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DOES CLUSTER APPROACH HELP IN INCLUSIVENESS? A STUDY ON THE PLASTIC INDUSTRY IN CHENNAI

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ABSTRACT

The closure of the MSME units in a large scale, not only affected growth of output and national income, but also and more importantly employment generation to the unskilled and semi skilled workers. This led to the reorganisation of the sector into MSME and the introduction of Cluster Development Approach with proactive Government support in terms of finance, policy and other aspects. The present study aims to examine the role of cluster in the plastic industry in promoting inclusive growth in the development of the MSMEs. This study suggested that a greater share of the units that are owned by the well placed Mainstream segment have not opted to invest in creating their own building infrastructure and thus have leased in the same, instead they have used that capital in investing in fixed capital and working capital. The Marginalised units are not able to produce as much as the Mainstream units, since the former are not able to invest in fixed and working capital. This will have considerable impact not only on the cost and revenue structure of the units that belong to the two groups, but also their profit.

KEYWORDS: *MSMEs; Cluster; Government; Inclusive; Impact*

INTRODUCTION

The Micro, Small and Medium Enterprises (MSMEs) small scale industry has been the mainstay of the industrial sector in India for all through the years. Even though the amount of investment made in this sector was not quite high, its contribution in terms of output, export and employment has been highly remarkable, not only within the industrial sector, but also in the overall economy. However, the onset of liberalisation policies from the 1990s and subsequent formation of World Trade Organisation have suddenly opened up the economy, under which the small scale units or the MSMEs have been forced to face the competition not only from the big domestic players, but also from the international players in the form of unrestricted imports. The closure of the MSME units in a large scale, not only affected growth of output and national income, but also and more importantly employment generation to the unskilled and semi skilled workers. This led to the reorganisation of the sector into MSME and the introduction of Cluster Development Approach with proactive Government support in terms of finance, policy and other aspects. More importantly, clusters also bring in the marginalised sections of the producers like women and other social groups into the mainstream of development. In this context, the present study aims to examine the role of cluster in the plastic industry in promoting inclusive growth in the development of the MSMEs.

MSMEs AND SOCIAL DEVELOPMENT

MSMEs not only contribute to economic development but also contribute to social development. Staley and Moore (1965) recommended the implementation of dispersal programmes in phased manner which involve: (a) selection of intermediate size cities and town to be developed into industrial growth points, (b) integrated development of small, medium and large scale industries at these growth points and (c) promoting linkages from these growth points downward to the villages by sub-contracting certain work from factories in the towns to workshops and households in the villages. According to Vepa (1971), small scale industries in India are distinct from traditional and village industries. Small-scale industries are generally modern small firms employing modern techniques to produce modern products. Tiwari *et al* (1992) revealed that industrialization is a highly complex and important phenomenon. The concept has helped in making choice of the important factors that determine the process. Kulkarni (1994) raised various issues such as ownership and control, subsidiary, control management and brand name etc., relating to small scale industries. According to the study of Singh (2000), when structural changes are taking place at a rapid pace, the role of small scale industries have become more and more vital in a countries development. According to Subbaraman (2011), job generating capacity of village industries cannot be over emphasized. Unemployment breed poverty and it can be eradicated by spreading the network of village industries in every nook and corner of the country.

CHARACTERISTICS OF THE PLASTIC UNITS

The sample plastic units belong to the members of the cluster and those who are outside of the cluster. A total of 41 units, 21 members out of the 30 and 20 non-member units, out of another 30 units have provided the required information and have become the sample units. The basic features of the owners of the sample units are shown in Table- 1.

Table 1: Group-Wise Category of the Respondents

Category	Mainstream	Marginalised	Total
Gender			
Male	30	6	**36**
Female	--	5	**5**
Education			
Member	14	7	**21**
Non-Member	16	4	**20**
Entrepreneurship			
1st Gen	19	9	**28**
2nd Gen	11	2	**13**
Unit Type			
Micro	5	4	**9**
Small	25	7	**32**

Source: Primary data.

Out of the 41 sample units, around one fourth (26.8 per cent) belong to the Marginalised segment, which includes 54.5 per cent males and 45.5 per cent females, and in the mainstream segment which comprises of males and those who belong to BC and OC communities. Also, among 36 male respondents, only six (16.7 per cent) come under the Marginalised segment, and among females, obviously all come under the Marginalised group. Female owners who also belong to the MBC and SC and ST communities face the twin disadvantage of gender and community, which will make them that much more difficult in encountering the problems.

INCLUSIVE GROWTH IN THE PLASTIC INDUSTRY

The benefits and gains made by the cluster arrangement are not restricted only to the member units, but they have also spilled out to those units which are not members *per se*. However, the major thrust of this paper is to deal with inclusive participation of the entrepreneurs who belong to the marginalised segments of the population. It examines the degree to which this group of the society is able to take part in the economic activities, especially in the industrial sector, since they mostly depend on the primary sector for their occupation, income and livelihood. They are encouraged by the Governments to reduce their dependence on agriculture or the allied sectors and venture into the non-agricultural sector, particularly the industrial sector. They are incentivised to enter the industrial sector, not as job seekers, but as job providers by becoming entrepreneurs. Women and those who belong to the deprived social segments can take part in this initiative and start their entrepreneurial activities in the MSME sector. While there is no denying the fact that many measures have been taken and implemented by the State as well as the Central Government in this regard, it is a moot point whether all of those initiatives have reached the intended beneficiaries and if yes, to what extent. For this purpose, the units which are owned by the marginalised groups both gender and social grouping wise have been grouped together and the impact of cluster in terms of soft and hard intervention measures and various other parameters are examined here and Table – 2 presents the descriptive statistics on the soft intervention measures on the basis of the social grouping.

Table 2: Impact of Soft Intervention Measures on the Social Groupings: Descriptive Statistics

Measures	Mainstream				Marginalised			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Training for achievement	1.00	3.00	1.16	0.45	1.00	2.00	1.10	0.32
Awareness programme	1.00	3.00	1.16	0.45	1.00	3.00	1.30	0.67
Programmes for planning	1.00	3.00	1.26	0.58	1.00	2.00	1.10	0.32
Conducting business	1.00	3.00	1.48	0.63	1.00	2.00	1.20	0.42
Linkages	1.00	4.00	2.03	1.08	1.00	4.00	1.80	0.92
Programme for ISO	1.00	3.00	2.19	0.75	1.00	3.00	2.10	0.88
Creating data bank	2.00	3.00	2.39	0.50	2.00	3.00	2.60	0.52
Networking within the cluster	1.00	4.00	2.35	0.98	1.00	4.00	2.60	1.26
Creating common branding	1.00	4.00	3.23	1.06	1.00	4.00	3.20	1.14
Preparation of common catalogue	1.00	4.00	3.32	0.94	2.00	4.00	3.60	0.70
Trust and confidence building	1.00	4.00	2.16	0.90	1.00	3.00	2.10	0.74
Capacity building	1.00	4.00	2.35	0.98	1.00	4.00	2.50	1.08
Development of common website	3.00	4.00	3.71	0.46	3.00	4.00	3.70	0.48
Development of Newsletters	3.00	4.00	3.87	0.34	2.00	4.00	3.60	0.70
Arrangements of exposure visit	1.00	3.00	1.87	0.62	1.00	2.00	1.70	0.48
Training programme	1.00	3.00	1.52	0.81	1.00	3.00	1.20	0.63
Detailed diagnostic study	1.00	4.00	1.29	0.74	1.00	2.00	1.20	0.42
Environmental and statuary licence	1.00	3.00	1.58	0.62	1.00	2.00	1.60	0.52
Cluster mapping	1.00	4.00	1.65	0.71	1.00	4.00	2.20	1.14
Value chain and its analysis	1.00	4.00	1.87	0.92	1.00	4.00	2.30	1.16

Source: Computed.

It is noted that for most of the measures, the mean value under the Mainstream group is between 1.00 and 2.00, viz., training for achievement (1.16), awareness programme (1.16), programme and planning (1.26), conducting business (1.48), arrangements of exposure visit (1.87), training programme (1.52), detailed diagnostic study (1.29), environmental and statuary license (1.58), cluster mapping (1.65) and value chain and its analysis (1.87). However, the mean value is more than 3.00 in the case of measures like creating common branding (3.23), preparation of common catalogue (3.32), development of common website (3.71) and development of newsletters (3.87). Hence, the units which are owned by the

mainstream group indicates much improvement from the soft intervention measures from most of them and they perceive less improvement or no change only from a few which deal with lack of common grounding or bonding or such activities through cluster. It is also to be noted that the mainstream units also include that do not directly come under the cluster umbrella.

Among the units that are owned by the marginalised group, a similar pattern emerges, where the mean value are less or higher as that of the mainstream units. However, the difference lies in the fact that the mean scores *per se* are less among the marginalised units compared to the mainstream units. This suggests that marginalised units perceive better improvement under most of the soft intervention measures as against the mainstream units and hence, the mean scores are less for the former than that of the latter. Only in a few cases the mean values are less for the mainstream units like awareness programme, creating data bank, networking within the cluster, preparation of common catalogue, capacity building, cluster mapping and value chain and its analysis. Except for the last two measures, the difference in the mean values for other measures is only meagre. Hence, overall, the marginalised units perceive much better impact under the soft intervention measures compared to the mainstream units.

The opinions of the sample units regarding the impact of hard intervention measures are examined and the summary statistics is presented separately for the mainstream and marginalised groups in Table – 3.

Table 3: Impact of Hard Intervention Measures on the Social Groupings: Descriptive Statistics

Measures	Mainstream				Marginalised			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Setting common production centre	1.00	4.00	2.55	1.36	1.00	4.00	2.00	1.41
Design centre	1.00	4.00	3.48	0.89	1.00	4.00	3.20	1.23
Testing labs has helped	1.00	4.00	2.65	1.28	1.00	4.00	2.20	1.32
R & D centre has helped	1.00	4.00	2.90	1.08	2.00	4.00	2.60	0.97
Common raw material bank	1.00	4.00	2.39	0.84	1.00	4.00	2.40	0.84
Common sales display centre	2.00	4.00	3.29	0.82	2.00	4.00	3.20	1.03
Creation of common infrastructure	1.00	4.00	2.35	1.02	2.00	4.00	3.20	0.79
Internal road connectivity	1.00	4.00	2.52	1.12	1.00	3.00	1.90	0.88
External road connectivity	1.00	4.00	2.52	1.15	1.00	3.00	1.90	0.88
Drainage facility within the cluster	1.00	4.00	2.42	0.72	2.00	3.00	2.30	0.48
Uninterrupted water supply	1.00	4.00	1.90	0.75	1.00	3.00	1.50	0.85
Cheaper water supply	1.00	4.00	1.84	0.73	1.00	3.00	1.60	0.84
Effluent treatment, Mgt. of wastewater	1.00	4.00	2.45	0.93	1.00	3.00	1.80	0.92
Uninterrupted power supply	1.00	4.00	1.68	0.75	1.00	2.00	1.20	0.42
Development of industrials estates/ Plots	2.00	4.00	3.71	0.59	1.00	4.00	3.40	0.97
Efficient conservation of energy	1.00	4.00	3.13	1.09	2.00	4.00	3.30	0.82
cluster has demonstration effect	1.00	4.00	2.61	1.17	1.00	4.00	2.00	0.94
Greater trust and cohesiveness	1.00	4.00	2.26	0.86	1.00	4.00	1.60	0.97
Common canteen	1.00	4.00	2.26	0.82	1.00	3.00	1.70	0.82
Re -location possibilities	2.00	4.00	3.58	0.72	4.00	4.00	4.00	0.00

Source: Computed.

In the case of the mainstream units, the mean values range from 1.68 to 3.71 and for all measures, none of them have indicated that the condition has become worse since the cluster arrangement and at the worst case, some of them have indicated that there has been no change. The least mean value of 1.68 is attained by the measure uninterrupted power supply, since getting regular power supply was a serious problem in Tamil Nadu once, though it has improved quite considerably over the years and the sample units too feel the same. This is followed by cheaper water supply (1.84),

uninterrupted water supply (1.90), greater trust and cohesiveness among the members of the cluster (2.26) and common canteen (2.26). These are the top five measures which have made considerably improvement in the functioning of the plastic units in Chennai. On the other hand, the worse measures, or the measures which have made only a meagre improvement are development of industrial estates/plots (3.71, relocation possibilities (3.58), design centre (3.48), common sales display centre (3.29) and efficient conservation of energy (3.13). This suggests that while some of the hard facilities like power supply, water supply, creation of common infrastructure and raw material bank have improved through the cluster arrangement, some of the common facilities or activities have not improved quite considerably, since many of the units state no change in such measures.

The mean values for the marginalised units indicate that the same intervention measures have improved quite considerably and at the bottom end of the mean values too, the same measures indicate poor performance. Thus, as far as the impact by the hard intervention measures is concerned, there is no much difference between the mainstream and marginalised units. But once again, the difference arises from the actual values of the mean, since for most of the measures, the marginalised units portray better improvement over that of the mainstream units and this has happened with the exception of only two measures, viz., creation of common infrastructure, where the mainstream units opine better improvement over that of the marginalised units, and similarly, in re-location possibilities, even though both groups suggest this has improved the least, the former perceive better improvement. So, for hard intervention measures, both mainstream and marginalised groups indicate considerable improvement for the same set of measures, while the least improvement is also cited for the same set of measures, though the marginalised group perceive better degree of improvement overall.

The impact of the cluster on the economic indicators among the mainstream and marginalised units is also analysed with the application of Test for Equality and a suitable null hypothesis is framed. Table – 4 presents the required data.

Table 4: Test for Equality of Economic Variables between Mainstream and Marginalised Units

Variable	t-test for Equality of Means					
	t	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Labour AC (Rs.)	-3.72 [a]	0.01	-1.72	0.40	-2.91	-1.06
Raw material AC (Rs.)	-3.93 [a]	0.01	-8.80	0.65	-1.75	-0.83
Total Average Cost (Rs.)	-4.39 [a]	0.00	-7.15	0.74	-1.92	-1.22
Total output (Tonnes)	6.95 [a]	0.00	73.96	55.39	314.65	407.19
Total output (Rs. lakhs)	3.76 [a]	0.01	136.10	282.57	587.43	452.86
Average Revenue (Rs. lakhs)	4.09 [a]	0.00	24.12	224.45	922.87	14.87
Average Profit (Rs. lakhs)	4.27 [a]	0.00	7.95	182.21	750.95	13.85

Note: [a] indicates 1 per cent level of significance. Source: Computed.

It is noted that the number of units from such group is quite limited and the number of units owned by women *per se* too is quite low. Hence, this implies that even though policies are in place for the incentivisation of participation by such group, it is clear that they require much more hand holding approach. This is further proved by the economic condition of their units, where they are not able to invest as much as they would want to, not able to cut down their cost of operation to their liking, not able to manufacture to the desired level and thus not able to earn sufficiently. The test result indicates that

the calculated t-value is statistically significant in all cases at 1 per cent level of significance and thus, the null hypothesis is rejected. Hence, the level of participation and the economic conditions of the units that are owned by the marginalised segment differs significantly from that of the mainstream units, in which the latter are quite better off compared to the former.

FACTORS FACILITATING INCLUSIVE NATURE OF THE PLASTIC INDUSTRY

The foregoing analysis suggests that the degree of inclusion of the entrepreneurs is very much restricted in the sample plastic industry. The participation of not only female entrepreneurs, but also those who belong to the MBC, SC and ST communities is very meagre. Hence, it is quite warranted to understand the reasons or the factors that facilitate the level of inclusiveness or the lack of it among the sample entrepreneurs and it is attempted in this study. This is done with the use of a regression model to capture of the degree and nature of the factors that determine the level of inclusiveness among the entrepreneurs. In this model, classification of the sample entrepreneurs on the basis of their societal class, viz., Mainstream and Marginalised is considered as the proxy for inclusiveness, in which Mainstream entrepreneurs = 1 and 0 otherwise and this is taken as the dependent variable. However, as the dependent variable is binary in nature, the warrants the use of Logistic Regression model rather than the normal linear regression model. The logit model in one of the qualitative response regression models which helps in studying the dichotomous dependent variable. In its simple form the model is written as:

$$\mathbf{L_i = ln(P_i/1\text{-}P_i) = Z_i} \quad (1)$$

Where, L_i is the odds ratio of i^{th} respondent or household;

ln is the natural logarithm;

P_i is the probability of willingness to pay for the higher education by the i^{th} respondent or household and

$$\mathbf{Z_i = \alpha + \beta_2 X_i} \quad (2)$$

Where, X_i is the regressor, which can include any number of regressors and β_1 is the intercept term and β_2 is the slope. And thus, equation-1 can be rewritten as:

$$\mathbf{L_i = ln\ (P_i/1\text{-}P_i) = \alpha + \beta_2 X_i + u_i} \quad (3)$$

Where u_i is the error term.

Thus, at the respondent level, the willingness to pay model is:

$$\mathbf{INC_i = \alpha + \beta_1\, AGE_i + \beta_2\, EDU_i + \beta_3\, clusteri + \beta_4\, GERi + \beta_5\, lnINV_i + u_i} \quad (4)$$

Where, INC_i is the level of inclusiveness of the entrepreneurs, in which Mainstream entrepreneurs = 1 and 0 otherwise;

AGE_i is the age of the i^{th} respondent and it will have a negative link with INC since, younger people (less than 45) are more educated and hence, will have greater inclusiveness among them compared to the older respondents (more than 45), who would not like to take risks;

EDU_i is the level of education of the i^{th} respondent and it is expected to have a positive sign, since those who are better educated will have greater sensitivity in taking risk and would like to enter the industry than that of the less educated;

$cluster_i$ is becoming the member in the cluster arrangement and it is measured as follows: Member = 1 and 0 otherwise. This is expected to have a negative link with the dependent variable, since the entrepreneurs who belong to the marginalised segment are not expected to be a part of the cluster;

GER_i is defined as the generation of the i^{th} respondent, where those who belong to the 1^{st} generation are given a value of 1 and 2 for those who belong to the second generation. This is expected to have a negative relationship with the dependent variable, as those who belong to the marginalised group would be first generation entrepreneurs and so on; and

INV_i is the amount invested by the i^{th} respondent, which includes both fixed and working capital in their plants and this is taken in natural log form (In) to have robust values. This is expected to have a positive link as those who belong to the mainstream group would have better network and would invest more compared to those who come under the marginalised segment. This model is estimated and the result is presented in Table – 5.

Table 5: Logistic Estimates: Factors Influencing Inclusiveness of Entrepreneurs

Independent Variables	Co-efficient	Marginal Effect	t-value	p-value
Age	-0.612	-0.422	-2.306 [b]	0.023
Education	0.709	0.537	5.669 [a]	0.000
Cluster	-0.198	-0.121	-1.347	0.187
Generation	-0.744	-0.462	-4.315 [a]	0.000
Investment	0.676	0.447	4.107 [a]	0.000
Intercept	0.733	0.518	7.011 [a]	0.000
Log Likelihood		-176.223		
χ^2 (prob.)		194.065***		
Pseudo R^2		0.4233		
N		41		

Note: [a] and [b] indicate 1 per cent and 5 per cent levels of significance. Source: Computed.

It is discernible that among the given independent variables, all but one are statistically significant in explaining the changes in the dependent variable. Cluster (cluster) alone is statistically insignificant, but all variables have turned up with expected signs. Age is negatively significant indicating the point that younger people have entered more and turned as entrepreneurs compared to the older respondents and being a older one pulls down the possibility of entering the manufacturing activity by 0.422 units. Similarly, better education pushes up the possibility of becoming an entrepreneur to the level of 0.537 units. However, cluster does not enable the participation of the entrepreneurs, though such relationship is not statistically significant. Being a first generation entrepreneur reduces the chance of entering by 0.462 units and the ability to invest is also statistically relevant in explaining the level of inclusiveness. Those who can muster sufficient capital to invest and start the production easily become an entrepreneur and *vice versa*. The model as a whole explains more than 42 per cent of the changes in the dependent variable and hence, it is noted that age, education, generation and investment plays a pivotal role in determining the degree of inclusiveness in the plastic industry.

CONCLUSIONS

The analysis about the features of the sample units indicates that the condition and the poor capital capability of the units that are owned and operated by those who belong to the Marginalised segment in terms of their fixed capital is clearly exposed, since they are not able to invest more *vis-a-vis* the units that belong to the Mainstream segment. The capital intensive nature of the plastic industry calls for greater investment, in which the Marginalised group suffer a distinct handicap, which cries for the immediate handholding from the government. The Mainstream units have invested more in fixed and working capital, but less in their building, whereas it is *vice versa* in the case of the Marginalised group. This will have a considerable impact on the ability to turn around sizeable quantity of output significantly by the units that are owned by the Marginalised group compared to that of the Mainstream group. A greater share of the units that are owned by the well placed Mainstream segment have not opted to invest in creating their own building infrastructure and thus have leased in the same, instead they have used that capital in investing in fixed capital and working capital. But, the units those are owned and operated by the Marginalised group have invested more in owning a building, but less in fixed capital and working capital, and thereby compromising their ability to produce more *vis-a-vis* the units that are owned and operated by the Mainstream group.

The Marginalised units are not able to produce as much as the Mainstream units, since the former are not able to invest in fixed and working capital. This will have considerable impact not only on the cost and revenue structure of the units that belong to the two groups, but also their profit. The marginalised units perceive much better impact under the soft intervention measures compared to the mainstream units. While some of the hard facilities like power supply, water supply, creation of common infrastructure and raw material bank have improved through the cluster arrangement, some of the common facilities or activities have not improved quite considerably, since many of the units state no change in such measures.

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