisits and analyses a number of areas covered in the data. It highlights some of the aspects that have interesting implications for cluster interventions. The selected clusters operate in widely different settings and address different industry sectors with their own strengths and weaknesses.

5.1 Results and Discussions: From the output Table 2 and Table 3, it is observed that the growth in Technical Change corresponds to positive TFP change and vice versa.

The relation between the three i.e. Technical Efficiency Change, Technical Change and Total Factor Productivity Change has been established by multiple regressions (step wise methods).

TFP Change = - 0.891 + 0.934 (Tech Efficiency Change) + 0.953 (Technical Change)

-Where TFP Change is dependent variable.

5.2 Benefits of Cluster Interventions:

Benefits to Businesses

1. *Localisation economies:* This benefit arises when firms using similar specialised input (i.e., information, technology or business services) are located near one another.
2. *Labor pooling:* This occurs when firms compete for the same type of occupations and workers, drawing qualified employees to the region for multiple employment opportunities.
3. *Access to information and performance benchmarks:* Firms in close proximity can more closely monitor and gauge performance of both potential customers and suppliers.
4. *Complementary products:* Due to proximity, the product of one firm may have an important influence over the activities of other firms. Further, complementary businesses may choose to engage in joint marketing that will benefit each by expanding the overall market demand.

Benefits to Communities:

1. Clustered groups of linked businesses tend to have higher productivity and are able to pay higher wages to residents.
2. Employment and income spillovers from clustered businesses may be greater than other forms of economic development.

Benefits to banks and financial institutions:

1. Separate packages/services can be developed for each cluster.
2. Products/services so developed can provide better yields.
3. Authentic statistical/market data for different units under a cluster can be collected, which would help in formalizing location–specific Risk Management framework for the industry.

6. Conclusion

The liberalisation opened up huge opportunities of technological tie-ups, exports and collaborations. Globalisation presents threats and opportunities to Indian industry. The bigger players can afford to put in large resources to counter the former and exploit the latter. MSEs are individually resource constrained to adopt this approach. The CDP is an ideal strategy for MSEs to overcome this handicap and meet the challenges of globalisation.

In India, to begin with, most clusters were underperforming and each firm was operating at the lower end of the technological spectrum. Most of the processes employed were labour-intensive. This meant that there is ample scope for productivity enhancement and technological up-gradation. The initiatives like technology up-gradation, networking among cluster actors, developing business development services, training on globalisation and WTO, were taken up in the selected clusters. These initiatives have shown the improvement in productivity and general growth of the MSEs and their moving up the value-chain.

To those clusters that were operating at lower productivity levels the opening up meant bigger challenges of global competitiveness. The situation demanded more careful and focused efforts in networking to achieve optimal capacity levels, focused efforts in technological up-gradation to ensure quality and productivity standards etc. CDP was able to address these issues through building up awareness, group approach in procurement, business development services, networking with institutions etc.

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Table 1: Major Cluster Development Initiatives in India

SN	Name of Scheme	Supported by	Year of Start
01	UNIDO CDP	UNIDO/MSMEDO	1993
02	MSE-CDP (formerly Up-gradation of Technology (UPTECH) SFURTI (Traditional Industries)	MSME / SIDBI/ SBI/RBI MSME/ KVIC, Coir Board,	1998 2005
03	National Programme for Rural Industrialization (NPRI)	NABARD	1999-2000
04	Comprehensive Handicraft Cluster Development (CHCD)	KVIC Handicraft	2002
05	Integrated Handloom Cluster Development Programme (IHDS)	Ministry of Textiles	2003
06	National Resource center for Cluster Development	NIMSME	2004
07	International Center for Cluster Competitiveness Growth & Technology	EDI/ MSME Foundation	2005
08	Promoting Innovative Clusters (PIC)	Department of Science & Tech.	2007

Table 2: MPI of Annual Means

YEAR	TECH EFF CHANGE	TECHNICAL CHANGE	TFP CHANGE
2001-02	0.974	0.918	0.894
2002-03	1.026	0.975	1.000
2003-04	1.033	0.860	0.888
2004-05	0.929	1.076	0.999
2005-06	0.953	0.948	0.903
2006-07	1.140	0.913	1.041
2007-08	1.061	0.921	0.977

Table 3: MPI of Firm Means

DMU (CLUSTERS)	TECH EFF CHANGE	TECHNICAL CHANGE	TFP CHANGE
AHMBD	1.000	0.940	0.940
VADRA	1.020	0.950	0.969
RAJKT	0.998	0.931	0.930
JAMNGR	1.040	0.947	0.985