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From the Desk of Chief Editor ...✍

We are placing Volume 6 Issue 2 of the RVIM Journal of Management Research in the hands of academic experts and subscribers. The current issue of Journal contains original research papers on various issues with respect to MSME sector. A two fold blind referral process is involved in selecting the papers for this journal the research papers in the journal will enhance the managerial knowledge and thoughts of the readers. This Journal would serve as a channel for knowledge sharing among academicians and practicing managers about contemporary management issues and problems. The journals intents to fulfill the information required by researchers across the countries. We hope that the readers will thoroughly benefit from the papers being compiled in journal and give their valuable feedback to enhance the quality in our

Dr. T V Raju

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PROFIT FUNCTION OF MICRO AND SMALL ENTERPRISES IN NATIONAL CAPITAL REGION, INDIA

Abhijit K. Mishra*
Dr. B.B.L. Das **

Abstract :

This study investigates into the profit function of micro and small enterprises in Delhi National Capital Region, India. It is based on the sample data (for 8 years ending 2013) collected for 399 enterprises drawn from manufacturing and service sectors, size wise, registration status wise and size of workforce wise. Profit has been modeled by the generalized Leontief function of the workforce and the utilization of non-human resources. It finds the coefficients of substitution between the two types of resources and the returns to scale exhibited by the sample enterprises. Overall, substitutability coefficients are very small and the returns to scale are increasing. An overwhelming majority of enterprises are in the normal profit range, although some (about 15% of enterprises) earn supernormal profits.

Key words: (i) Generalized Leontief profit function, (ii) National Capital Region, (iii) Micro and small enterprises, (iv) factor substitution, (v) returns to scale, (vi) Nonlinear regression analysis.

Introduction

As revealed by the Fourth All India Census MSME 2006-07, there are about 214.3 lakh micro and small enterprises (MSEs) in India employing about 497.6 lakh people and a fixed asset of Rs. 63.386 thousand million and thereby contributing approximately Rs. 100.15 thousand million to the gross domestic product of the nation. Of those, the number of unregistered enterprises is overwhelmingly large (198.74 lakh in number or 92.72% to the total). Among MSEs, about 53.64% are in manufacturing, 39.44% in service and the rest 6.92% in repairing/maintenance sector. The value of fixed asset with the registered MSEs is a little less than twice larger (62%) than that of the unregistered enterprises (38%) and the proportion of the total output they contribute is commensurate with their fixed assets (63.08% and 36.92% for registered and unregistered enterprises, respectively). Due to rather low capital/labour ratio (value of fixed assets per workforce = 1.27 lakh) they generate large employment, function as the nurseries for entrepreneurship and innovation, reduce disparities in industrial development across the country and the rural/urban areas, produce

diverse products and services to cater to the local as well as global markets and also function as the intermediaries in the national and international value chains.

Especially after 1991, since when the new economic policy was adopted, the MSEs have experienced an exhilarating politico-economic environment for their thriving. In response to favourable economic climate, establishment of MSEs accelerated throughout the nation. Similar or perhaps more strong thrust was experienced in Delhi and the surrounding areas as well. Since MSEs attract a large number of people for industrial employment, Delhi experienced a boom of in-migrant population and it was felt that diverting the increasing pressure of population to varied, dispersed and systematically well-planned clusters was necessary in order to reorient planned development of the region and protect Delhi's infrastructure from excessive pressure as well. In 1985, National Capital Region Planning Board Act was enacted and the National Capital Region Planning Board was constituted. To begin, the NCR included seven districts of Haryana (Faridabad, Gurgaon, Jhajjar, Panipat, Rewari, Rohtak and Sonapat), five districts of

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Uttar Pradesh (Bagpat, Bulandshahr, Gautam Budh Nagar, Ghaziabad and Meerut) and one district of Rajasthan (Alwar) with Delhi at its

core. Presently, it has four constituent sub-regions as depicted in Fig.1.

Fig.1: Constituents of the National Capital Region



1. Haryana Sub-Region (13 districts): Faridabad, Gurgaon, Mewat, Rohtak, Sonapat, Rewari, Jhajjar, Panipat, Palwal (carved out from the erstwhile districts of Faridabad and Nuh/Mewat in 2008), Mahendragarh, Bhiwani, Jind and Karnal.

2. Uttar Pradesh Sub-Region (9 districts): Meerut, Muzaffarnagar, Moradabad, Hapur, Amroha, Ghaziabad, Gautam Budh Nagar, Bulandshahr, and Baghpat.

3. Rajasthan Sub-Region (2 districts): Alwar and Bharatpur.

4. Delhi (in the core).

Objectives of the present study: It is well known that the goal of an industrial or commercial organization (economic firm) may be profit maximization or it may have any other alternative goal/goals such as (i) long run survival and command over market share (Rothschild, 1947), (ii) sales maximization (Baumol, 1959), (iii) stake-holders satisficing (Simon, 1955; Cyert-March, 1963), (iv) managerial utility maximization (Williamson, 1964), (v) growth maximization (Marris, 1964), etc. However, in view of the fact that an overwhelming majority of MSEs are proprietary (about 94.4% of total, 90.1% of registered and 94.6% of unregistered enterprises, as reported by Ministry of MSME, 2014), it is unlikely that stake-holders' satisficing would be their objective. Further, in view of the extremely competitive environment in which the MSEs operate and there exists almost no barriers to the entry of new competitors, the objectives such as the long run survival, commanding market share or growth maximization are less relevant. The objective

of sales maximization hinges on relatively long run perspective and possibilities of expansion of the scale of operation, which may not be very congenial to the proprietary instincts as well as the limitations on resources that the proprietors may face. As a matter of fact, all alternatives (to profit maximization) suit to a large and often oligopolistic organization. The MSEs, which are very small, proprietary and unable to strengthen themselves with various financial instruments, work in a tough competitive market with short run objectives, often resembling with the neo-classical ideal firm aiming to profit maximization (Scitovsky, 1943; Koplin, 1963; Osborne, 1964). Therefore, it is most likely that MSEs would strive for maximization of profits in the short and medium run.

The objectives of this investigation are, therefore, first to look into the profit function of micro and small enterprises with regard to the inputs (human and non-human or material resources) used by them. Additionally, this

study seeks to know the propensities of substitution between these resources and the returns to scale of operation these organizations exhibit. It enquires whether manufacturing enterprises show up resource substitutability and returns to scale different from the service enterprises and whether micro enterprises have different parameters of the profit function than the small enterprises. It also investigates into how the enterprises with relatively smaller number of workforce differ from those with relatively larger workforce.

Choice of the profit function: Profit function, which is a relationship between profit and the inputs used by an enterprise, may be specified or modeled in a variety of mathematical forms in the style of production functions (Mishra, 2010). A Cobb-Douglas profit function is defined in terms of profit (the current revenue minus current variable cost per unit of production normalized by the price of output) as a function of the numerical product of prices and quantities of inputs used to raise the output (Chand and Kaul, 1986). In translog profit function (Choudhary et al., 1985) profit is defined as in the Cobb-Douglas profit function but the relationship between profit and inputs to production takes on the translog form as formulated by Christensen et al. (1973).

In this investigation profit has been defined as the net return ($NR = \text{gross revenue minus all expenses, sans salaries/wages, incurred by the enterprise}$) normalized by the market value of the fixed asset ($MVFA$) as recorded for any particular period, i.e. $P = NR / MVFA$. This definition of profit is suitable to empirical analysis due to several reasons. First, each enterprise under study produces several products in different quantities that vary price wise as well as input-intensity wise. Secondly, there are many enterprises in the sample that produce a wide variety of products including numerous types of consumer goods, capital goods and services. To obtain data on such a gigantic scale is nearly impossible. Moreover, it may also be noted that at the level of a unit (enterprise) many inputs are clayey in nature

such that they are not fixed and confined to producing a particular product, but, instead, can be either shared by many or shifted from the one to the other products. Also, there are quasi-fixed inputs that can be adjusted for a while but will not be adjusted all the way to the optimum level due to the constraints of adjustment costs. Further, there are nondiscretionary inputs whose level or utilization for a particular itemized product is not under the control of management since the production process turns out multiple products. They may correspond to quasi-fixed or fixed inputs whose minimum application is essentially required. It is more reasonable, therefore, to obtain cost of production at an aggregate rather than individual product level. In turn, to obtain profit, one must compute revenue also at an aggregate level in consonance with the cost of production. Reasonableness of such an approach is supported by the behavior of enterprises (and the management), which is more sensitive to monitoring revenue, expenses and profit at the gross level rather than at the itemized product level. Having made the measurement of profit operational, it is required that the rate of profit should be made comparable among the different enterprises that produce different types of products. For this purpose, it is reasonable to normalize the profit with the market value of the fixed asset, particularly because (i) the profit (revenue minus expenses) is measured on market value, (ii) in the short run fixed assets are more stable than other measures which may be used for normalization, (iii) value of fixed assets do not respond much to the shifts in product-mix decisions of the enterprise that are sensitive to fluctuating market forces, (iv) a good part of the fixed assets enter into the sunk cost, (v) normalization by fixed assets reduce differences in the scale of operation among the enterprises, and finally, (vi) data on market value of fixed assets of an enterprise is readily available.

As to the relationship between profit and inputs, Generalized Leontief function (GLF)

modified by Zellner-Revankar factor may be used. The GLF (Diewert, 1971) is given as:

$$P = h \left[\sum_{i=1}^n \sum_{j=1}^n a_{ij} (x_i^{0.5} x_j^{0.5}) \right]; a_{ij} = a_{ji} \geq 0; x \geq 0; h > 0 \dots\dots (1)$$

where P is the dependent variable (profit), x_i is the i^{th} explanatory variable (normalized workforce and expenses sans salaries/wages), a_i is the coefficient (unknown parameter) and h (unknown parameter) refers to the factor that equalizes both sides of the equation (also called the scaling factor). The Zellner-Revankar factor appears in the specification (Zellner and Revankar, 1969) as:

$$P \exp(bP) = c^v f^v; v \geq 0 \dots\dots (2)$$

where b and v are the parameters related to the returns to scale and f is the function that relates profits to the inputs e.g. Cobb-Douglas, CES (Constant Elasticity of Substitution), Generalized Leontief function such as in (1) above, etc. It may be noted that the specification of f in eqn. (1) above is very flexible for incorporation of many inputs and allows for variable Allen elasticities of substitution between any two variable inputs. It does not provide for measuring returns to scale (assumes that the constant returns to scale prevails). The specification in eqn. (2) endows f with a scope to incorporate monotonically variable returns to scale, decreasing returns to scale for a negative b . Accordingly, the profit function takes the form (for two inputs x_1 and x_2):

$$P = \frac{(ch(a_{11}x_1^{0.5} + a_{22}x_2^{0.5} + a_{12}x_1^{0.5}x_2^{0.5}))^v}{\exp(bh(a_{11}x_1^{0.5} + a_{22}x_2^{0.5} + a_{12}x_1^{0.5}x_2^{0.5}))} \dots\dots (3)$$

Thompson (1988) lists many other flexible functional forms that may suitably model a profit function. The choice of the model in eqn. (3) above has been made on account of easy interpretability of parameters, flexibility to incorporate additional inputs and amenability to statistical estimation.

Sources of data: Detailed enterprise wise data generated by the Fourth all India Census of MSME 2006-2007 are available on the website

of the Ministry of Micro, Small & Medium Enterprises (www.dcmsme.gov.in). Taking it as a base, a sample of 420 small and micro enterprises was drawn by the stratified random sampling method for conducting further survey of the sample enterprises in order to collect more information as well as to update the relevant information already made available by the Census 2006-07. The collection of data was mainly motivated to study the human resource management aspects of MSEs in the NCR. The sample data could satisfactorily be collected only from 399 enterprises and the updated data so collected are covering the period 2006-2013. The sample enterprises are distributed in the spatial units of the NCR as: Delhi (105), Ghaziabad (71), Faridabad (70), Gurgaon (89) and Noida (64). Among them, 197 are manufacturing and 202 are service enterprises. Classified according to capital size, 188 are micro and 211 are small enterprises. Among them, 167 are registered and 231 are unregistered enterprises. A part of the sample dataset has been used here for the analysis of profit earned by the micro and small enterprises in the NCR.

Estimation of the profit function and interpretation of estimated parameters: In this study the financial data (revenue, expenses net of salaries and wages, etc.) for eight years (2006-2013) period have been averaged to obtain the profits. Similarly, the data for workforce (employees) and value of fixed assets are the average values. Averaging has been done due to two reasons. First, such averaging smoothen the year-to-year fluctuations and provides more stable values of the financials. Secondly, the financial data for all enterprises are not consistently (without break in the series) available for the run of eight years, 2006-2013. In a few cases data for 5 or 6 years only are available. In such cases, averages fill the gap and make inter-enterprise comparisons feasible.

The profit function (eqn. 3) has been estimated by nonlinear regression (optimized by sequential quadratic programming). The

standard error of estimates of parameters and their lower/upper bonds for 95% trimmed range are obtained by bootstrapping.

The notion of empirical normal profit range:

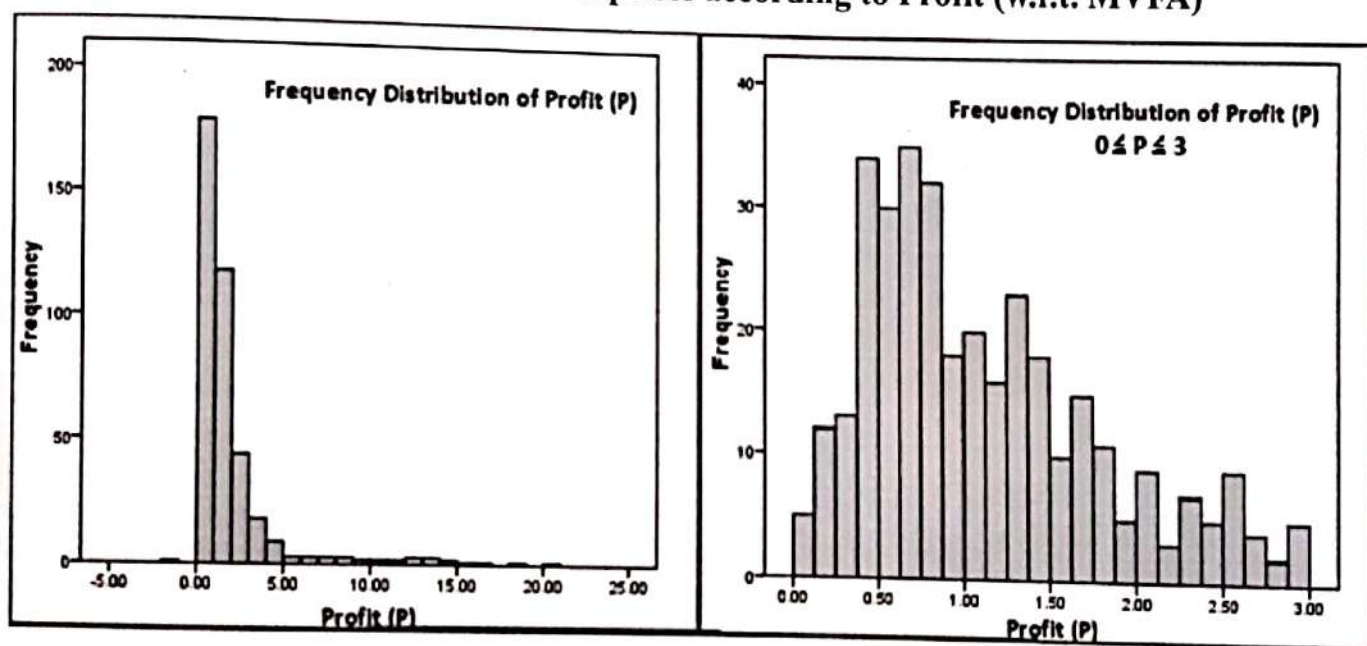
At this juncture it is appropriate to discuss the concept of Normal Profit Range (NPR). A normal profit range may be defined as a range occupied by the enterprises whose profits (P) do not show up statistical outliers, while

outliers are the enterprises whose profits lay beyond a statistically acceptable spread range with respect to its own (P's) distribution and the model used to explain it. As the distribution of profits is highly right-skewed, use of arithmetic mean and standard deviation would be grossly inappropriate to detect such outliers and, thus, define the NPR. Use of median and median absolute deviation (MAD) as measures of location and dispersion is more appropriate.

**Table-1: Percentile Distribution of Profit (w.r.t. MVFA)
Earned by the Sample Small and Micro Enterprises in NCR**

Percentile	10	20	25	30	40	50
Profit (P)	0.413	0.560	0.649	0.696	0.862	1.113
0 P 3	0.397	0.519	0.584	0.653	0.796	0.925
Percentile	60	70	75	80	90	100.00
Profit (P)	1.380	1.735	2.025	2.468	3.810	20.976
0 P 3	1.167	1.383	1.506	1.703	2.147	3.000

Fig.2: Distribution of Enterprises according to Profit (w.r.t. MVFA)



Rousseeuw and Croux (1993) suggest two more measures of location and dispersion. If we use Rousseeuw-Croux measures, the cut-off point would be $P=3.239$ or yet larger and the number of enterprises to be included in the NPR would be 347 (or more). However, we found in the present analysis that the estimated profit function with 347 (or more number of) enterprises increases the number of outliers with respect to the model (eqn. 3) that is being

used for estimating the profit function. Hence, we have abandoned the Rousseeuw-Croux methods. On several trials we found out that the NPR may approximately be defined as the range between $(2)_{mm}PD-$ and $(3)_{mm}PD+$ where ${}_mP$ is the median profit and ${}_mD$ is the median of absolute deviation of P from ${}_mP$. For the sample enterprises under study, this range is approximately $P(0, 3)$. Normal profit is earned by the bottom 85% of the sample enterprises. It

may be seen that even this definition shows up three outlier enterprises. However, to eliminate them would require $P(0, 2.5)$ which unduly eliminates many enterprises that have P well explained by the model (eqn. 3). That is to say, $P(0, 2.5)$ has more statistical disadvantages but little advantage. Therefore, we have accepted the NPR in $P(0, 3)$ rather than in $P(0, 2.39)$.

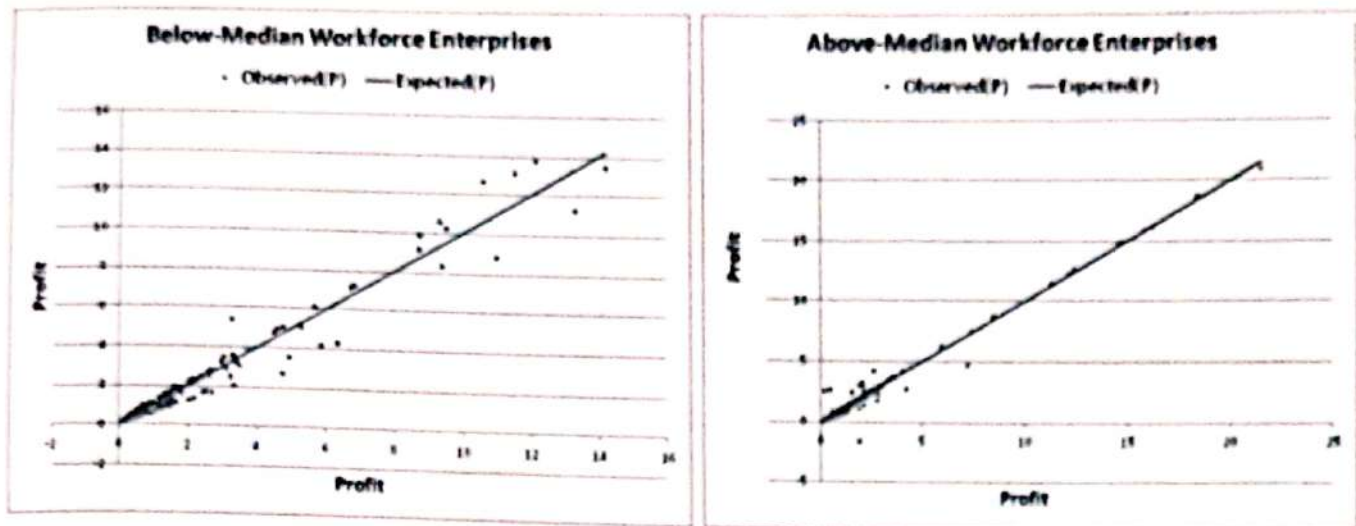
Profit functions of the enterprises with below-median and above-median workforce: The distribution of the enterprises

(Table-2) according to the size of workforce (no. of employees) reveals that about one-third of the enterprises have 9 or less number of employees, while in another one-third of the enterprises the number of employees varies between 10 and 25. The median enterprise (17 in number) has 15 employees. There are 189 enterprises having employees less than 15 in number. On the other hand, 193 enterprises have more than 15 employees.

Table-2: Percentage Distribution of Enterprises (According to No. of Employees or Workforce; Median = 15 Employees)						
No. of Employees up to (median)	6	7	8	9	10	15
% of Enterprises	8.3	16.7	25.0	33.3	41.7	50.0
No. of Employees up to (> median)	20	25	30	36	50	75
% of Enterprises	58.3	66.7	75.0	83.3	91.7	99.7

Table-3. Estimated Parameters of Profit Function of MSEs in Below-Median vs. Above-Median Workforce in National Capital Region, India				
[Below-Median: n=189; $R^2 = 0.943$]; [Above-Median: n=193; $R^2 = 0.960$]				
Parameter	Estimate	SEE	LB	UB
h(below median)	0.519	0.038	0.465	0.616
h(above median)	0.946	0.112	0.869	1.346
a₁₁(below median)	0.088	0.117	0.005	0.456
a₁₁(above median)	0.000	0.006	0.000	0.020
a₂₂(below median)	0.912	0.116	0.544	0.992
a₂₂(above median)	0.962	0.036	0.865	1.000
a₁₂(below median)	0.000	0.018	0.000	0.015
a₁₂(above median)	0.038	0.036	0.000	0.135
b(below median)	-0.137	0.352	-0.803	0.371
b(above median)	0.103	0.157	-0.144	0.468
v(below median)	1.853	0.293	1.276	2.288
v(above median)	2.181	0.391	1.527	3.093
c(below median)	1.764	0.213	1.401	2.169
c(above median)	1.005	0.115	0.638	1.101
Note: LB and UB are lower and upper bonds for 95% trimmed range; SEE is the Standard Error of Estimate of the parameters.				

**Fig.3: Profit Rates (as % to Value of Fixed Assets)
of MSEs in the NCR, India (Workforce-wise)**



The estimated parameters of profit functions (Table-3) reveal that the enterprises with below-median workforce exhibit decreasing returns to scale (negative b , and smaller v) and poorer substitutability (near-zero a_{12}) between the factors of production than the above-median workforce enterprise, which show increasing returns to scale. They also show a wide range in P (Fig.3) vis-à-vis the above-median enterprises (mostly concentrated in the NPR). This is natural as the enterprises with below-median workforce already have smaller workforce, mostly barely necessary for their functioning.

Profit functions of enterprises in manufacturing and service sectors: Among the sample (399) MSEs, 197 enterprises are in the manufacturing sector while the rest (202) are in the service sector. It is expected that profit function of the manufacturing enterprises will be significantly different from the service sector enterprises. The estimated parameters for manufacturing versus service sector enterprises are presented in Table-4 and the profits (observed as well as estimated) are depicted in Fig.4.

A comparison between the estimated parameters of profit functions of manufacturing and service sectors (Table-4) suggests that the coefficient associated with expenses (a_{22}) in the manufacturing sector is

smaller than that in the service sector. Moreover, the spread of this parameter (indicated by SEE and UB-LB) is larger in the manufacturing sector than in the service sector. The coefficient (a_{12}) associated with the product $z_2(x)$ of labour $z_1(x)$ and capital $z_2(x)$, represented by non-wage expenses) is larger and more dispersed in the manufacturing sector suggesting that there is some substitutability between the two factors of production (z_1 and z_2). This coefficient (a_{12}) is near-zero in the service sector suggesting a near-Leontief type of technology in which labour and capital combine in fixed proportions. This may be so due also to the fact that manufacturing sector is more capital intensive, while service sector is more workforce intensive, needing less capital (machinery, etc). That is why there is little room for substitution of the one factor for the other. The parameter b in the manufacturing sector is positive (against negative b in the service sector), which leads to the conclusion that the manufacturing sector has increasing returns to scale, while the service sector has decreasing returns to scale. Higher value of v in the manufacturing sector further strengthens the conclusion that manufacturing sector has increasing returns to scale. A larger value of v for the manufacturing sector also suggests that 'value-added' is larger in this sector and it increases with the scale of production, which is reflected in the profit.

Table-4: Estimated Parameters of Profit Function of MSEs in Manufacturing vs. Service sectors in National Capital Region, India

[Manufacturing: $n \approx 197$, $R^2 = 0.959$]; [Service: $n = 202$, $R^2 = 0.979$]

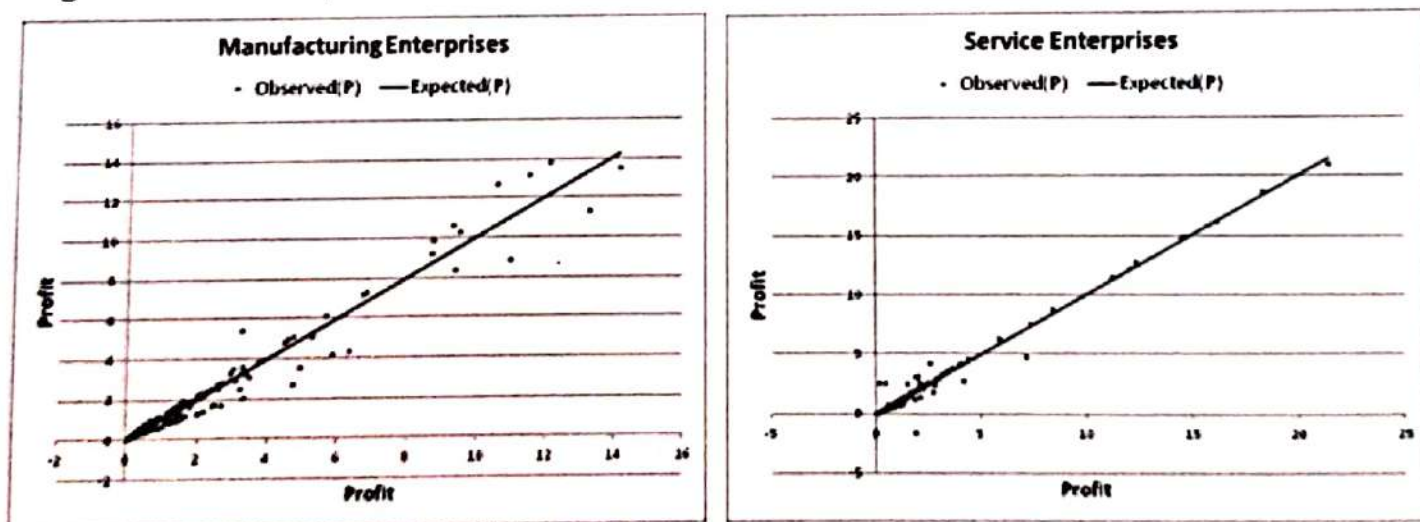
Parameter	Estimate	SEE	LB	UB
$h(\text{manufacturing})$	0.466	0.020	0.414	0.492
$h(\text{service})$	0.951	0.058	0.876	1.163
$a_{11}(\text{manufacturing})$	0.000	0.015	0.000	0.065
$a_{11}(\text{service})$	0.002	0.002	0.002	0.002
$a_{22}(\text{manufacturing})$	0.911	0.051	0.788	0.992
$a_{22}(\text{service})$	0.998	0.014	0.954	1.000
$a_{12}(\text{manufacturing})$	0.089	0.054	0.000	0.212
$a_{12}(\text{service})$	0.000	0.001	0.000	0.002
$b(\text{manufacturing})$	0.772	0.373	-0.338	1.129
$b(\text{service})$	-0.091	0.064	-0.229	-0.003
$v(\text{manufacturing})$	2.767	0.393	1.764	3.215
$v(\text{service})$	1.788	0.162	1.412	2.028
$c(\text{manufacturing})$	2.183	0.089	1.977	2.346
$c(\text{service})$	0.933	0.071	0.696	1.027

Note: LB and UB are lower and upper bonds for 95% trimmed range; SEE is the Standard Error of Estimate of the parameters.

As presented in Fig.4, the MVFA-normalized profits in the manufacturing sector vary from near-zero to a little less than 14 times of MVFA. However, in case of the service sector it varies from near-zero to about 21 times MVFA.

Further, most of the enterprises in the manufacturing sector earn larger profits (with respect to the value of fixed assets) while the service sector enterprises are mostly swarming around the NPR.

Fig.4: Profit Rates (as % to Value of Fixed Assets) of MSEs in the NCR, India (Sector-wise)



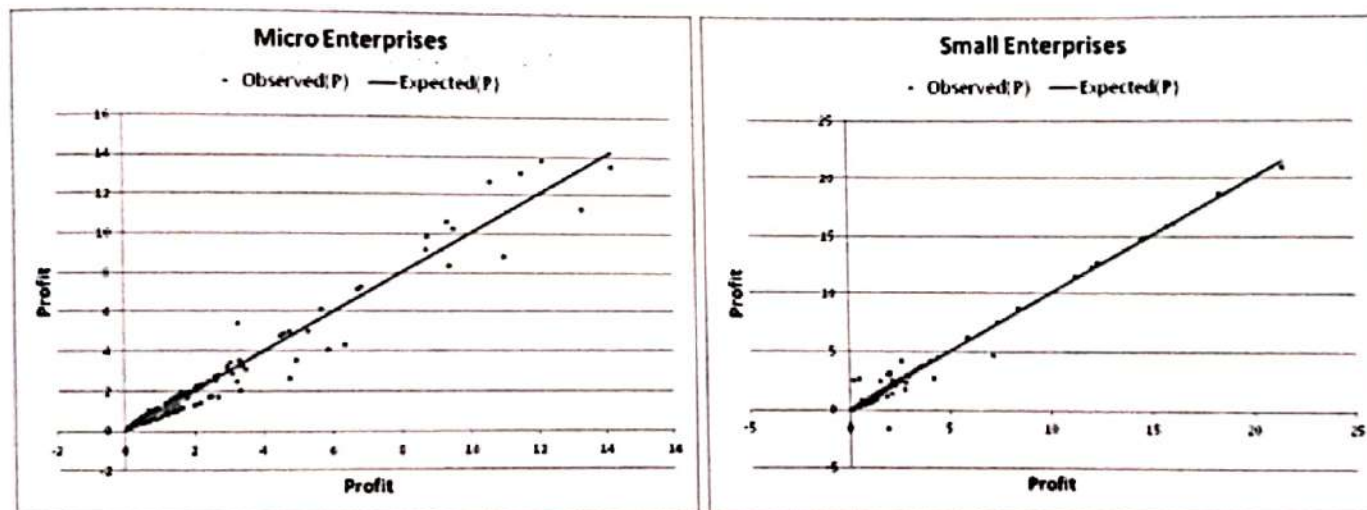
Profit functions of micro and small enterprises: Micro enterprises exhibit more substitutability between labour and capital than the small enterprises do (Table-5). Also, micro enterprises are experiencing more pronounced and increasing returns to scale while small enterprises are experiencing decreasing returns

to scale. Micro enterprises also show up higher 'value-addition' than the small enterprises. As Fig.5 suggests, micro enterprises are more scattered in the profit range, while small enterprises are mostly concentrated in the NPR and have fewer outliers.

Table-5. Estimated Parameters of Profit Function of Micro and Small MSEs in National Capital Region, India				
[Micro: n = 188; $R^2 = 0.959$]; [Small: n=211; $R^2 = 0.979$]				
Parameter	Estimate	SEE	LB	UB
h(micro)	0.466	0.020	0.410	0.494
h(small)	0.951	0.069	0.891	1.207
a ₁₁ (micro)	0.000	0.009	0.000	0.016
a ₁₁ (small)	0.002	0.014	0.000	0.053
a ₂₂ (micro)	0.911	0.052	0.794	1.000
a ₂₂ (small)	0.998	0.014	0.947	1.000
a ₁₂ (micro)	0.089	0.053	0.000	0.206
a ₁₂ (small)	0.000	0.001	0.000	0.002
b(micro)	0.772	0.362	-0.237	1.187
b(small)	-0.091	0.065	-0.240	-0.006
v(micro)	2.767	0.389	1.816	3.318
v(small)	1.788	0.177	1.351	2.005
c(micro)	2.183	0.091	1.988	2.325
c(small)	0.933	0.082	0.655	1.002

Note: LB and UB are lower and upper bonds for 95% trimmed range; SEE is the Standard Error of Estimate of the parameters.

**Fig.5: Profit Rates (as % to Value of Fixed Assets)
of Micro and Small Enterprises in the NCR, India**



Profit function of all sample enterprises:

Overall, the sample enterprises show up higher profitability for larger non-wage expenses and little addition to profitability due to workforce they employ (Table-6). Yet, there is some evidence of substitutability between the two types of inputs. These enterprises are operating

with increasing returns to scale and a majority of them operate in the NPR. Two distinct rays of profitability line (i and ii) are observed (Fig.6). The majority of enterprises cluster around ray (i) while quite a few are on the ray (ii). They are mostly manufacturing enterprises.

Table-6. Estimated Parameters of Profit Function of All and Outlier-Censored MSEs in National Capital Region, India

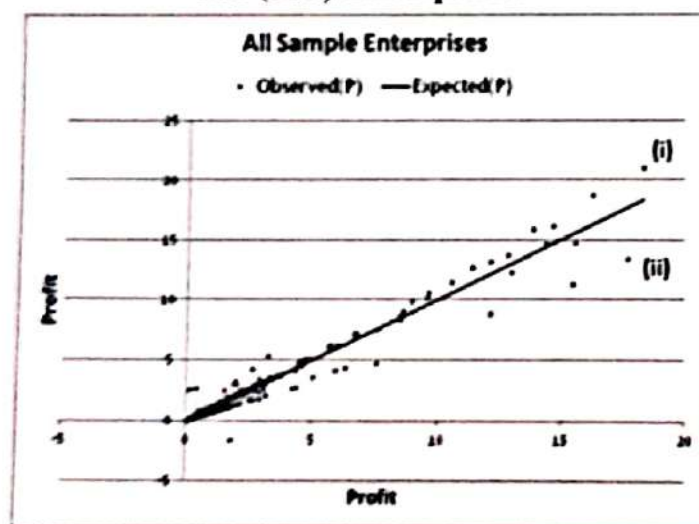
[All: $n = 399$; $R^2 = 0.956$]; [Censored: $n=341$; $R^2 = 0.843$]; $P (0 \leq P \leq 3 \text{ MVFA})$

Parameter	Estimate	SEE	LB	UB
$h(\text{all})$	0.704	0.042	0.665	0.841
$h(\text{censored})$	0.363	0.035	0.274	0.422
$a_{11}(\text{all})$	0.000	0.028	0.000	0.101
$a_{11}(\text{censored})$	0.074	0.059	0.000	0.190
$a_{22}(\text{all})$	0.963	0.027	0.889	0.999
$a_{22}(\text{censored})$	0.926	0.053	0.810	1.000
$a_{12}(\text{all})$	0.037	0.026	0.000	0.099
$a_{12}(\text{censored})$	0.000	0.025	0.000	0.088
$b(\text{all})$	0.102	0.163	-0.198	0.430
$b(\text{censored})$	2.144	1.058	-1.397	3.000
$v(\text{all})$	2.114	0.267	1.648	2.678
$v(\text{censored})$	2.825	0.495	1.373	3.414
$c(\text{all})$	1.341	0.100	1.063	1.447
$c(\text{censored})$	3.490	0.314	2.820	3.747

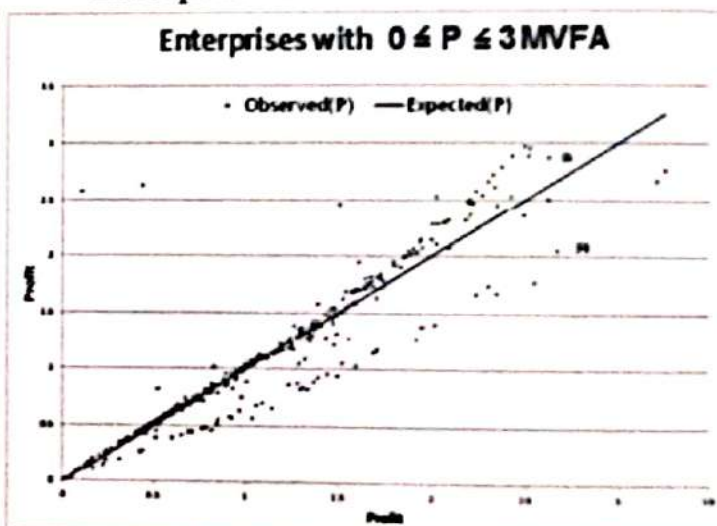
Note: LB and UB are lower and upper bonds for 95% trimmed range; SEE is the Standard Error of Estimate of the parameters. All for all 399 enterprises; Censored for censored data on enterprises ($0 \leq P \leq 3$ times the MVFA).

Fig-6. Observed and Estimated Profit Function of MSEs in the National Capital Region, India

All (399) Enterprises



Enterprises with $0 \leq P \leq 3 \text{ MVFA}$



It has already been observed (Table-2) that in most cases the enterprises swarm in the NPR. As noted earlier, the distribution of profits is highly skewed (coefficient of skewness = 3.518). Fifty percent of the enterprises have $P \leq 1.113$ times their MVFA. Seventy five percent of the enterprises have $P \leq 2.025$ times MVFA. Only 10 percent of the enterprises have

$P \geq 3.81$ times MVFA. The median P is 1.113 and mean P is 2.013 with standard deviation = 2.904.

In view of this, it is considered desirable if profit function is estimated for the enterprises in NPR only. To reiterate, we found that normal profit is earned by bottom 85% of the sample enterprises. Viewed as such, 341 enterprises

have profit, $P \leq 3$ times MVFA. The estimated parameters of the profit function (eqn. 3) are presented in Table-6. It is observed that those enterprises (with $0 \leq P \leq 3$ times the MVFA), too, exhibit increasing returns to scale, but with increased role of manpower (enhanced a_{11} and reduced a_{22}) and decreased substitutability (reduced a_{12}) between manpower and non-manpower inputs. The estimated values of b , v and c (by using 341 enterprises in the NPR) are all larger than those estimated by using all (399)

enterprises. In general, the findings of the analysis obtained by using all (399) enterprises remain un-contradicted by the findings based on the enterprises in the NPR.

Profit function of enterprises in the widened NPR: It has been discussed earlier that we have defined the NPR by the criterion $0 \leq P \leq 3$. In so doing, we abandoned the Rousseeuw-Croux criteria which suggested the NPR as $0 \leq P \leq 3.23875$.

Table-7. Estimated Parameters and Profit Function of Enterprises with Censored P ($0 \leq P \leq 3.23875$ MVFA)

[xxx: $n=347$; $R^2 = 0.836$]; P ($0 \leq P \leq 3.23875$ MVFA)

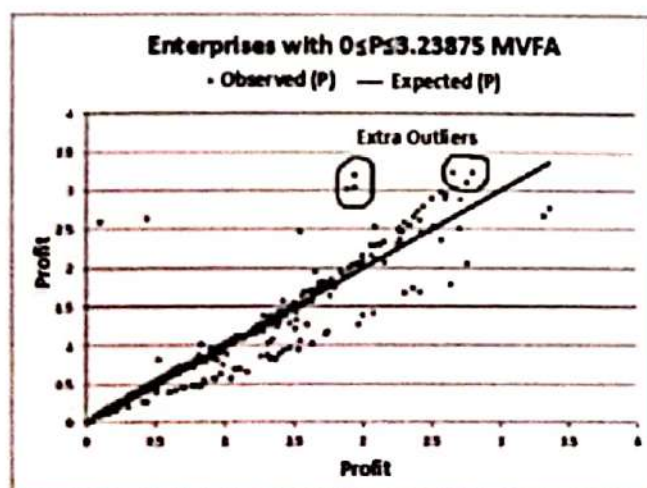
Parameter	Estimate	SEE	LB	UB
$h(xxx)$	0.869	0.088	0.627	0.957
$a_{11}(xxx)$	0.079	0.055	0.000	0.174
$a_{22}(xxx)$	0.921	0.048	0.825	1.000
$a_{12}(xxx)$	0.000	0.032	0.000	0.109
$b(xxx)$	0.958	0.529	-0.438	1.431
$v(xxx)$	2.947	0.543	1.583	3.595
$c(xxx)$	1.472	0.140	1.200	1.642

Note: LB, UB and SEE defined as in preceding Tables. xxx for censored data on 347 enterprises ($0 \leq P \leq 3.23875$ times the MVFA).

In Table-7 we have presented the estimated parameters for the enterprises that lay in the widened NPR defined as $0 \leq P \leq 3.23875$. There are 347 enterprises falling in this range. The result is that more outliers enter the range (Fig.7) as well as the R^2 of the fit (of the model to the data) deteriorates from 0.846 (Table-6 for $n=341$) to 0.836 (Table-7 for $n=347$). Of the

seven enterprises included in $0 \leq P \leq 3.23875$ range (which were not there in $0 \leq P \leq 3$ range), six turn out to be outliers (Fig.7). Thus, we conclude that the NPR defined by $0 \leq P \leq 3$ is better than the NPR based on Rousseeuw-Croux criteria.

Fig-7. Observed and Estimated Profit Function of MSEs in the Extended Normal Profit Range



Concluding remarks: The analysis reveals that about 85% of MSEs earn normal profit in the range of 0-3 times the market value of fixed assets, mostly running with the increasing returns to scale and near-zero coefficient of substitution between human and non-human resources. These characteristics are more pronounced in case of the manufacturing sector and micro enterprises. Profits mostly respond to the size of non-human resources employed by the enterprises and it is more so in case of small enterprises. These tendencies indicate that the MSE sector is attractive to entrepreneurs and the expansion of this sector is likely in future due to entry of new enterprises, especially the micro ones. Employment generation will be mostly on account of this expansion rather than growth of the existing enterprises that prefer to increase capital rather than labour inputs.

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A STUDY ON THE INFLUENCE OF ENTERPRISE RELATED VARIABLES TOWARDS WEBSITE ADOPTION IN SMALL AND MEDIUM ENTERPRISES

Ravilochan Rao*

Abstract :

The Small and Medium Enterprises (SMEs) have been contributing to the economic development of India in many ways such as employment generation for both urban and rural population, providing goods & services at competitive prices to domestic market and to the exports and thereby playing an important role in the sustainable development of the economy as a whole. This was evidenced in the annual reports of Ministry of MSME, that there are around 26 million MSME enterprises in India, contributing nearly 45% share of manufactured output, accounting for 40% of overall exports of the country and providing employment to about 59 million people (Annual Report MSME, 2009-10). However, the performance of the Small and Medium enterprises in India is not comparable with that of SMEs in other Asian economies. There are several reasons for this including policy matter, governance issues, capacity crunch, financial constraints, poor adoption of technology etc. The adoption of Internet Technologies in Small and Medium Enterprises is relatively faster and majority of these enterprises quickly adopted internet for e mail transactions and website development and use. This study is an effort to find a possible relationship between the enterprises owning a website and some of the independent factors such as ownership pattern, qualification of the entrepreneur and period of establishment of the enterprise. The study is conducted on 118 Small and Medium Enterprises in Karnataka State. A structured questionnaire was administered to the entrepreneurs and data collected was used to find a possible relationship between these independent factors mentioned above and enterprise owning the website. The results projected the correlation between the enterprises owing the website and ownership pattern, qualification of the entrepreneur and period of establishment of the enterprise.

Key words : *Small and Medium Enterprises, Website, Ownership pattern, Period of Establishment and Qualification*

Introduction

The globalization process that was initiated in 1991 in India created a challenging business environment and many Small entrepreneur-driven enterprises were exposed to challenges from global counterparts but some of them may have grown to become globally competent players. The Small and Medium Enterprises (SME) have been considered as an engine of economic growth and as key instrument for promoting equitable development of an economy. This sector constitute more than 90% of total enterprises in most of the economies and are credited with generating the highest rate of employment growth and account for a major share of industrial production and exports. The major advantage of this sector is its

employment potential at low capital cost. Therefore, these enterprises play a pivotal role in the economic and social development of the economy with their effective, flexible and innovative entrepreneurial spirit. The Indian SMEs play a significant role in the overall industrial economy of the country as in many other developing economies. The SMEs contribute significantly to the country's manufacturing output, employment and exports. In recent years, this sector has consistently registered higher growth rate compared with the overall industrial sector. With its agility and dynamism, the sector has shown admirable innovativeness and adaptability. This sector also helps in industrialisation of rural and backward areas, reducing regional imbalances and assuring

more equitable distribution of national income and wealth.

The SME sector in India is highly heterogeneous in terms of the size of the enterprises, variety of products and services, and levels of technology. There are around 26 million Micro Small and Medium Enterprises (MSME) in India, contributing nearly 45% share of manufactured output, accounting for 40% of overall exports of the country and providing employment to about 59 million people (Annual Report MSME, 2009-10). These enterprises manufacture more than 6,000 products ranging from traditional to high tech items. In Financial Year (FY) 2011, total production of MSMEs was equivalent to about 14.28% of India's GDP. The total production of MSMEs for FY2011 was Rs. 10,957.6 billion. Between FY2007 and FY2011, the sector's total production grew at a CAGR of 11.5%, clearly indicating the substantial contribution of MSMEs to the Indian economy. The MSMEs were considered as priority sector and therefore a few major initiatives were undertaken by the Government of India in FY12 to revitalise this sector. This includes creating an opportunity for Indian SMEs to raise funds from capital markets with approval from SEBI for SME platforms in BSE and NSE. The Ministry of MSME organized skill development programmes for 478,000 persons during this period. In addition to this, a cluster-based approach for select sectors to improve the productivity, competitiveness and capacity building was introduced (Economic Survey 2011-12). Further in the budget 2012-13, the Government had set up an India Opportunities Venture Fund with SIDBI worth Rs. 50 billion for equity to the MSME sector. The allocation for the Prime Minister's Employment Generation Programme was increased by 23% from Rs 10.37 billion to Rs 12.76 billion. Under the Public Procurement Policy for Micro and Small Enterprises (MSEs), Ministries and Central Public Sector Enterprises (CPSEs) are required to make a minimum of 20% of their annual purchase from MSEs. Further, an

increase in the turnover limit from Rs. 6 million to Rs.10 million for SMEs for compulsory tax audit of accounts and for presumptive taxation was introduced.

In spite of all this encouragement, in order to be competitive in the market, SMEs have to move with time and adopt Information Technology and Internet in their business in addition to technology absorption for manufacturing. Also, the performance of the Small and Medium enterprises in India is not comparable with that of SMEs in other Asian economies. There are several reasons for this including policy matter, governance issues, capacity crunch, financial constraints, poor adoption of technology including internet for business transactions. Internet is a powerful tool used for easy access to information, reach the people across the globe instantaneously, shrink the cycle time of the ordering process in business etc. The adoption of Internet Technologies in Small and Medium Enterprises is relatively faster and majority of these enterprises adopt internet for e mail transactions and website access. It is significantly useful for the Small and Medium Enterprises to have a website for better visibility and reach to the market. However, many of the SMEs have several constraints in owning the website which could be on account of ownership pattern, qualification of the entrepreneur and/or period of establishment.

Literature Review

Grover and Goslar (1993) found that most of the SMEs have their PC embedded with modem, but have limited themselves in using their web site as a medium to promote their products and services. The study also revealed that most of these SMEs are just interested in showing that their companies are all computerized and most of the managers lack skills and knowledge on surfing the internet. In addition to this, these managers perceive that learning and adopting the web site is a waste of time and it is one of the costs that may burden their company if they spend money to train their

employees. Some of the observations made in the article, "Small and Medium enterprises and ICT" by Kotelnikov (2007) are as follows:

a) Many SME owners are unfamiliar with operating a computer and are skeptical about the concrete benefits to its core business and assume that ICT is only for larger companies. Even if they have the will and financial resources to integrate ICT into their core business, SME owners are often at a loss while choosing the most appropriate and cost-efficient product.

b) Adopting ICT is a difficult task for companies of all sizes, whether they are in developed or developing countries. In fact, the organizational changes are required in order to effectively adopt ICT because they change the way firms do business. While the changes may be beneficial in the long run, they often hurt one department and strengthen another.

c) The lack of ICT literacy is a major problem affecting all sectors of the economy in every part of the world. When business and technology are managed on two different tracks, companies spend a large part of their revenues on technology, and most of them are not satisfied with this investment. Such expensive failures have led many observers to question whether ICT can ever produce a defensible long-term competitive advantage.

In a study by Kutlu and Ozturan (2008) on the usage and adoption of IT among SMEs in Turkey, the responses to the question related to the existence of a web site indicated that almost 67.5% of the SMEs had web sites. The question related to the purpose of the web sites' usage revealed that 91.7% of them contained product/service information whereas 46.2% of them were doing e-business through their web sites. Further, in the concluding remarks, authors observed that business owners and managers with positive attitude are inclined to be more successful in adopting and implementing new technology.

According to Narayanasamy, (2008) traditional business owners and consumers think that they can provide or get more information from the direct interaction with the sales person, compared to just going through the web sites. SMEs are not willing to spend extra money or invest more, to solve problems related to their web site, such as security problems, bandwidth and consultation fees.

Objectives of the study

The study is taken up to understand the website adoption and use by SMEs and to find out the influence of some of the independent variables in the organization such as period of establishment, entrepreneurs' educational qualification and ownership pattern. These variables are generally not given due attention while studying website use in SMEs.

The specific objectives of the study are:

- To know about the Small and Medium Enterprises owning the website
- To understand the different independent variables such as period of establishment of the enterprise, ownership pattern of the enterprise and educational qualification of the entrepreneur.
- To find out the relationship between the enterprise owning the website and period of establishment of the enterprise, ownership pattern of the enterprise and educational qualification of the entrepreneur.

Hypothesis

The following hypothesis is developed and tested using Statistical Tools.

H₀: There is no significant relationship between enterprise owning a website and period of establishment of the enterprise, ownership pattern of the enterprise and educational qualification of the entrepreneur.

Scope of the Study

For the purpose of the study 118 Small and Medium Enterprises in Karnataka State were approached with a structured questionnaire. The scope of the study was restricted to manufacturing SMEs in the Karnataka State. As the study is related IT applications, the enterprises located in urban Karnataka State covering Bengaluru, Mangaluru and Mysuru districts were approached. In view of the limited time frame and uncertainty of availability of entrepreneurs during the Survey, Non probability Convenience Sampling Method was adopted. The questionnaire covered the questions on availability of the website by the enterprise, ownership pattern (Family owned, Private limited, Public limited), period of establishment (before the beginning of (1991) globalization process in India, during

the globalization period (1991-2000) or decade after globalization in India) and educational qualification of the entrepreneur (Post graduate and above, Technical graduate, Graduate or below graduation). The responses from the enterprises were gathered, tabulated and tested using Statistical Tools.

Data Analysis and Interpretation

Among the 118 enterprises visited only 83 enterprises were having the website which implies that only about 70% of the Small and Medium Enterprises visited have the website. The association of these enterprises with the independent variables, namely period of establishment, ownership pattern and qualification of the entrepreneur is shown in the Tables 1 to 3. The Table also gives the details of these independent variables.

Table1 Period of establishment and Website availability

Period of establishment	Number of enterprises with website	Percentage
Established before globalization	46	55
Established during the period of globalization	25	30
Established a decade after globalization	12	15
Total	83	100

Chi Square value=20.12 degree of freedom is 2 and significance level is 0.000.

Among the enterprises that own website, it is observed that professionally managed enterprises have a share of about 65%. Also, all Public Limited enterprises own the website. Family owned enterprises with website constitute only 35% of the enterprises.

Table 2 Ownership pattern and website availability

Ownership pattern	Number of enterprises with website	Percentage
Family owned business	29	35
Private Limited	33	40
Public Limited	21	25
Total	83	100

Chi Square value=20.12 degree of freedom is 2 and significance level is 0.000.

Among the enterprises that own website, it is observed that professionally managed enterprises have a share of about 65%. Also, all Public Limited enterprises own the website. Family owned enterprises with website constitute only 35% of the enterprises.

Table 3 Qualification of entrepreneurs and website availability

Qualification	Number of enterprises with website	Percentage
Post graduate and above	18	22
Technical graduates	38	46
Graduates	20	24
Diploma/ITI	07	08
Total	83	100

Pearson Chi Square value =8.14 and degree of freedom is 3 and significance level is 0.043

It is observed that about 92% of the enterprises with website are run by the entrepreneurs/CEOs with graduation or above qualification. Also, technically qualified entrepreneurs account for about 46% of the enterprises with website. It implies that education qualification of the entrepreneur matters in owning the website by the enterprises.

In all the three cases above, significance level was <0.05 in the Person Chi Square test and therefore, the null hypothesis is rejected. It implies that there is a significant relationship between enterprises having a website and period of establishment, ownership pattern and qualification of the entrepreneur. In order to know the relationship between the enterprises having the website and period of establishment, educational qualification of the entrepreneur, and ownership pattern, Pearson Correlation Test was administered. The results of the test is shown in Table 4

Table4 Correlation between Enterprises owning the website and the independent variables

Pearson Correlation	Period of establishment	Ownership Pattern	Qualification of the entrepreneur
Correlation coefficient for Enterprises owning the website	0.26	-0.41	0.2
Significance level	0.002	0.000	0.017
Number of samples	118	118	118

The Table 4 shows the Karl Pearson Correlation method used to test the correlation between the dependent variable owning the website with the independent variables period of establishment, ownership pattern and qualification of the entrepreneur. It is evident from the results that the correlation is significant between the enterprises owning the website and period of establishment, ownership pattern and qualification of the entrepreneur with significance level of 0.002, 0.00 and 0.017 (<0.05) respectively. However, Pearson coefficient is low for period of establishment and qualification of the entrepreneur. It is negatively correlated with ownership pattern of the enterprise. In order to test this relationship

further, logistic regression analysis is attempted. Here, the dependent variable is dichotomous, and therefore, applying logistic regression is justified.

Logistic regression

It is known that 83 enterprises have website and 35 enterprises are without website. It implies that 70% of the enterprises have the website. The website is the dependent variable and it is binary variable with 0 = website available and 1=website not available. The predictor variables are period of establishment, ownership pattern and qualification of the entrepreneur.

BLOCK 0

Block 0 output is for the model that includes only the Constant. Given the base rates of the two decision options ($83/118 = 70\%$ own the website, 35% do not own the website and the best strategy is to predict, for every case, that the enterprises own the website. Using that strategy, it will be correct 70% of the time.

Table 5 Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step1	Step	27.328	3	.000
	Block	27.328	3	.000
	Model	27.328	3	.000

Omnibus Tests of Model Coefficients gives a Chi-Square of 27.328 with 3 degree of freedom, significance level $0.000 < .05$. This is a test of the null hypothesis that adding the three

BLOCK 1 METHOD=ENTER

The predictor variables, period of establishment, ownership pattern and qualification of the entrepreneur are added.

predictor variables to the model has not significantly increased the ability to predict the decisions made by the respondents.

Table 6 Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	116.151(a)	.207	.294

a Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Under Model Summary, the -2 Log Likelihood statistics is 116.151. This statistic measures how poorly the model predicts the decisions -- the smaller the statistic the better the model. The Cox & Snell R Square and Nagelkerke R Square can reach a maximum of 1. As the estimation terminated at iteration number 5 against the requested 20 iterations it is difficult to project the probability of the enterprises owning the website in terms of ownership pattern, period of establishment and

educational qualification of the entrepreneur. Hence, further analysis is abandoned.

Summary of the findings

As the null hypothesis is rejected, it is clear that there is a significant relationship between enterprises owning the website and period of establishment, ownership pattern of the enterprise and educational qualification of the entrepreneur. This is strengthened with the Karl Pearson Correlation Test where the relationship was proved to be significant. Further attempt to test the relationship using regression analysis could not be executed as iteration terminated

after 5 levels. Hence, the relationship is restricted to correlation between enterprises owning the website and other independent variables as explained in the study.

From the study it is also evident that the enterprises, irrespective of period of establishment, adopt technology that is useful to their business, such as having the website.

The educational qualification of the entrepreneur matters in enterprises adopting technology based services such as owning the website.

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ROLE OF WOMEN OWNED MICRO & SMALL ENTERPRISES FOR PROPELLING URBAN DEVELOPMENT: EVIDENCE FROM ETHIOPIA!!

Dr. R. Dayanandan*

Abstract :

Women entrepreneurship is increasingly recognized as an important driver of economic growth, productivity, innovation and employment, and it is widely accepted as a key aspect of urban economic dynamism. However, women entrepreneurs in Ethiopia face various challenges and due to this most of them are not continuing their business for a longer period of time which hinders their personal and economic development. Hence this paper aims to examine the role of women owned enterprises for urban development in Ethiopia. To address the objectives, 371 registered micro and small enterprises owners were identified randomly and direct interview was conducted with semi structured questionnaire. In addition, focus group discussion and key informant interviews have carried out to substantiate the necessary information. Statistical tools such as mean, standard deviation, paired T test were used to analyse the collected data and arrived the results. In addition, multiple linear regression analysis was also carried out to find out the influential variables on the performance of the women enterprises. The findings indicate that majority of women entrepreneurs are young, the main reasons to start the business are willing to be self employed and lack of other alternative. The main source of income before the business was husbands' salary, fortunately the business income become the main source after the business. The linear logistic regression results indicated that income of the business, capital and age of enterprise are the significant variables determine the performance of enterprises. Finally it is concluded that women owned enterprises plays a vital role achieving urban development in the study area through employment creation, income generation and asset creation among women entrepreneurs which pave the way for solving the socio-economic problems so as to achieve the development of the city. Based on the findings recommendations also forwarded to enhance the performance of enterprises further.

Key Words: *Entrepreneurship, Micro and Small Enterprises, Problems and Prospects, Urban Development*

1. Background and Rationale

Women are the most important person for any country development and playing a significant role for the alleviation of socio-economic problems. But available information shows that women in urban area are marginalized due to their low status and unemployment as well as lack of livelihood options. There are some indications that in some socio-economic groups, such as adolescents and women, poverty may be linked to HIV prevalence owing to higher rates of early sexual initiation and reports of forced or traded sex (Chung, 2012). Economic dependency, poverty and unemployment are the most crucial problems faced by the women in Ethiopia in general and

in the study area (Hawassa town) particular. The economic dependency ratio of the country is 109 for 100 economically active persons, of that women are more dependent than men in terms of food, clothing, health, education etc. (CSA, 2011). Entrepreneurship is an alternative mechanism to overcome the drudgeries faced by the women.

Women entrepreneurs have been played an important role in economic sector. There are different evidences that show the activities of women entrepreneurs in economic growth. They contribute numerous ideas and a great deal of energy and capital resources to communities, and generate jobs as well as create additional works (Common Wealth

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Secretariat, 2002).

In Ethiopia women dominate the micro and small enterprise sector and their participation in the private sector is similar to other African countries. Their products and services contribute to Gross Domestic Product (GDP) growth; generate income and employment. The extent and form of women's participation in the market is different from that of men entrepreneurs. The reasons are strongly linked to the roles and positions of women in Ethiopian society (Desta, 2010).

The Central Statistical Authority of Ethiopia (2010) report indicates that women own 73.5% of microenterprises, 13.7% of small enterprises in manufacturing industries and 30% of medium and large enterprises in industrial activities. The majority of informal sector and micro enterprise operators are women and which is very low and poorly represented in small, medium and large enterprise.

According to CSA (2012) urban employment unemployment survey the overall unemployment rate of the country is 18.0% and the corresponding male and female unemployment rates are 11.4% and 25.3% respectively. Furthermore the differentials of unemployment rate by gender in South Nations and Nationalities of Peoples Region (SNNPR) show that female unemployment rate (17.5%) is more than double as compared to 8% for male. As the documentation of trade and industry office (2012) show that the total entrepreneurs enrolled in micro and small scale business which survives for two years and above is 6200, of those 4289 men and 1911 women members. This implies that even though women in the region constitute half of the population, the percentage share of entrepreneurs is very meager which may hinder the urban development.

From the total number of registered women entrepreneurs, only 212 are running small business and 1699 running micro enterprises. This indicates most of them are constituted in micro sectors (RTIB, 2012). Further, among women entrepreneurs who engaged in Micro and Small Enterprises, only few could bring significant changes on their life and business. The above realities initiate the author to study the role of women entrepreneurs for urban development.

2. Objective of the Paper

The overall objective of this research paper is to assess the role of women owned micro and small enterprises for the development of Hawassa town and the specific objectives are to:

1. Assess the profile of women entrepreneurs and their enterprises in the study area;
2. Explore the support provided to the women entrepreneurs by different organizations;
3. Examine the contribution of enterprises for the development of women and for the urban development;
4. Trace out the factors that influence the performance of enterprises operated by women entrepreneurs

3. Research Design

This paper depends on empirical research based on both qualitative and quantitative data. To achieve the stated objectives, both primary and secondary data were used. Primary data was collected by direct interview from the sample women entrepreneurs, women

entrepreneurs' association as well as trade and industry officers using semi-structured questionnaires. There are 1911 women entrepreneurs those registered their businesses and survive for two years and above in the Hawassa town. To determine the sample size, Conchran (1997) formula was employed with 95% confidence level and arrived 139 numbers. The study also considered 5% non – response rate and the total sample size was $139 + 7 = 146$. However, data could be collected from only 137 women entrepreneurs. In addition, two focus group discussions with 8 to 10 individuals from micro and small scale business, key informants interview with women entrepreneurs' association as well as from trade and industry bureau were carried out to supplement the primary data. The secondary information was obtained from published and unpublished documents and reports of Regional Trade and Industry Bureau, internet sources, journals, and from other research papers. Five point Likert scale questionnaire was used to elicit the factors determine the performance of women enterprises.

The collected data was coded and analyzed by using Statistical Package for Social Sciences (SPSS version 20). The quantitative data were analyzed using simple analytical tools such as percentages and averages. The contribution of enterprises on socio-economic changes of the respondents was assessed by paired t- test. In addition, multiple linear regression analysis was carried out to assess the factors influencing the performance of women enterprises. The results are presented in the form of tables, charts and graphs for easy understanding.

4. Results and Discussion

4.1 Profile of sample Women Entrepreneurs

Socio-economic variables are related to the position of the entrepreneurs in the society,

which is determined by various social and economic aspects. Demographic characteristics of entrepreneurs determine business and industry choices, financing strategies and growth patterns of businesses. Isidore et al., (2011) states that family size affects women entrepreneurial activities, large family size is common in developing countries.

In most regions of the world, entrepreneurship is popular among young people. Therefore age is considered as a determinant factor of women entrepreneurship. The survey result indicates that majority (67.8%) of respondents belongs to the 20-40 years old which can be considered as a productive age. The average age of the sample entrepreneurs is 30.7 years and more than 80% of them are less than 35 years old. Brush and Gatewood (2008); GEM (2012) states that most of women entrepreneurs around the world start their businesses in young ages (18-34 years) and an average number of young women entrepreneurs greater than older ages. Older age of people may have declined effects for entrepreneurship (Al-Sadi and et al, 2010). The finding of this research has the same result with the previous ones; 82.5% of women entrepreneurs fall their age category between 20-35 years and this age is better time to perform entrepreneurship.

Marital status is also one of the demographic factors influencing entrepreneurship; married women may obtain better assistance from their husbands in terms of financial, idea and labor support. On the other hand, unmarried women have freedom to take decision on their own regarding their entrepreneurial activities. The survey results show that majority (54%) of the sample entrepreneurs is married and 35% are unmarried. According to Gyanu (2007) married women are more successful entrepreneurs than unmarried one. The present research result indicates that married women have the greater exposure because married women are responsible for the families' need and the

ambition to get more income, pushes them to enter in to entrepreneurship. Survey results also indicate that getting high income is the second most reason for starting the business.

Household size refers to the number of members in a family. It is assumed that large households with productive age group are able to provide labour that might be required to carry out the enterprises smoothly. On other hand, if more dependencies are in the family, this may hinder the entrepreneurs in the involvement of their venture fully. Household size affects the social and economic well being of the household members as well. Large household size is associated with crowding, unfavorable health and poor economic conditions. It is expected that women entrepreneurs would come from larger households, because running their own businesses may provide more flexibility to earn an income while they care for dependents. Larger households, with more family members to support may also contribute to necessity motivations. On the other hand, fewer household members may provide more time and fewer obligations that would enable them to engage in this activity. The average number of persons in a household is 4 persons in urban areas of the Ethiopia and 3.8 persons in SNNPR (CSA, 2011).

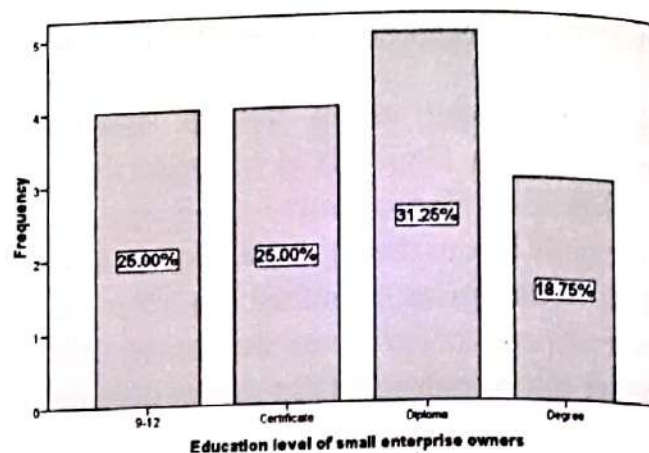
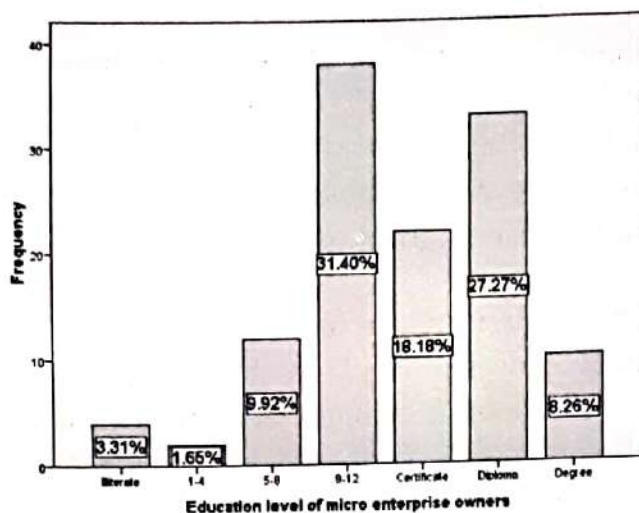
As survey data shows, almost half (51.8%) of women entrepreneurs have 3.8 persons which is also most equal to the average household size of the region. The result also indicates that the average working time of women entrepreneurs is 12.3 hours per day. Most (95.6%) of women entrepreneurs work more than eight hours per day. Also it is observed that while number of house hold size increase average time per day spent in business decreases. Desta (2010) emphasized that the size of household and women's responsibility at home affects the operation of their businesses, additionally

cultural traditions in Ethiopia women are primary household careers, have additional domestic workloads alongside running their own businesses (ILO, 2003). The finding indicates that most of the respondents came from larger households and the size of the family shares the time spent in business.

Education is one of the key factors and the most powerful tool to bring the desired socio-economic changes in a given society. It also reflects the level of society's development. Lack of education and relevant training hinders the development of the society and entrepreneurial activity as well. It is found from the survey results that most (30.7%) have attained between 9-12 grade and 27.7% are diploma holders and only 9.5% have completed their degree. This indicates that majority of the entrepreneurs are having adequate basic education to run their business.

When one compares the two sectors of women entrepreneurs' women entrepreneurs running small business have better education than micro business owners. As can be seen in figure 1, the educational level of most (31.4%) of micro enterprise owners are 9 to 12 grades, whereas 31.2% small enterprise owners are diploma holders. This indicates that that education level of women entrepreneurs determines size of business. Increased educational opportunities for women and the level of education have led to increased productivity (Al-Sadi and et al, 2010).

Figure 1: Educational Level of Women Entrepreneurs



Source: Field survey, 2014

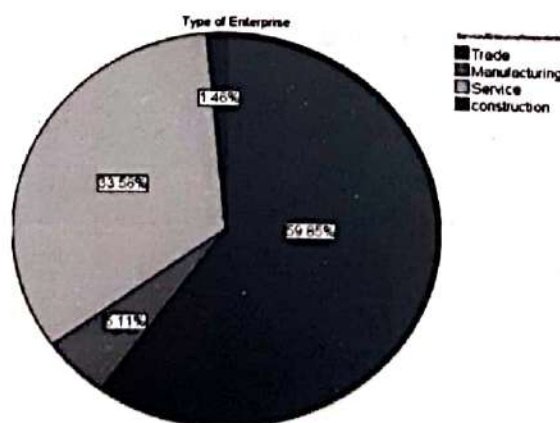
1.1 Profile of Sample Enterprises

4.2.1 Types of Enterprises: Women in Sub-Saharan Africa more likely to start businesses in consumer oriented industries. Consumer sector businesses are more often smaller and less knowledge or capital-intensive than those in business services or transforming (GEM, 2012). Richardson et al. (2004) indicates that the majority of the women entrepreneurs in Ethiopia, Zambia and Tanzania had businesses in the trade and service sectors. Accordingly in this research an attempt has been made to see the type of enterprises carried out by the sample entrepreneurs and presented in figure 2.

Women entrepreneurs naturally select the type of business related activities such as hair

dressings, restaurant and food processing instead of looking another opportunities. This may contributes to the size of their business being small and concentration in few sectors causes high competition within specific market and reduces their turnover. From the findings it is observed that more than half (59.85%) of the sample entrepreneurs engaged in trade activities such as selling cloths, shoes, cosmetics, super markets etc, 33% of them engaged in service sector such as running restaurants, running kinder garden and so on, and they are not advantageous of other sector. The results seem to coincide with past researchers' findings which stated that the entrepreneurial activities of the women entrepreneurs from developing countries are concentrated in the trade and services sectors (Singh et al. 2001; Spring, 2005).

Figure 2: Types of Enterprises



Source: Field survey, 2014

4.2.2 Age of Enterprises: Through the increase of experience and skill of entrepreneurs, the capital, and income of the business are also expected to increase. Majority (87.6%) of enterprises have the age between 2 to 5 years, which are very young and only 2.9% of enterprises were established between 11 to 15 years. Since the age of enterprise increases the number of enterprises decreased, this will be an indication of business discontinues as stated by Kebede (2002) only one in three small businesses survive to their third anniversary. Also GEM (2012) report confirm that high total entrepreneurship activity found in Sub-Saharan Africa, though business discontinuous by women is much higher than men. Based on the result one can conclude that women's business not to survive longer.

4.2.3 Legal ownership status of Enterprises: Enterprises can be established with different legal ownership statuses such as Sole proprietorship, Joint ownership, Family

business, Cooperative and others (Hisrich, 2005). Women are generally more likely to run in single founder businesses, indicating a tendency to operate on their own. They are less likely to work in teams than men, only with few cases they start with three or more founders. The same result also expected from this research as well. Table 1 represents the legal status of business enterprise of respondents.

As it is observed from the survey results, respondents are highly concentrated in few type of business ownership and majority (92.7%) of them registered as sole proprietorship activities because of the nature of the business type entrepreneurs easily start, run and close the business without consent of any other person. The finding has the same result with (ILO, 2003; Richardson et al, 2004) indicates majority of businesses (both micro and small) were registered as sole trading businesses in Ethiopia.

Table 1: Legal Status of Sample Enterprises

Business Ownership	Frequency	Percentage
Sole Proprietorship	127	92.7
Partnership	01	0.7
Cooperative	09	6.6
Total	137	100.0

Source: Field survey, 2014

4.3 Characteristics of Sample Women Entrepreneurs

This section addresses the research questions related to the personal characters of women entrepreneurs which include motivator for the business, previous work position, and the main source of income before and after the business etc.

4.3.1 Entrepreneurial Motivation among

Respondents: Individual drivers defined by Global Entrepreneurship Mentor (GEM) are necessity and opportunity driver. Necessity-driven entrepreneur is one starts business due to lack of better options for work, or lack of job opportunity and a low level of social security entitlements, and they are pushed into creating a source of income. Opportunity-driven entrepreneurs who sought to either earn more money or more independent. In this context it is essential to know the motive of starting the entrepreneurial activities and multiple

responses forwarded are presented in Table 2.

The main motive of the respondents for starting their business was self employed which constitute 29.9% of the respondents followed by lack of other alternative to generate income (26.68%). These results coincide with Jamil (2009) and ILO (2003) results which illustrate that majority of women motivated by push

factor and most of the time considered as survival strategy. According GEM (2013) running business get more money considered as an opportunity driven entrepreneurs. Afiya (2012) indicates that women undertake economic activities in order to support their families.

Table 2: Motives of starting Enterprises

Reason to Start Business	Responses	
	Frequency	Percentage
To generate high income	53	24.16
Lack of other alternative to generate income	58	26.68
To be self employed	65	29.9
Family Tradition	22	10.2
To apply the previous skill	18	8.28
Total	216	100

Source: Field survey, 2014

4.3.2 Sources of Income: Generally, most of Ethiopian house hold income is based on the men household head. Women are responsible for household works and caring children. This is because men have better education than women and this advances men to earn more

salary. Further the opportunity to avail lone from bank and engage in different income generating activities due to their land entitlements. Hence it is assumed that that sample women entrepreneurs depend on their husband's income as a main source before starting their business.

Table: 3 Main Sources of Income Before and After the Business

Source Income	Before Business	After Business
Own salary/wage	28 (20.4)	-
Husband's income	51 (37.2)	10 (7.3)
Others (house rent, other business, remittances)	58 (42.3)	09 (6.6)
From business	-	118 (86.1)
Total	137 (100)	137 (100)

Note: Figures within brackets show percentages

The findings of the study indicate that 35.8% women initially stick on their husband's income as the main source. For 20.4% of women their

monthly salary was the major income. After involved in entrepreneurial activities, 86% of women entrepreneurs obtain the main source of income from their business and dependency on husband's salary decreased significantly. The finding is similar with Muller (2010) and

explores that women initially start their business to support their family income fortunately their business become the main source of income.

4.3.3 Sources of Startup capital: Startup capital determines the type and size of business establishment micro, small, medium or large. In most African society due to social and

cultural norms women not being allowed to own land this in turn leads women fail to provide collateral this becomes a big challenge in accessing finance. Due to these reason high percentage of female entrepreneurs depend on own savings or support from family and friends to start their business (Lanta Daniel Diyamett, 2012).

Table 4: Sources of Startup Capital

Sources	Frequency	Percentage
From own Saving	42	30.7
From Equib	28	20.4
Borrowed from individuals	22	16.1
From Gift	25	18.2
From inheritance	06	4.4
From MFI	05	3.6
From banks	06	4.4
From NGO's fund	03	2.2
Total	137	100.0

Source: Field survey, 2014

In this research generally it is found that women entrepreneurs are largely used their personal saving to start the business. According to the Table 4 results, 30.7% of respondents have used as startup capital obtained from their personal saving, followed by Equib which takes 20.4% share, while 18.2% used the gift as startup capital and others from informal funding sources such as family and or friends.

4.3.4. Loan Availed by the Entrepreneurs: Entrepreneurs need credit service at startup level to open new business and while running the business, to expand the business and to increase investment. Women entrepreneurs most of the time uses their personal saving when starting the business, but after running the business they create an asset which would be collateral to obtain credit service from the formal sources, therefore it is assumed that

women most of the time use the loan to expand their business. As the outcomes of the research reveals, the main purposes for which they have availed the loan are to start the business (77.8%), 19.4% obtained loan to expand the existing business and the remaining 2.8% for purchase of personal assets.

4.4 Entrepreneurial Supports

It is quite obvious that there are different types of supports are essential to start and run any type of entrepreneurial activities. In this backdrop this section deals with the type of supports seeked by the sample women entrepreneurs and the support availed from different sources.

4.4.1 Type of supports essential for the Sample Enterprises: In is well known fact that both financial and non financial supports are essential for the development of any business.

Women entrepreneurs may face many problems at startup and while running their businesses, the support provided to overcome the problems they encounter and facilitate their

development. In this section an attempt has been made to assess the major supports required by women entrepreneurs.

Table 5: The Required Supports for the Respondents

Supports	Frequency	Rank
Credit service	60 (36.4)	1 st
Working Place	60 (36.4)	1 st
Fair Tax	09 (5.4)	2 nd
Rearranged credit repayment time	09 (5.4)	2 nd
Market Network	09 (5.4)	2 nd
Machinery provision	06 (3.6)	3 rd
Training	04 (2.4)	4 th
Fast service	04 (2.4)	4 th
Interest free Credit	04 (2.4)	4 th

Source: Field survey, 2014

Note: Figures within brackets show percentages

From the survey results (Table 5), it is observed that the major supports women entrepreneurs want to have from the government ranked from 1 to 3. The first option of the respondents' requirement is credit service and working place which is forwarded by 36.4% of the respondents, the second prioritized requirements forwarded by majority of the sample entrepreneurs is collection of fair tax, rearrangement of repayment period for the loan they availed and arrangement of marketing networks. The third priority requirement is arrangement of machinery for their ventures in order to facilitate their business. Other requirements forwarded by the sample entrepreneurs are arrangement of training facilities and provision of interest free credit.

4.4.2 Initial Supports for the Entrepreneurs:

Family plays an important role in a woman's business such as providing capital for new firms, providing labor and moral support. Many women entrepreneurs manage their enterprises with support from family and

friends, both at start-up and expansion. Muller (2010) argues that family support is one main part of business success for women entrepreneurs.

The study results poses that out of total 137 entrepreneurs, 46.0% of women entrepreneurs have got support from members (family father/ mother/ sisters/ brothers), and 23.4% married women got support from their husbands. This is the result which is in line with the findings of Richardson et al. (2010) indicates that micro and small entrepreneurs in general, as well as women entrepreneurs in particular used informal sources of support such as family, friends and colleagues as their main means of assistance for their business both in terms of financial and non financial help.

Thus, family and close friends play a very important part in ensuring the emotional stability of women entrepreneurs. Some entrepreneurs lacks family support, due to this they confound to lack of startup capital and high burden of home and business work. Women lack family support with different reasons. These women are exposed to a lot of problems and Mohd Fauzi and Mohd Jani

(2011) concluded that family support is very important in ensuring the emotional stability of women entrepreneurs, because they are working both in houses and also their working place.

4.5 Contribution of Enterprises on Women Entrepreneurs and Urban Development

In this section the contribution of women enterprises was measured in terms of change in employment opportunity, capital, income and saving etc were calculated using paired sample T- test. A significance of change before and after the business is determined by Sig. (2-tailed) value equal or less than 0.5. And profit gained and asset generated from businesses have also been evaluated.

4.5.1 Employment opportunity: Entrepreneurship is a key contributor to new employment in an economy, because

entrepreneurs create new businesses, and new businesses create jobs. However, all entrepreneurial activities does not equally contribute to the employment opportunity. For example, in many economies, much employment creation comes from a small number of ambitious, fast-growing new businesses. Women owned businesses and enterprises also contribute significant number of job opportunity to the national economy. According to ILO (2003) survey in Ethiopia, women entrepreneurs included in the survey created an average 4.8 job opportunities per enterprise, 128 Tanzanian women entrepreneurs have created 983 jobs, it is on average of 5.9 per enterprise thus demonstrating that women entrepreneurs can be a significant force in employment creation, both for family members and others. In this backdrop an assessment was made in this research to find out the employment opportunities created in the sample enterprises for themselves and others.

Table: 6 Employment generated in sample MSEs

No. of Employees	Employees at the beginning		Employees at present		Sig. (2-tailed)	Mean
	Frequency	Percentage	Frequency	Percentage		
No	101	73.7	69	50.4	.000*	.803
1-4	23	16.8	53	38.7		
5-8	13	9.5	12	8.8		
8-15	0.0	0.0	0.3	2.2		
Total	137	100.0	137	100.0		
Mean Employees	1.97		2.72			

Source: Field survey, 2014

Note: *Significant at 5% level

As the assessment results show (Table 6), majority (73.7%) of women entrepreneurs not hired any employees during their starting period of the venture, but now only 50.4% of the total not hiring any employees. And in the

beginning only 16.8% of women entrepreneurs could employ 1 to 4 individuals but now 38.7% could give employment opportunity for 1 to 4 labours. The paired test result which is significant at 5% level also supports the arrived results. As many researchers asserts that women entrepreneurs create new jobs for themselves and others (Sultana, 2012; OECD,

2004). However the finding of this research show the negligible contribution in the study area comparing with ILO (2003) study which found that women creates an average of 4.8 job opportunities per firm, this indicates that most of the sample women entrepreneurs are struggle for their survival. Nigest (2012) states that women entrepreneurs face and deal with a range of challenges and problems on a day-to-day basis, and these have hampered their growth and their potential contribution towards creating meaningful and sustainable employment.

4.5.2 Change in income of Entrepreneurs:

One of the objectives of entrepreneurship among women folk is to be free from the economic dependency so that they can be empowered. Hence it is expected that the respondent's income is expected to increase after running the business. A gross income from the enterprises is derived from its sales value of

output. The survey results (Table 7) indicate that a remarkable change in income is observed after their engagement in entrepreneurial activities.

It is observed from the assessment, 44.5% of respondents have no income before business due to unemployment but after the entrepreneurship all of them could earn income in different amount, remaining 55.5% of respondents earned only less than 5000 Birr (National currency) as their monthly income from different sources. However after their engagement in different business activities, 44.4% of the total could earn more than 5000 Birr as monthly income. Also it is pertinent to note that 13.1% of the sample could earn Birr 20000 to 60000 as monthly earning. The Sig. (2-tailed) value <0.05 , also indicates that there is significant difference in income. The average income difference between before and after the business is 9865.2Birr.

Table: 7 Monthly Income of Sample Entrepreneurs

Income in Birr	Before Business	After Business	Sig. (2-tailed)	Mean
No income	61 (44.5)	-	.000*	9865.2
100-1000	51 (37.2)	11 (8.0)		
1001-3000	23 (16.8)	28 (20.4)		
3001-5000	02 (1.5)	33 (24.1)		
5001-10000	-	33 (24.1)		
10001-15000	-	09 (6.6)		
15001-20000	-	05 (3.6)		
20001-60000	-	18 (13.1)		
Total	137 (100)	137 (100)		
Mean Income	564.7	10429.9		

Note: Figures within brackets show percentages

*significant at 5% level

4.5.3 Change in Capital: It is a common phenomenon that there should be an increment of capital in the ventures which show the

development of business in the day to day affairs. As income increases, the entrepreneurs are interested to invest some part of their profit in their venture after meeting their loan obligations and family expenditure.

Table: 8 Change of capital in the sample Enterprises

Capital of the Enterprises				
Income	Initial Capital	Current Capital	Sig. (2-tailed)	Mean
	Frequency	Frequency		
1000-5000	61 (44.5)	-	.001*	11946.715
5001-20000	49 (35.8)	107 (78.1)		
20001-50000	07 (5.1)	23 (16.8)		
50001-100000	08 (5.8)	02 (1.5)		
100001-150000	01 (0.7)	02 (1.5)		
150001-200000	-	01 (0.7)		
Above 200001	11 (8.0)	02 (1.5)		
Total	137 (100)	137 (100)		

Source: Field survey, 2014

Note: Figures within brackets show percentages

*Significant at 5% level

Hence it is essential to assess the positive impact in improvement of their venture capital and as portraid in table 8, majority of businesses established with initial capital of Birr 100 to 5000, the capital of businesses increase through years, and the most (78.1%) of businesses capital fall in the range of 5001 to 20000 Birr now and the mean deference is 11946.715Birr and the Sig. (2-tailed) value is less than 0.05, this indicates that there is a significant increase in the current capital. Also it is important to note that the number of ventures which has the initial capital of Birr 200000 and above (8%) reduced to only 1.5% due to many reasons.

4.5.4. Monthly saving: Saving provides financial strength to the entrepreneurs and families to meet the contingencies; it provides working capital of the enterprise. Saving is also an indicator which shows the improvement of the women entrepreneurs. Savings takes place if there is excess income after meeting their obligations. To assess the increase in savings, savings before and after initiating/expanding the enterprises was calculated and compared. The survey results (Table 9) illustrates that more than half (59.9%) of the respondents were not having any saving habit before their business and this number reduced to 32.1%, this implies saving habit of women entrepreneurs has improved. Also it is noted that the average saving before starting the business was Birr 270.2 which increased to Birr 797. The paired t test value also less than 0.05, which tells that there is significant increase in saving after the business.

Table: 9 Monthly Saving of Entrepreneurs

Saving in Birr	Before Business	After Business	Sig. (2-tailed)	Mean
No saving	82 (59.9)	44 (32.1)	.000*	526.861
30-1000	51 (37.2)	62 (45.3)		
1001-3000	-	24 (17.5)		
3001-5000	04 (2.9)	07 (5.1)		
Total	137 (100)	137 (100)		
Mean Saving	270.2	797.08		

Source: Field survey, 2014

Note: Figures within brackets show percentages

*Significant at 5% level

4.5.5. Asset Creation: Through entrepreneurship entrepreneurs generate income and the accumulated income contributes owning an asset. Sample respondents in the study have generated assets such as (machine, house, motor cycle or Bajaj and house equipments) from the income earned

in their enterprises. The arrived results indicate that out of the total women entrepreneurs, 32.11% could generate assets in different types as mentioned earlier. That is 22.63% could generate household assets and 4.4% of respondents bought Motor cycle or Bajaj through their business income. Further 3.64% of the women entrepreneurs bought houses and 4.4% accumulated machinery items for their ventures. This illustrates that entrepreneurship helps women to generate income, create job opportunity for them and to others, and additionally provide an opportunity to generate assets.

Table 10: Asset Generated From Business

Assets	Responses	
	Frequency	Percentage
Machine	06	04.4
House	05	03.64
Motor Cycle or Bajaj	02	01.46
House Equipments	31	22.63
Total	44	32.11

Source: Field survey, 2014

4.6 Challenges of Women Entrepreneurs

Regional divergences bring little differences in the way of women start and develop their business or support or enabling environment (Zewde and et al, 2002). For instance Okurut and Ama (2013) states that in Gaborone having trade license takes long time and costly the

reason is it is given in centralized office located in Gaborone. Additionally the loan approval process is too long and also shortage of fund from government is another problem.

Entrepreneurs face problems at start up and while running the businesses. This section examines the different challenges faced by the women entrepreneurs in their business in the study area. Singh and Belwal (2008) explained that Ethiopian financing system has been noted

as the major challenges for female entrepreneurs. In the words of Schorling (2006), MSEs in Ethiopia deal with various problems, which include working premises, shortage of raw materials and marketing problems.

4.6.1. Problems faced while registering the business: Many times at the initial stage entrepreneurs may face problems during the registration and availing business license due to the need of fulfilling the required stipulations. In the same way the available result indicates that 15.3% women entrepreneurs faced service delay and 2.2% faced bureaucracy in business registration process. Majority (82.5%) of sample entrepreneurs have not faced such problems. The average days spent to get business license was 13. This indicates that women spent around two weeks to get business license this influences the working time of their businesses. As Stevan (2005) argues that corruption and bureaucracy make matters worse especially for women and this also experienced by the selected respondents which is adversely affect the business.

Key informants assured that most of the time the delay in registering the business is not because of the service provider rather the customers did not provide the complete documents. If they bring all the required things they can get the business licensee within one day. The basic requirements to get business license are the person must have completed 18 years of age, he/she should have a bank account balance depends on the business type and kebele (village) identity card. This indicates that the sample entrepreneurs are expecting some sort of relaxations in the stipulations.

4.6.2. Business problems at Startup: Most new business starts-up, no matter how simple or complex, face some challenges during the process and starting up. When asked about such challenges, the sample women entrepreneurs stated a number of problems they had encountered during the start-up. Marketing problems and capital acquisition are common issues in the startup stage of business development. Most MSEs face critical constraints both at the operation and start up level. Sample respondents also faced problems at the initial stage of their ventures.

Table 11: Business Startup Problems

Start up Problems	Frequency	Percentage
Financial	81	46.3
Working place	57	32.5
Marketing problems	25	14.3
Others (family problems,)	12	6.8
Total		100.0

Source: Field survey, 2014

According to Table 18 results, financial problem is the major problem faced by 46.3% of the respondents, and the second prominent problem of respondents is lack of working place. The result is in line with the finding of Richardson (2004) stated that the most mentioned problems in Ethiopia at startup are obtaining finance and finding premises. Also Masood (2011) argued that women are economically and socially dependent on male members, as a result of this women

encountered a lot of problems during startup and while running the business.

4.6.3. Problems faced while running business: Entrepreneurs meet different problems when they are running their businesses. According to the results of the study, the major problems faced by the respondents while running their businesses are financial problem reported by 49.63%, followed by 37.96% regarding working place problem.

Table 12: Problems Faced while running Business

Problems Face While running Business	Frequency	Percentage
Financial	68	49.63
Market competition	31	22.62
Working Place	52	37.96
High Tax	18	13.14
Negative attitude of the society	06	4.38
Lack of profit	13	9.49
Government enforcement to Use Cash register	09	6.56
Unable to retail Once I registered for VAT	07	5.11
Total		100.0

Again 14.3% of the sample women faced marketing problems. Most of the respondents' startup capital relay on personal saving, poor formal credit provision and lack of collateral all together contributes to the financial problem. The result is similar to Eshetu and Zeleke (2008) and ILO (2003); the main challenges of women entrepreneurs in Ethiopia are difficulty in obtaining loan, lack of suitable location or sales outlet; stiff competition; low purchasing power of the local population; lack of marketing knowhow; seasonal nature of the business; lack of market information; inadequate infrastructure; shortage of time (due to multiple tasks); shortage of raw materials and shortage of working capital. Karim (2001); Muller (2010) explores that negligible number of entrepreneurs accessed formal loan from micro finance institution limits the initial and current capital of women's business, exposes them some individual borrowers, unable to gain enough finance and make them highly depend on their personal saving which is limited fund. Finally all these problems limit the growth and development of women business mostly remains small and stagnant.

Through FGD, majority of women entrepreneurs maintained that working place is

the major problem of their business, high renting price, unable to do in fixed place due to renters willingness. Lack of finance is common problem and few of them argued that they lack the credit service due to lack of collateral, most of them are risk averse and not willing to take loan.

4.7 Factors influencing the performance of Enterprises (Regression Analysis Results)

In order to find out the factors which influence the performance of enterprises operated by sample women in the study area, Linear Regression Analysis was carried out. The average monthly profit generated by the enterprises was considered as an implication of performance of the business. The average monthly profit is considered as the dependent variable and 37 explanatory variables as specified in the methodology were included as independent variables and expect to influence either positively or negatively. The model specification is as follow $Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + \dots + b_{37}x_{37}$

Table 13: Significant Variables form Model Results

	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
(Constant)	3648.835	782.025		4.666	.000
Current capital	.012	.005	.206	2.488	.014
Monthly income	.072	.020	.295	3.560	.001
Lack of skilled man power	-280.859	263.505	-.107	1.066	.288
Business training	-107.565	168.900	-.051	-.637	.525
Infrastructure	181.281	199.613	.090	.908	.365
Demand of the product	-76.436	224.360	-.030	-.341	.734
High price of raw material	-498.849	199.744	-.223	2.497	.014
R square		F		Significance	
.234		5.62		.000	

Source: Computed from the survey data

From the total thirty seven variables used in the model, seven variables (Current Capital, Monthly Income, Lack of skilled man power, Business training, Infrastructure, Demand of the product, High price of row material) are significant with their p-value is less than 0.05. The overall model explained the significance of R square (.204) indicates that 20.4 per cent of the variation in influencing level performance of enterprise operated by women is explained by the seven independent variables selected for the study.

The significant coefficient current capital implies that one unit increase in current capital leads to 0.013 units influence the profit of the enterprise which indicates that an increase in capital brings increase in profit. Monthly income also positively influence the profit of the enterprise with 0.011 unit; as the result show that an increase in business training brings 0.26 units increase in enterprise profit, infrastructure contributes .04 unit change in the profit, when the demand of the products increase with one unit the profit enterprise increase with 0.011, in contrary a unit lack of skilled man power decreases the profit with 754.79 unit and the increase the unit price of raw material also brings 858.5 unit decrease in

profit. The model analysis result indicates that the dependent variable of performance of the enterprise influenced as: $Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7$

$Y = 3648.835 + .012 \text{ Current Capital} + .072 \text{ Monthly Income} - 0.498 \text{ High price of raw material}$

5. Conclusion and Recommendations

Women constitute almost half of the population in Hawassa town, Ethiopia. Their dependency ratio is higher than their counter parts. Entrepreneurship is one of the means of job and income creation. The enterprises contribute employment opportunity for them and improve the average income earned before business which paves the way for urban development by solving the socio-economic problems of the women. However women entrepreneurs face a number of problems at startup as well as operating stage such as financial, working place and lack of awareness towards women supporting organizations and financial institutions. Even some of women entrepreneurs know about such organizations, but not in the correct way. To mitigate this, Government and Non Government Organizations and other institutions assistance in terms of financial and non financial support

improves the performance of their enterprises.

Based on the findings the study the following recommendations are forwarded to reduce the challenges and to maximize the opportunities of women entrepreneurs.

- The household members should support women entrepreneurs by sharing the home responsibilities of women's to devote all their efforts in the business, also women's should have to share their responsibilities to others.
- Women entrepreneurs need to acquire managerial skill to manage both business and home responsibilities
- Hiring skilled man power provides advantage to them to manage the business easily. This decreases the average working hour of women and reduces their burden.
- Women become successful if they work through interest. Personal motivation and ambition to change will support the business success.
- Majority of women entrepreneurs lacks the knowledge of existing organizations, and the service provided by them, this hinders them not to be a beneficiary of the services. Therefore, those organizations should make awareness creation among the entrepreneurs.
- Organizations providing women specific services need to facilitate the business training programs to enhance the performance of women entrepreneurs at micro level
- Entrepreneurs require credit service to start and expand the their business, however majority of women entrepreneurs were unable to provide the required collateral, therefore concern financial institutions consider the collateral free loans and low interest credits.
- Women entrepreneurs should explore

supports offered by different organizations to mitigate, the shortage of finance, working place, business training and machinery needs at startup and in business running time.

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DENOUNCEMENTS AND PROSPECTS OF DIGITIZATION OF HUMAN CAPITAL MANAGEMENT PRACTICES IN SMALL AND MEDIUM ENTERPRISES: AN EVIDENCE BASED ANALYSIS

Dr. Geetha R*

Abstract :

There are nearly 4.68 Crore working Micro, Small and Medium Enterprises (MSMEs) in India which are producing around 6000 varieties of products and have generated employment to 10.62 Crore people. They contribute nearly 8% to GDP and 45% to manufacturing output and 40% to Indian exports (MSME Annual Report, 2012). Automotive component Industry which constitutes significant part of MSME sector in India has registered a Compound Annual Growth Rate of 18% (2009-13) with an annual turnover of USD 39.7 billion in 2013. It has a potential of USD 115 billion by 2020-21 (ACMA Annual Report, 2013). The Auto component industry, which is an integral part of the automotive sector, comprises about 500 firms in the organized sector and more than 10,000 firms in the unorganized sector and it has been one of the fastest growing segments of Indian manufacturing. It has provided direct and indirect employment to about 1.31 crore people in the country and contributes nearly 4% to GDP and 5% to industrial production. As the size of employees is growing in automotive component firms due to robust growth rate in the industry, it has become imperative for automotive firms to digitize their HCM operations so as to streamline all their operations and processes pertaining to Human Capital Management (HCM). This study attempts to evaluate the effectiveness of digitization of HCM practices in Micro, Small and Medium Enterprises (MSME) sector with particular emphasis on Automotive Component firms through assessment of the impact of digitization on core factors like-, simplification of HCM processes, decision making, Cost, standardization, process consistency, ease of accessibility, quality, time and others. Through an exploratory analysis an endeavor was made to identify the denouements and benefits derived due to automation of HCM operations and processes.

Keywords: Digitization, Human Capital Management, Micro, Small and Medium Enterprises, IT infrastructure

INTRODUCTION

Digitization of Human Capital Management practices is the process of converting information pertaining to organizational workforce into a digital format. In this format, information is organized into discrete units of data and can be separately addressed and processed using computers and other electronic devices. Digitizing of personnel information makes it easier to preserve, access, and share data and information. Under manual practices, documents may only be accessible to people who visit its physical location, but if the document content is digitized, it can be made available to people worldwide. As MSMEs grow and expand, they are trending towards digitization of all processes so as to simplify data processing and to make it easily retrievable from any part of the world at any time.

MSMEs across the globe are integrating technology with their HCM practices in order to augment production, simplify and improve processes, reduce costs or to attain competitive advantage or for competitive compliance. There are various forms of digitization. Most of the Small Business Enterprises especially Micro and Small enterprises these days prefer to subscribe to cloud computing services and use access devices to transact with the service providers. It is a novel trend and it also yields for big data analytics and facilitates significant cost reduction. However there are security issues associated with cloud computing, leading to data thefts, leakages and others to be addressed. It also leads to excessive dependence on service providers.

As a result many SME's find it affordable and convenient to invest on ERP systems and

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digital HCM applications like- Web-based Employee /Manager Self Service tools, workflow technologies, vendor management systems, applicant tracking systems, hiring management systems, employee monitoring system, e-recruitment, internal mobility tools, Performance appraisal and management software, succession planning, personnel development, career planning tools, package review software, executives and key people management tools, Payroll and compensation management applications, SAP and others. Many Small and Medium automotive firms find it affordable to use SAP (Systems, Applications Products), an integrated software technology instead of separate applications for each department. This facilitates easy maintenance. e-tool applications in HCM have enhanced productivity of the workforce, increased efficiency and effectiveness and they have also increased the accuracy and speed with which the employees perform their tasks.

Conversion of HCM data from manual to digital format allows information to be added to the knowledge management systems of the enterprise. As a result of this HR data can be integrated into the larger Enterprise Resource Planning (ERP) system. Data pertaining to the time usage of the workforce can enhance the decision making abilities of the management by allowing the HR department to form an integral aspect of strategy formation for the enterprise as a whole. Thus automation of multiple HCM activities through integrated software applications will increase organization's capabilities to manage HR in a hassle free manner, thereby enhancing its effectiveness.

Various functions that can be categorized under the HCM umbrella like payroll, compensation and benefits administration, enrollment, record keeping, employee relations, recruitment, training, retention, leave management, tax compliance, performance review, query management and survey management can be included under the Digital-Human Capital Management(D-HCM) solution. D-HCM

encompasses all the technology behind each HR function and integrates everything into one simple and easy-to-use network. It streamlines record keeping and maintains competitive work force by simplifying and accelerating recruitment, training, retention and other HCM activities.

The focus of the present study is to identify the denouements and prospects due to the application of digital tools in HCM in auto-component manufacturing industry.

SIGNIFICANCE OF THE STUDY

The D-HCM will continue to grow and all companies will eventually adopt a total technological solution to deliver HCM services and those who have already been on this path for some time will continue to expand and upgrade their systems to deliver their services better .D-HCM in automobile component manufacturing industry is an under researched area. It helps organizations in maintaining an audit log of activities, storing of documents electronically, and creation of Employee Self Service (ESS) and Manager Self Service (MSS) tools to access individual information, simplifies the processes, ensures standardization and process consistency and a lot of others. It improves security and automates control as a result of which there is an enhancement of organizational effectiveness. This study would be of immense help to companies that are ambiguous about digitization of HCM to decide in favour or against it. It would also be of significant help to the top managers of the organizations to make strategic investment decisions pertaining to the digitization of Human Capital Management practices.

STATEMENT OF THE PROBLEM

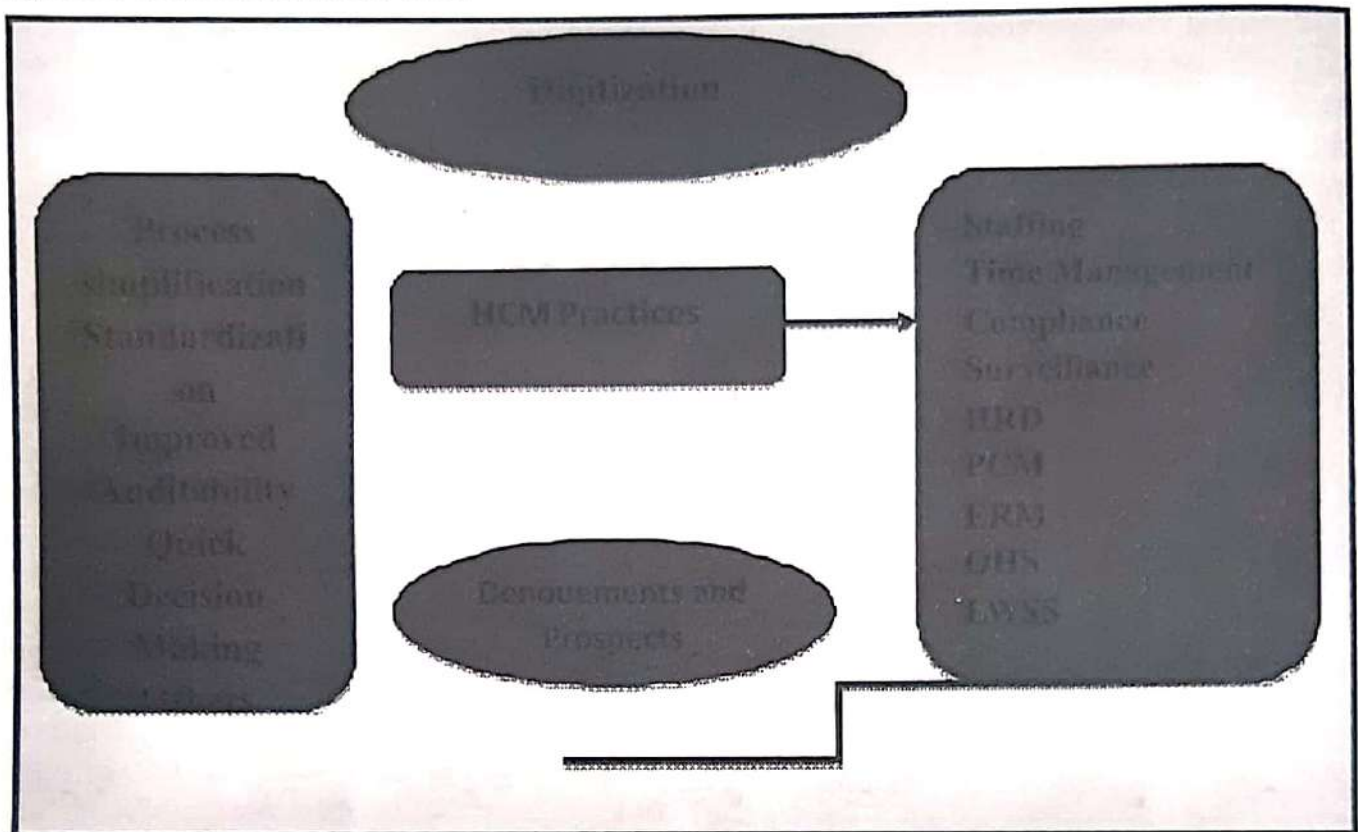
Micro Small and Medium Auto component firms are making massive investments on digitization of HCM practices. However there is a need to justify whether such massive investments are yielding positive outcomes or not, since none of the prevalent researches have

addressed this issue. An effort was made through this research to examine the implications of D-HCM practices on business outcomes through an opinion survey of HR practitioners working in the units considered for research.

Research Context

The context of the research is to assess the beneficial outcomes of digitization of HCM in Auto-Component industry. Research model is derived after a thorough literature survey. The research framework is based on the Technology Acceptance Model(TAM) of Davis (1981).

Figure: 1 Research Frame work



3.5 OBJECTIVES OF THE RESEARCH

Though there are several empirical studies related to the role of Human Resource Information Systems in organizations, concrete efforts to measure the denouements and prospects of digitization of HCM practices in Automobile component industry have not been made so far. Current research work is undertaken in order to realize the following objectives:

1. To determine the implications of D-HCM on process simplification and decision making
2. To evaluate D-HCM as a strategic tool for cost effectiveness and standardization.

3. To appraise the effectiveness of D-HCM on accessibility and savings related factors
4. To assess the impact of D-HCM on improving the quality, saving time and other value adding factors.
5. To examine the significant outcomes of D-HCM practices, in auto component industry.

SCOPE OF THE STUDY

The present study explores and analyzes the effectiveness of D-HCM practices on organizational performance in Automobile component manufacturing industry. The scope of the study includes 21 factors of D-HCM

reduced to four key factors -namely Simplification and Decision oriented factors, Cost effectiveness and standardization factors, accessibility and savings related factors and quality and other value adding factors. The evaluation was made based on the primary data collected through the questionnaires, e-mail surveys, observations and personal interview.

The sample units comprise of 43 HR practitioners at middle and top level management. They were chosen randomly from 43 select auto component firms located in three south Indian states of Tamil Nadu, Karnataka and Andhra Pradesh Which are known to have auto component clusters. Karnataka has 2 clusters while Tamil Nadu and Andhra Pradesh have 1 cluster each

RESEARCH DESIGN

Research Methodology

Exploratory and Descriptive research methods were used to realize the objectives of the research. The key objective of the research is to examine the major outcomes due to D-HCM in auto component industry, which ultimately drives them towards organizational effectiveness.

The present research is exploratory in nature. The variables (indicators of D-HCM effectiveness) such as HR productivity, length of work processes, and speed of decision making, paperless environment, information flow, quality, customer service, and time management were studied in relation to D-HCM in select automobile component manufacturing firms.

Data Collection

A. Primary Data:

Primary data was collected through opinion survey techniques like direct interview, structured questionnaire, e-mail survey and observation. HR managers and executives of select automobile component manufacturing firms were chosen as the target respondents.

Research Instruments:

A Structured questionnaire was used for the present research.

B. Secondary Data:

Secondary data was extracted from various archives like- books, company reports, e-newspapers, magazines, journals and internet search. Some of the online data bases used were: ProQuest, EBSCO, J-gate, SSRN (Social Science Research Network), Google scholar, Wiley online library, Taylor and Francis, Routledge, Wikipedia and other repositories.

Sample Size and Technique:

The sample units of 43 HR practitioners were chosen from 43 select auto component companies located in Chennai, Vishakhapatnam, Audugodi, Whitefield, Electronic city and Peenya Industrial area in Bangalore city, Attibele and Jigani, industrial area Bangalore urban district, Hosur-Tamil Nadu, Peenya, Doddballapur and Nelmangala, Bangalore rural district, Bidadi, Ramanagara district and Mysore regions. The samples were drawn from select automobile component manufacturing companies. The respondents were drawn from each of the companies identified for the study under the automobile component manufacturing industry. Sample units were drawn through simple random sampling technique.

Statistical Tools Adopted:

Statistical techniques such as:

- Cronbach alpha test was used for reliability analysis and to check inter-item consistency and inter-item covariance. It was used to evaluate the reliability of the research instrument used for survey purpose.
- Mean, Standard Deviation, Range and other measures are used wherever necessary, especially in analyzing the various dimensions of e-HRM.
- Scatter plots and other graphical

illustrations have been used wherever appropriate.

- Factor analysis was used to reduce twenty one factors considered in the assessment of D-HCM to four factors based on their commonality. Factors were extracted using Principal Factor Axis analysis. And their extraction is depicted with the help of Scree-plot and rotation component matrix.
- Regression analysis was used to find the correlation between the dependent variable and the independent variables.

Research Hypotheses

Hypotheses 1:

Ho:Cetirus Paribus, there is no significant Correlation between D-HCM and the simplification and decision oriented factors

Ha:Cetirus Paribus, there is significant Correlation between D-HCM and the simplification and decision oriented factors

Hypotheses 2:

Ho:Cetirus Paribus, there is no significant Correlation between D-HCM and cost effectiveness and standardization related factors.

Ha:Cetirus Paribus, there is a significant Correlation between D-HCM and cost effectiveness and standardization related factors.

Hypotheses 3:

Ho:Cetirus Paribus, there is no significant interaction between the D-HCM and accessibility and savings related factors

Ha:Cetirus Paribus, there is significant interaction between the D-HCM and accessibility and savings related factors

Hypotheses 4:

Ho:Cetirus Paribus, there is no significant Correlation between D-HCM and quality and other value adding factors.

Ha:Cetirus Paribus, there is a significant Correlation between D-HCM and quality and other value adding factors.

Limitations of the study

1. Since the sample units chosen were HR practitioners, they were very busy and hence they could not give more details on the topic.
2. D-HCM is in the nascent phase in some of the auto-component firms hence the respondents were not very clear in giving their opinion.
3. The data collected is based on the personal bias and opinion of the respondents. Hence the reliability and validity of the data collected is based on the bias and prejudices of the respondents

Analysis and Interpretation of Data

Table-1: Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.943	.941	21

The reliability analysis was conducted as shown in table-1 above by computing the Cronbach's alpha (α) for each moderating variable used to assess the effectiveness of D-HCM. The reliability of a measure indicates the stability and consistency of the instrument used in measuring a concept and helps to assess the goodness of a measure (Sekaran, 2000). The Cronbach alpha test was conducted to ensure internal consistence and reliability between the moderating variables used to assess the concept.

The Cronbach alphas for twenty one items or independent variables used to measure the construct is 0.943 with ' α ' for each score ranging between 0.936 to 0.945 indicating that the measures have acceptable internal consistency since they are much above Nunnally's (1978) threshold of 0.70.

Factor Analysis:

Simple iterated factor analysis was carried out

by iterating principal axis factors with four factors by reducing the twenty one factors used to assess the D-HCM effectiveness to four factors based on their communality. As a method of extraction, a promax oblique rotation technique was used since it was found that correlation exists between the variables considered for assessment. To determine the number of factors to be extracted, both theory

and information was used by running the analysis extracting different numbers of factors and seeking which number of factors yields most interpretable results. Finally four factors were extracted.

The steps involved in data reduction through factor analysis are indicated below:

Step-I: Pre-checking Sampling adequacy through KMO and Barlette's test of Sphericity.

Table-2: KMO and Barlette's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.697
Bartlett's Test of Sphericity	Approx. Chi-Square	860.844
	Df	210
	Sig.	.000

Kaiser-Meyer-Olkin test was conducted to ensure the adequacy of sampling size for factor analysis. In table-2, since KMO is 0.697 which is above the threshold limit of 0.6 the sampling size is found to be adequate. Barlett's test of Sphericity with sig. value of .000 shows that the sampling adequacy is significant at 99 percent confidence level.

Step-II: Extraction Method, Principal factor axis.

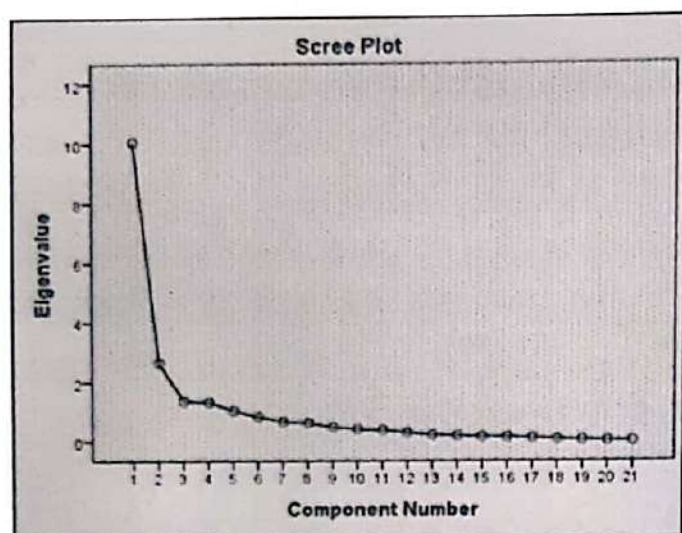
Table-3: Communalities (Extraction by Principal Factor Axis Method)		
	Initial	Extraction
Ensures Process Consistency and standardization	.854	.736
Facilitates Quick Learning and Adaptability to Environmental Changes	.844	.735
Saves Expenses on Manpower	.908	.750
Develops Unique and Specialized Personnel	.830	.551
Facilitates Creation of Better Work Environment	.950	.768
Augments Employee Productivity	.958	.868
Facilitates scalability and auditability	.979	.761
Technology has improved production quality	.984	.798
Has enhanced competencies of workforce	.897	.735
Production Planning has Becomes Simpler	.896	.778
Has improved Occupational Health and Safety Process	.850	.700
Enables Easy Access to Knowledge and Information	.754	.477
Saves Cycle Time of all Activities	.907	.404
Ensures Quick Decision Making	.795	.659
Facilitates Identification of Training and Development Needs of Workforce	.905	.747
Facilitates strategy formulation	.926	.773
Useful for statutory compliances	.796	.681
Reduces Paper Work	.693	.419
Enhances Quality of Workforce	.729	.516
Ensures Effective Auditability of all functional Activities	.771	.582
Has improved decision Making capabilities and predictability	.723	.581
Extraction Method: Principal Axis Factoring.		

Step-III: Extraction - The values in extraction column in Table-3 above indicate the proportion of each variable's variance that can be explained by the retained factors. Variables with high values are well represented in the common factor space, while variables with low values are not well represented. Later factors are grouped on the basis of their Communalities

in proportion of each variable's variances due to underlying latent factors.

With principal factor axis factoring, the initial values on the diagonal of the correlation matrix are determined by the squared multiple correlation of the variable with the other variables.

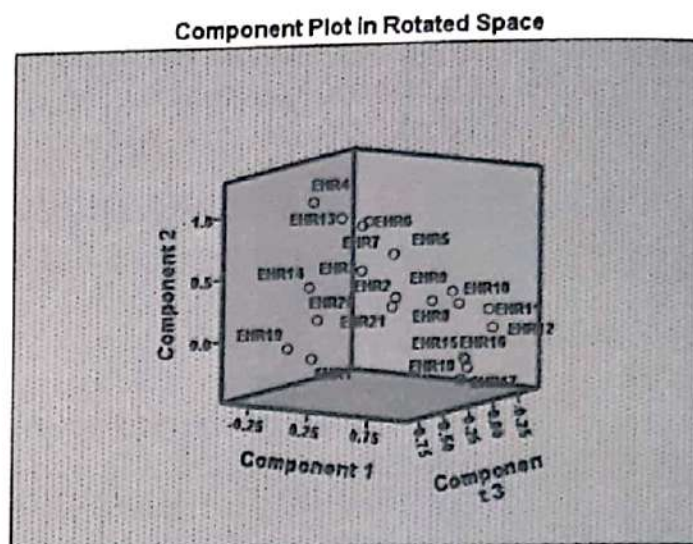
Figure-2: Scree Plot



Step-IV: Scree plot in Figure-2 graphically displays the Eigen values for each factor and suggests that 4 factors are prominent since they have Eigen values more than one.

The rotated component matrix in Figure-3 above shows as to how the factors are

Figure-3: Component Plot in Rotated Space



loaded around the components extracted through principal factor axis analysis based on their communalities. Most of the factors are highly loaded on to the first component which is decision-oriented.

Table-4: Component Correlation Matrix				
Component	1	2	3	4
1	1.000	.572	.192	.452
2	.572	1.000	.257	.526
3	.192	.257	1.000	.126
4	.452	.526	.126	1.000
Extraction Method: Principal Component Analysis.				
Rotation Method: Promax with Kaiser Normalization.				

The component correlation matrix indicates a four factor solution as evident in the data above in **Table-4**. Items comprising simplification and decision related factors, cost and standardization related factors, and quality and value adding factors related factors and accessibility and savings factors appear to be

grouping relatively based on their communalities. . The Eigen values for factors 1, 2, 3 and 4 are shown above and those factors that have Eigen values greater than one have been extracted as components as shown above in table-4 and figure-2.

Table-5: Descriptive Statistics				
Digital Practices in HCM	Mean	Std. Deviation	Minimum	Maximum
Has improved decision Making capabilities and predictability	3.81	.664	1	5
Ensures Process Consistency and standardization	4.05	.844	3	5
Facilitates Quick Learning and Adaptability to Environmental Changes	3.93	.961	2	5
Saves Expenses on Manpower	4.37	.757	3	5
Develops Unique and Specialized Personnel	3.93	1.009	2	5
Facilitates Creation of Better Work Environment	3.98	.771	2	5
Augments Employee Productivity	3.95	.785	2	5
Facilitates scalability and auditability	3.84	1.233	1	5
Technology has improved production quality	3.95	1.133	1	5
Has enhanced the competencies of workforce	3.72	1.120	1	5
Simplifies Planning	3.93	1.163	1	5
Improves OH &S	3.91	1.087	1	5
Easy Access to Info	4.26	.790	2	5
Saves Cycle Time	4.21	.773	2	5
Quickens Decision Making	3.81	1.118	1	5
Facilitates TNA	3.86	1.125	1	5
Facilitates strategy formulation	3.95	1.045	1	5
Useful for statutory compliances	3.72	1.076	1	5
Reduces Paper Work	4.37	.846	2	5
Enhances Quality of Workforce	4.19	.699	2	5
Ensures Effective Auditability	4.07	.669	3	5

Table-5 indicates the descriptive statistics for each of the factors which constitute the denouements of digitization of HCM. It has been discussed in detail under summary of findings.

Hypotheses 1: H_0 : Cetirus Paribus, there is no significant Correlation between D-HCM and the simplification and decision oriented factors

Table-6: Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.410 ^a	.168	.148	.661
a. Predictors: (Constant), Simplicity and Decision-Oriented Factors				

Table-7: Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.952	.464		4.212	.000
	Simplicity and Decision-Oriented Factors	.336	.117	.410	2.881	.006
a. Dependent Variable: No. of firms Adopting DHCM						

The results of the regression analysis in Table - 7&8 above does not support the hypothesis -1 stated above and hence it is not accepted. The standard beta coefficient is 0.336. The significance level is 0.00 for the independent variable D-HCM practices indicating that adoption of D--HCM practices has enhanced the decision making capabilities in HCM and has simplified HCM processes in auto-component firms. The positive relation

between the dependent and independent variable is significant at 99 percent confidence level as indicated by ($P < 0.01$)

Hypotheses 2:

Ho: *Ceteris Paribus*, there is no significant Correlation between D-HCM and cost effectiveness and standardization related factors.

Table-8: Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.328 ^a	.108	.086	.684
a. Predictors: (Constant), Cost and Standardization - Oriented Factors				

Table-9: Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.999	.574		3.482	.001
	Cost and Standardization - Oriented Factors	.316	.142	.328	2.225	.032
a. Dependent Variable: No. of firms Adopting DHCM						

The results of the regression analysis in Tables 8 and 9 above does not support the null hypothesis-2 stated above and hence it is not accepted. The standard beta coefficient is 0.316. The significance level is 0.01 for the independent variable D-HCM practices indicating that adoption of D-HCM practices has significantly facilitated standardization of HCM practices and has also contributed immensely to the reduction of various HCM

costs. The positive relation between the dependent and independent variable is significant at 99 percent confidence level as indicated by ($P < 0.01$).

Hypotheses 3:

H_0 :Cetirus Paribus, there is no significant interaction between the D-HCM and accessibility and savings related factors.

Table-10:Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.020 ^a	.000	-.024	.724
a. Predictors: (Constant), Accessibility and Savings related Factors				

Table-11:Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.162	.758		4.173	.000
	Accessibility and Savings related Factors	.022	.175	.020	.125	.901
a. Dependent Variable: No. of firms Adopting DHCM						

The results of the regression analysis in Table 10& 11abovedoes not support the hypothesis-3 stated above and hence it is not accepted. The standard beta coefficient is .022. The significance level is 0.00 for the independent variable D-HCM practices indicating that digitization of HCM practices has significantly enhanced the ease of accessing information and significantly saves time and expenses on

HCM.Practices. The positive relation between the dependent and independent variable is significant at 99 percent confidence level as indicated by ($P < 0.01$)

Hypotheses 4: H_0 : Cetirus Paribus, there is no significant Correlation between D-HCM and quality and other value adding factors.

Table-12:Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161 ^a	.026	.002	.715
a. Predictors: (Constant), Quality and other Value Adding Factors				

Table-13: Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.383	.843		2.827	.007
	Quality and other Value Adding Factors	.212	.203	.161	1.045	.302

a. Dependent Variable: No. of firms Adopting DHCM

The results of the regression analysis in Table 12 and 13 does not support the hypothesis 4 stated above and hence it is not accepted. The standard beta coefficient is 0.212. The significance level is 0.007 at $\alpha=0.01$ for the independent variable D-HCM practices indicating that D-HCM practices have

significantly increased quality of HCM activities and other value adding activities.. The positive relation between the dependent and independent variable is significant at 99 percent confidence level as indicated by ($P<0.01$)

Figure-4: Partial Regression Plots

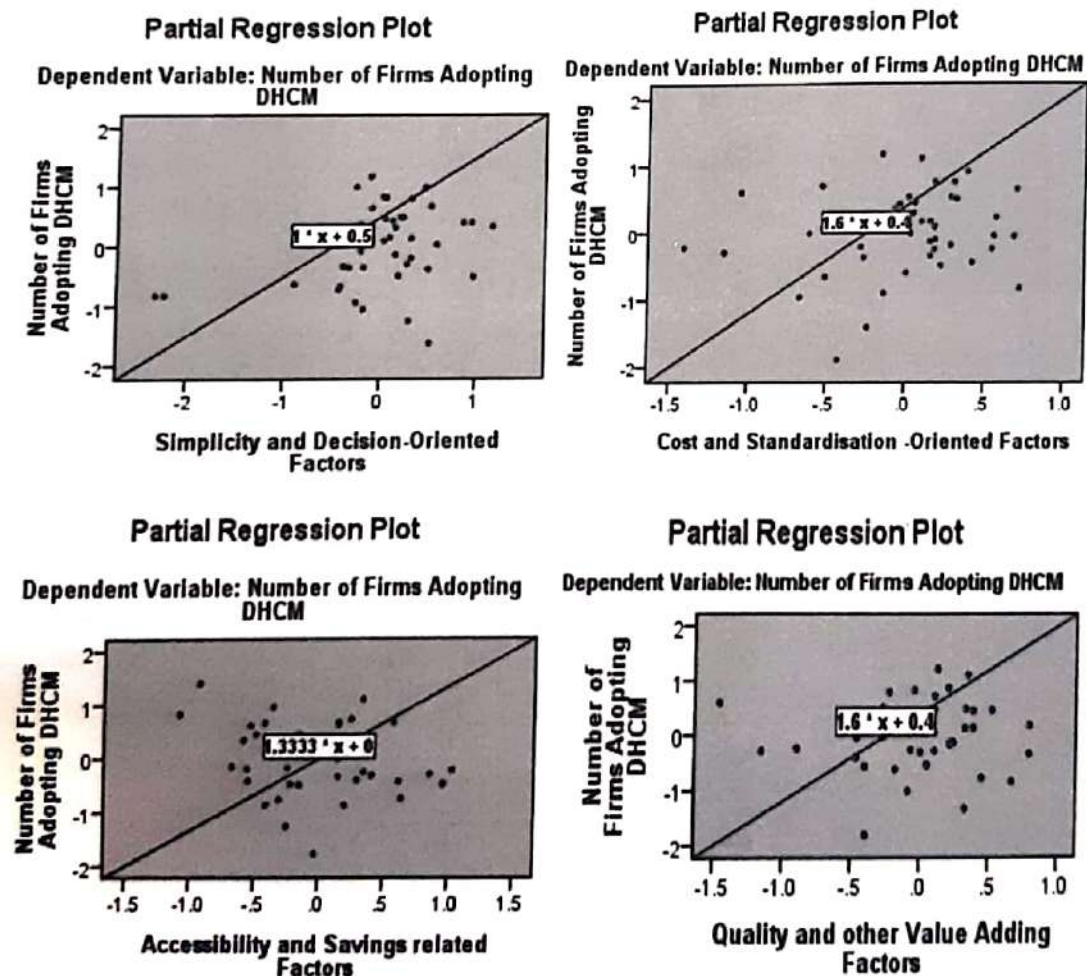


Figure-4 above shows the partial regression plots for depicting the strength and direction of association between the dependent variable D-HCM practices and independent factors like simplicity and decision oriented factors, cost effectiveness and standardization factors, accessibility and savings related factors and quality and other value adding factors.

Summary of Findings

- Digitization of HCM practices has significantly improved decision making capabilities and predictability (Mean Score-3.81 at Min-1 and Max-5).
- Technology integration has ensured process consistency and standardization of all HR processes and practices in auto-component firms (Mean Value-4.05 at Min-1 and Max-5).
- Adoption of digital practices has facilitated quick learning and adaptability to environmental changes (Mean Value-3.93).
- Digitization has saved expenses on manpower (Mean Value-4.37).
- D-HCM has helped to develop unique and specialized personnel (Mean-3.93).
- Employment of digital applications in HCM has helped in the creation of better work environment (3.98).
- Technology integration has augmented productivity of workforce and enhanced the quality of production (Mean Values-3.95 and 3.95 respectively).
- D-HCM has improved occupational health and safety and has enabled easy access to employee related information (Mean-3.93 and 3.91 respectively).
- Cycle time of all HCM activities has been reduced in automotive component firms (Mean-4.26).
- D-HCM facilitates in - strategy formulation, identification of training needs of employees and is also useful for statutory compliances (Mean-3.86, 3.81 and 3.95 respectively).
- Quick decision making, paper work reduction, enhancement in the quality of workforce, effective auditability are other benefits derived through D-HCM (Mean-Values- 4.21, 3.72, 4.37 and 4.19).
- D-HCM applications are found to be susceptible to data security threats like data compromise, data loss and data thefts.
- Some of the small and medium firms were frequently bothered by technical snarls and hence they were maintaining both manual HR records and electronic version of it.
- Smaller firms could not afford to purchase integrated HR packages due to high cost. They were mostly using simple standalone applications.
- Some of the HR practitioners did not have clarity on the auditability of e-HR practices.

Suggestions

- ❖ Web 2.0 technologies are not used as an effective source for HCM in auto-component industry. It should be used extensively for greater gains.
- ❖ Many of the firms were found to be resorting to outsourcing of some routine HCM processes like recruitment, training and development. Auto-component firms

can reduce their HCM costs to a greater extent in the long run if they invest on purchase of such digital applications and manage them in-house.

- ❖ By investing on automation of HCM operations firms can reduce the cycle-time further.
- ❖ Basic information technology applications are used for HCM in auto-component firms. They may start employing advanced tools to ensure greater benefits of digitization.
- ❖ Most of the auto-component firms are using basic and stand-alone front-end applications in HR; they should try to use integrated packages like Oracle People soft, SAP_PM Suite and other integrated applications to reap full benefits of automation.
- ❖ Security threats are serious issues to be addressed in digitization. Auto-component firms should ensure that they adopt adequate security measures to avoid data thefts and data losses of any kind.
- ❖ They should also appoint Data Base Administrator to take care of data management and security issues.
- ❖ The Human Capital may be given adequate training about the importance of streamlining HCM practices as it would greatly contribute to organizational performance.
- ❖ The HR practitioners should be sensitized about the security threats and issues involved in digital data transfers and about the measures to be adopted to prevent and overcome them.

Conclusion

Digitization of HCM practices can lead to innumerable efficiency gains if they are utilized effectively. Though it is in the nascent phase in the auto-component industry, still the firms are able to attain efficiency gains in terms of reduced cost, saved time, and simplified processes, maintenance of consistence, standardization, increased auditability of recruitment practices and a few others like increased average applicant volume per vacancy. Few of the firms considered for survey were found to be more focused on reducing production cost through automation of production process rather than automation of HR practices. That is the reason why auto-component firms have not been able to fully realize the benefits of digitization. The efficiency gains that they have attained now can only be rated as partial compared to other sectors of the economy like Information Technology, BPOs and KPOs. Hence it is highly recommended that the auto-component firms should make best use of digital applications to attain greater efficiency gains.

D-HCM has made remarkable strides in auto-component industry. Though the firms are employing very basic tools and applications of D-HCM, they are able to enhance their performance by means of reduced task-time and cost, quickened pace of learning, employee motivation and employee engagement, quick decision making, enhanced quality of workforce and several other positive outcomes.

This empirical study provides ample evidence to justify the rationale behind massive investments on D-HCM. If the firms under study have derived noteworthy benefits through simple and basic D-HCM applications in addition to their conventional HR practices, then they'll surely be able to derive mindboggling benefits by investing on advanced applications.

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THE RELEVANCE OF INFORMATION TECHNOLOGY TO THE MANAGEMENT OF MSMES IN INDIA – A CASE STUDY ON DODDABALLAPUR TEXTILE PARK

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Abstract:

Information technology (IT) is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data. Management comprises planning, organizing, staffing, leading or directing, and controlling an organization to accomplish the goal.

This study is aimed at understanding the relevance of information technology (IT) to the management of a textile cluster situated in Doddaballapur, rural Bangalore and thereby understanding the factors that influence the actual use of IT. It also enabled an understanding of the causes for hindrances in relating IT to other areas of management in addition to their core area which is production. This study employs regression methodology to determine the significance of the chosen variables with respect to technology intensity of the management. The study conducted among 41 respondents in the textile cluster of Doddaballapur Apparel Park revealed that two factors namely type of the organization and the level of IT in use had significance with actual usage. Perceived ease of use of IT also played a significant role in actual usage of the system. The result is not in line with potential suppositions.

Key words: Information technology, textile clusters, perceived usefulness, perceived ease of use.

INTRODUCTION

Computers got invented during 1950's while its growth started with Abacus and converged into a subject called Computer Science. Storing large amount of data, retrieving, manipulating, analyzing data has been a vital activity of an enterprise today. Be it a large organization or a small enterprise, high efficiencies, increasing productivity, quick decision making are the rules of a successful management. Therefore, firms may reduce the transaction costs of information-intensive activities by resorting to IT. These opportunities may favour small and medium enterprises (SMEs) that in most cases operate in a dense network of inter-firm relationships and consequently manage a great amount of information.

In due course, it was observed that the usage of the computers and its business applications in the SME segment was not actively promoted by Indian Government. In early 1980 and 1990s, Indian Government was looking at providing infrastructure such as industrial land and sheds,

subsidized rates of power and economic zones with the vision of promoting SMEs to create employment.

This followed with focus on globalization of SME segment during which time manufacturing industry was fuelled to use automation, increase production capacities, improve efficiencies and productivity and reduce defects. Finished goods were in great demand in the international markets. Computer industry was also growing at lightning speed. IT tools such as DOS, Microsoft office tools, Power point presentations, Microsoft access etc came in as a boon to the growing industries. With the advent of internet the world became a small place. Enterprise level software with web developments and ERP enabled ease of operations in large enterprises, while small and medium enterprises were not beneficiaries to the advancements in IT due to resource and costs. However basic tools like PC, internet and web were in use. Thus Information and Communication technology took birth with MIS concepts, customized software and ERP to

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serve the rapidly growing business.

If we look at the history of the textiles, the archaeological surveys and studies have found that the people of Harappan Civilization knew weaving and the spinning of cotton four thousand years ago. Reference to weaving and spinning materials is found in the Vedic Literature also. There was textile trade in India during the early centuries. A block printed and resist-dyed fabrics, whose origin is from Gujarat is found in tombs of Fostat, Egypt.[3] This proves that Indian export of cotton textiles to the Egypt or the Nile Civilization in medieval times were to a large extent. Large quantities of north Indian silk were traded through the silk route in China to the western countries. Indian silk were often exchanged with the western countries for their spices in the barter system. During the late 17th and 18th century there were large export of the Indian cotton to the western countries to meet the need of the European industries during industrial revolution. Consequently there was development of nationalist movement like the famous Swadeshi which was headed by the Aurobindo Ghosh. There was also export of Indian silk, Muslin cloth of Bengal, Bihar and Orissa to other countries by the East Indian Company.

The current scenario in textile industry is that the Ministry of Textiles in India has initiated many industrial policies, and committees, various organizations such as Public Sector Undertakings (PSUs), Export Promotion Councils, Advisory Bodies, Autonomous Bodies, Textiles Research Associations, Information technology, etc have been formed to support the Indian textile industries. Information technology is also one of the important functions under ministry of textiles to promote the usage of the IT in all these textile industries. They have also supported the Indian Textile industries by providing training and support to install the basic infrastructure such as computers, WiFi and small servers in textile sectors. However Indian textile sectors have realized the importance of IT application not

only in their core area of production but also in other functional areas like accounting and finance, human resource and marketing. Hence most of the organization have developed customized ERP solutions and are intensive users of Tally packages. There is a need for integrating all functions of the organization for effective operations, but the process calls for huge investment in terms of infrastructure, implementation and integration.

Theoretical background

Earlier investment in IT is loosely defined as including computers and telecommunications equipment and their necessary hardware, software, and services (Dedrick, Gurbaxani, & Kraemer, 2003). Firms regularly invest in IT for such activities as payroll, human resources, accounting, supply chain management, and a host of other functions (Rao, Metts, & Monge, 2003). While smaller firms have been more reluctant to invest heavily in IT, larger firms have found it almost imperative and profitable (Stimmel, 2001). Of particular concern to smaller firms is the resource requirements associated with IT investment (Pool, et al., 2006).

The degree of sophistication of both information and planning and control systems is a prominent factor in determining the success or failure of business growth which becomes increasingly important as businesses grow larger and more complicated (Churchill & Lewis, 1983). In addition, these systems, such as information systems, must be acquired in advance of growth so that they are in place when needed. By using IT to automate business processes and to improve information gathering, access, and quality, small firms can transform their entire business (Dedrick, et al., 2003). Furthermore, as the phenomenon of multifactor productivity (MFP) maintains, these improvements can be gained without additional investment in resources. Over time, IT investment has been shown to be associated with a shift to higher skilled workers. In fact, Lester, et al. (2003) found information processing to be the strongest indicator of a

firm's life cycle stage.

The literature on IT investments by organizations have focused mainly on the antecedents of IT investment, that is, identifying the external, technological, and organizational factors that would persuade a firm to adopt IT. External forces include pressure from competitors, suppliers, and customers as well as the availability of government incentives and technology consultants (Aguila-Obra & Padilla-Melendez, 2006; Kim & Jee, 2007). Studies focusing on technological factors have examined the potential benefits and trade-offs of IT investments along with the influence of existing related technologies. Organizational support for IT investment can depend on the firm's structure, processes, size, culture and technological capabilities of various firm members, etc.

For some SMEs, few factors found to have a profound influence on IT investments are the perceived cost savings and income generation benefits, external pressure from rivals, suppliers, and buyers, organizational readiness, and perceived ease of use (Grandon & Pearson, 2004; Mehrtens, Cragg, & Mills, 2001). IT investment in SMEs differs from IT investment in large firms because a smaller number of people have decision-making responsibility, standard procedures are not instituted, long-term planning is limited, and there is more reliance on external IT experts in SMEs (Premkumar, 2003). Nonetheless, IT capabilities may enable the long term survival of SMEs in a number of ways. They provide access to external knowledge and financial resources, create trust and legitimacy through widespread information dissemination, and generate more social network ties (Morse, Fowler, & Lawrence, 2007).

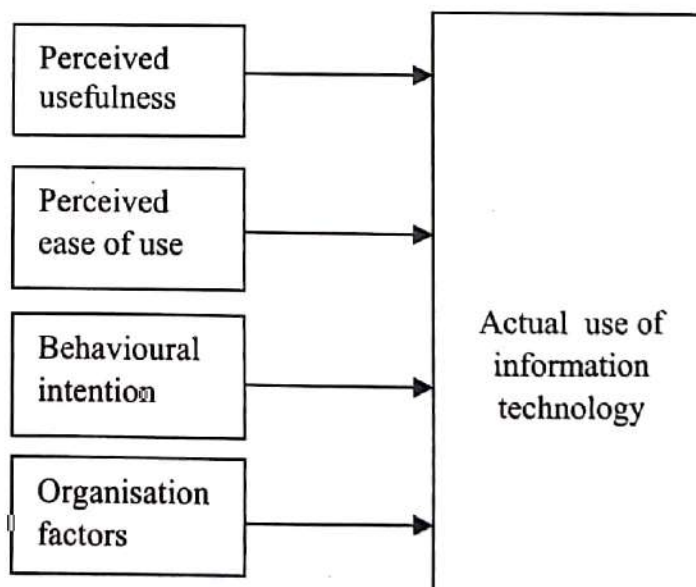
IT investment itself is a process that can occur in stages identified as: initiation, adoption, adaptation, acceptance, reutilization, and infusion (Aguila-Obra & Copyright © 2008 Institute of Behavioral and Applied Management. All Rights Reserved. 76 Padilla-

Melendez, 2006). An in-depth qualitative study by Bruque & Moyano (2007) found that the factors influencing IT investment (e.g., managerial support, firm growth, and firm size) have little or no role in its implementation. Other issues such as staff training, staff socialization, power structure, and hierarchies play a larger role in IT implementation. For SME executives, once an IT is adopted, other challenges remain including keeping current with changing IT, training and educating employees, and receiving timely and accurate information (Riemenschneider & Mykytyn, 2000). The same can be seen by Kazanjian's OLC and Crises Model.

Research Model

The study engages 24 variables that would contribute to the actual usage of IT in textile clusters, out of which 23 are taken as independent variables and 1 factor becomes the dependent variable. The dependent variable is defined as technology intensity as perceived by an individual, while the independent variables comprise of Organisational factors(O) , Perceived usefulness (PU) ,Perceived ease of use (PEU) and Behavioural intention (BIU) .All the factors are summarised into the conceptual model (refer Fig.1) .

F-1. Conceptual model



Determinants

Refer Table T-1

The measurement instrument consists of two sections. First section consists of PU, PEU and BIU which is based on the Technology Acceptance Model (TAM). Scales adapted are from Davis, et al (1989) and Venkatesh, et al (2003). All constructs in this model are operated using standard scales from past literature.

Perceived usefulness, Perceived ease of use and Behavioural intentions comprise of 5 variables each. All 15 variables measured the latent variables PE, PEU and BIU using Likert scale with five points positively packed, coded from 1 to 5 in sequence of strongly disagree, disagree, neutral, agree and strongly agree.

Organisational factors (OF) under section two which consists of 9 variables, sketch out the demography of SME in terms of its age, type as in micro, small and advanced, based on investment in plant and machinery, stage of the organisation, whether it is in expansion stage, consolidation or diversification stage, employee strength, percentage of qualified employees, level of IT and core area where used. Out of the 9 variables, O9 is taken as dependent variable, which measured technology intensity on three scales, novice, intermediate and advanced.

Figure 1 shows an overall design of a model to communicate the relevance of information technology through 4 factors i.e. PU, PEU, BIU and OF having significance on the actual use of the system. Use of TAM model is predicated on the management of textile clusters for understanding conceptual issues related to actual use of the system. PU refers to the users' belief that using IT would enhance his performance. PEU refers to the users' belief that IT would be free of cognitive effort. BIU refers to the users' attitude towards usage of IT.

The model leads to assumptions based on our research objectives and literature study to derive the following hypothesis

- H1 - PU is significant to the actual usage of IT
- H2 - PEU is significant to the actual usage of IT
- H3 - BIU is significant to the actual usage of IT
- H4 - OF is significant to the actual usage of IT

Research Methodology

This phase of study comprises of survey held amongst the textile cluster situated in Doddaballapur, rural Bangalore. These clusters were chosen because they were granted the SPV to enhance cluster modernisation and restructuring.

Exploratory research is done in attempting to understand practical problems at the small and medium enterprises at micro level, the level of innovation and the need for advancement in technology. A sample of 41 SME respondents of the textile cluster in Doddaballapur Apparel Park and Doddaballapur Integrated Textile Centre were considered for the study. Responses were collected using electronic questionnaire on a one to one basis. Telephonic responses were also obtained from those who had headquartered out of the integrated park. A structured questionnaire of 24 questions sought response through single choices and five point Likert scale on a sequence of strongly disagree, disagree, neutral, agree and strongly agree.

The research methodology is conducted in two sections

1. Confirmatory factor analysis of variables of section 1 followed by linear regression.
2. Ordinary least square regression - stepwise regression of variables of section 2 using backward elimination.

The first step involved a) Drawing out descriptive statistics of 24 variables b) Reliability test using Cronbach Alpha coefficient c) Confirmatory factor analysis by forcefully loading items onto latent variables, PU, PEU and BIU. d) Factor scores thus obtained, were subjected to linear regression on the dependent variable O9(technology intensity).

The second step performed a stepwise regression where all independent variables under organisation factor were added to a single regression model by selection method. This method engages Ordinary least square regression.

Results

Table 2 (T-2) revealed descriptive statistics of all 24 variables, where the mean midpoint is 4.24 and the standard deviation is wide spread between the range of 0.374 and 1.341. Table 3 (T-3) established validity and reliability of the model with the help of Cronbach's Alpha coefficient ($0.792 > 0.7$).

Table 4 (T-4) revealed that factor 2 is significant, consequent to its p value being 0.00119 (< 0.05). Perceived ease of use is the only factor that fits its data to the model. Result from table 4 (T-4) indicate that the scales are not reliable and only PEU can be considered to be influencing the actual usage of IT. The ease of operation of IT, the ease to interact with IT tools with clarity and understanding, the flexible interaction and easy to be skilful in usage, all contribute to impact the actual use of IT. The study did not find significant relations between Perceived usefulness and Behavioural intentions which were otherwise found to be consistent by our survey findings though.

Table 5 (T-5) identified factor O3 at p value 0.002 and O7 at p value of 0.003 to be influencing O9. The predictive abilities of Type of the organisation and Level of IT play a role in actual use of IT. The study rendered all other organisation factors as insignificant. Though our study revealed that most factors did not influence the usage of IT, potential suppositions did not fall in line with the findings.

Discussions of findings

Turnover of firms and age of firms do not have a good significance and it does not make sense here, since high turnovers are not typical of relevance of IT. 63% of the textile clusters are over a decade old in the industry, a few being in

the range of 25 years to 50 years. Organisation stage of the clusters were categorised largely into expansion mostly followed by clusters in consolidation and diversification stages. Textile being labor intensive industry, employee strength largely fell into the range of greater than 250 employees. 93% of the clusters used IT in their core area of production only. This is explained by significance of O3, i.e. type of the organisation, whether micro, small or medium. Software usage was noticed even in micro industries. O7, another significant factor is the level of IT in use. 93% of the clusters use low end ERP and customised software to automate their production machineries. Hence under section 2, H4 remains invalid disapproving our assumption that organisation factor is significant to the actual use of IT. It has to be understood that though software is in use in the production area, the management has not taken up integration of information technology in other supporting areas of the enterprise like Finance, HR, Marketing etc.

The factors PU and BIU under section 1 are a doubtful prediction. It suggests that most SMEs are not in sync with the belief that IT would enhance performance nor are they being driven by their attitude towards usage of IT. Perceived usefulness is not showing relevance here.

No significant influence on intention to use might possibly be because of not perceiving usefulness. ERP has a monolithic structure that is not suitable for most SMEs who are limited by resources like money, staff and IT skills.

Factor PEU is showing strong significance conveying that the belief in IT easing cognitive effort and ease of use can have relevance in its usage. The final model suggests that actual use of IT can be rendered relevant only with perceived ease of use of the system.

Ekaterina & Victor (2011) revealed that existing researches indicate strong positive correlation between ICT and economic efficiency and competitiveness of SMEs.

Our study shows low level of diffusion in IT

integration in the management of SME clusters. This paper depicts that the real needs of SME clusters are different from possibilities. A growing number of SME clusters have expressed their readiness to invest in information technology but the clusters in study are not yet ready for the technology upheaval. Traditional disadvantages due to size limitations drive them to remain on sustenance levels than dive into expansion plans, frequently bogged down by capital limitations and challenges in technical knowhow.

In our study we are not analysing the success rate of IT solutions. The paper has chosen variables based on several studies and TAM model. It has aimed at finding which variable can impact relevance of IT to the management of SME clusters. We wish to state that our sample size is small and confined to a particular geographic region in rural Bangalore. The inferences provoke further study to reach out to more clusters that are launched on the Special Purpose Vehicle.

The limitations to this study are firstly peculiarities of each cluster. Though macro environment will remain the same, micro environment can differ depending on the type of cluster. Additional research needs to be done in this area. Secondly, the construct is composed of individual perception of personal phenomenon work in future can be aimed at being more objective in analysis of behaviour and perceptions.

Future research can also engage study of adaptability of techno commercial solutions like cloud computing for the growing SME segment, by extending TAM model.

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Appendices

Table-1. Factors influencing actual usage of IT

Sl. No	Factors	Item numbers
SECTION 1		
1	Perceived usefulness (PU)	PU10 to PU14
2	Perceived ease of use (PEU)	PEU15 to PEU19
3	Behavioural intention to use (BIU) the system	BIU20 to BIU24
SECTION 2		
4	Organisation factors	O1 to O9

Table-2 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Age of the firm	41	1	4	3.05	1.341	-1.283	.724
Turnover	41	1	4	2.32	1.213	-1.475	.724
Organisation type	41	1	3	2.44	.709	-.454	.724
Stage of organisation	41	1	4	2.44	1.001	-.954	.724
No of employees	41	1	4	2.98	1.107	-.740	.724
Percentage qualified	41	1	4	1.83	.892	-.942	.724
Level of IT	41	1	4	3.85	.573	17.996	.724
Core area of usage	41	1	3	2.90	.374	18.072	.724
IT knowledge	41	1	3	2.46	.596	-.530	.724
Accomplishes tasks	41	2	5	4.51	.746	4.467	.724
Increases productivity	41	3	5	4.56	.634	.342	.724
Enhances effectiveness	41	3	5	4.37	.698	-.685	.724
Make job easier	41	1	5	4.10	1.091	.320	.724
Increases profits	41	1	5	3.68	.986	.892	.724
Easy usage	41	3	5	4.24	.624	-.507	.724
Disseminates information	41	1	5	3.76	.888	.992	.724
Interaction clear and understandable	41	2	5	3.78	.881	-.605	.724
Interaction flexible	41	3	5	3.85	.760	-1.195	.724
Easy to be skilful	41	3	5	4.17	.771	-1.230	.724
Intend to use for expansion	41	4	5	4.63	.488	-1.754	.724
Intend to use in core area	41	3	5	4.54	.674	.188	.724
Intend to use often	41	3	5	4.63	.581	.972	.724
Intend to use in future	41	3	5	4.49	.675	-.169	.724
Expect usage in future	41	3	5	4.61	.628	.913	.724
Valid N (listwise)	41						

Refer to IBM SPSS Base

Table-3 Cronbach's Alpha Reliability Co-efficient

Cronbach's Alpha	N of Items
.792	15

Table - 4 Result of linear regression after applying confirmatory factor analysis

Coefficients:				
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	2.463415	0.082865	29.728	< 2e-16 ***
fact1	-0.001886	0.083451	-0.023	0.98209
fact2	0.349248	0.099479	3.511	0.00119 **
fact3	-0.122816	0.096330	-1.275	0.21028

Table - 5 Result of ordinary least square regression using backward elimination.

Coefficients:				
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.20688	0.49429	0.419	0.67797
data\$O3	0.42951	0.13367	3.213	0.00272 **
data\$O5	-0.15431	0.07963	-1.938	0.06030 .
data\$O7	0.43286	0.13636	3.174	0.00302 **

GLOBALISATION AND ITS EFFECT ON PERFORMANCE OF MICRO, SMALL AND MEDIUM SCALE ENTERPRISES

Rajeevi Nayak*

Abstract:

Globalization means the dismantling of trade barriers between nations and integration of the nations' economies through financial flow, trade in goods and services and corporate investments between nations. Globalization effect on Indian industry started when Government opened the country's market to foreign investment in early 1990s. So the period after this remarkable year is called post globalization period.

The effects of globalization on Indian Economy have proved to be positive as well as negative. Domestic industries have to face lot of challenges due to globalization. Globalization has led to an 'unequal competition' a competition between large MNCs and dwarf Indian enterprises. Anti-globalist feel that globalization has negative impact on Indian industries such as unhealthy ogy. Increase the capital base, redesign the product to suit international market, hiring of expert management skills etc., Therefore, while taking an account of the existing status of Indian MSMEs, this paper tries to assess the impacts of globalization on Indian MSMEs. To study the effect globalization growth rate of four parameters such as number of enterprises, production, employment and export of Micro, Small and Medium scales industries are observed for pre and post globalization period and conclusions are derived.

Keywords: MSME, Globalization, Indian Economy, Government, Opportunities, Challenges.

1. INTRODUCTION

Indian economy is a developing economy. Its vast resources are either unutilized or underutilized. A major section of man power is lying idle. The per capita income is low. Capital is shy and scarce and investment is lean. Production is traditional and the technique is outdated. The output is insufficient and the basic needs of the people remain unfulfilled. Industrialization is the only answer to this present state of disrupted economy. Small and Medium Scale industries do not require huge capital, can generate more employment opportunities with less investment, they can be accessible to the remote rural areas and do not lead to regional imbalances and hence suitable for a country like India. The planners and the economists in India took recourse to small scale industry because most of these industries existed in the traditional form, which symbolize our heritage and past glory. These still serve as the back bone of our economy, which is mostly rural.

1.1 DEFINITION: MICRO, SMALL AND MEDIUM ENTERPRISES:

Small scale industries are termed as Micro, Small and Medium Scale industries (MSME) as per MSMED Act, of 2006. MSMEs are defined and classified based on their investment in plant and machinery (for manufacturing enterprise) and on equipment for enterprises providing or rendering services. Hence the enterprises covered under this act are;

- i) Manufacturing Unit
- ii) Units engaged in providing/rendering of services

Both Categories of enterprises have been further classified into Micro, Small and Medium Enterprises based on their investment in plant and machinery (for manufacturing enterprises) or on equipment (in case of enterprises providing or rendering services). The present ceiling on investment to be classified as micro, small or medium enterprises is as under.

Classification of Enterprises

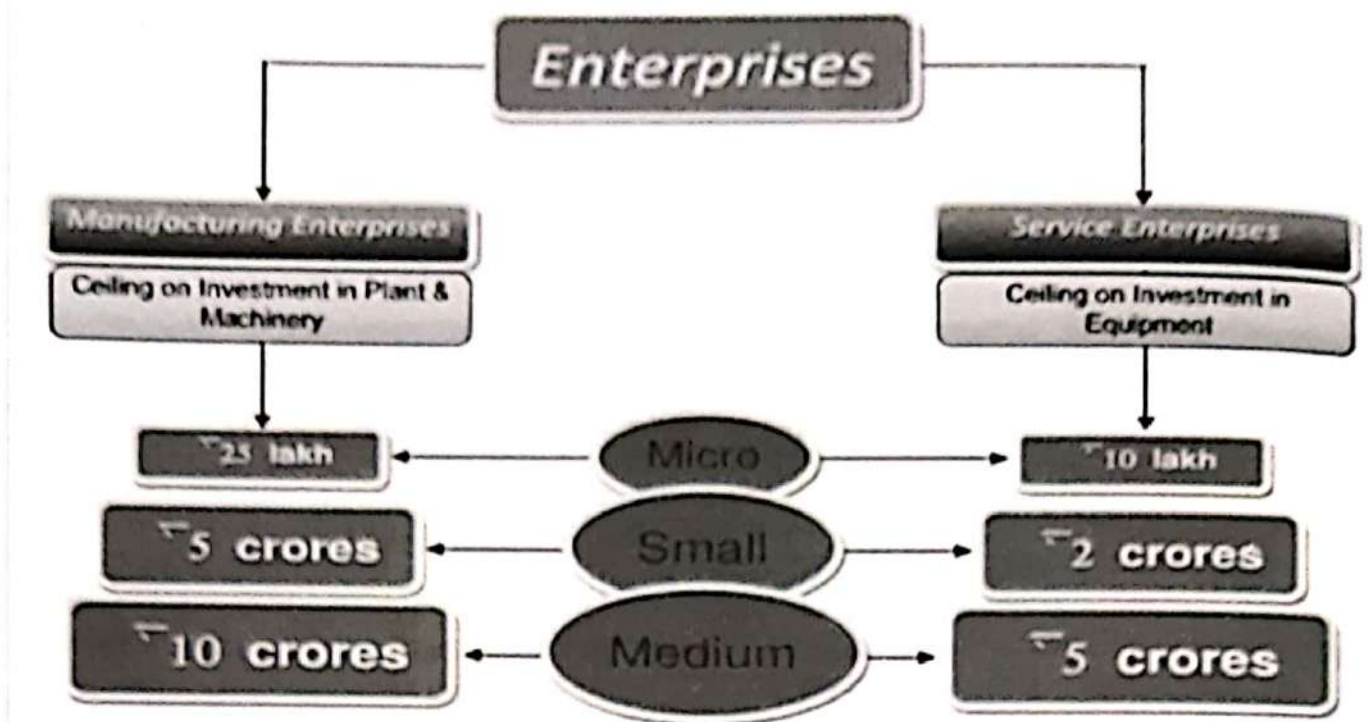


Fig.1 Showing the classification of MSME (Source: MSME Act 2006)

1.2 CONTRIBUTION OF MSMEs TO INDIAN ECONOMY:

World over, the Micro Small and Medium Enterprises or MSMEs have recognized as engines of economic growth. As per recent Census of India, MSMEs constitutes 94% of industrial enterprises, contributing 36% to total value of export. It provides 80 million employments. 45% of output is originated from MSMEs. It has contributed 8.9 % to GDP. Major advantage of MSME is its employment potential at low capital cost.

1.3 GLOBALIZATION

Globalization means the dismantling of trade barriers between nations and integration of the nations' economies through financial flow, trade in goods and services and corporate investments between nations. Globalization effect on Indian industry started when Government opened the country's market to foreign investment in early 1990s. So the period after this remarkable year is called post globalization period.

Globalization is not a new phenomenon. In the immediate post-World War-II period, globalization was mainly driven by rapid growth in foreign trade while in the 1950s and 1960s, foreign direct investment (FDI) started to play an increasingly important role in this process. Over the last three decades and based on global trend of trade and investment liberalization, the world economy has evolved into a highly integrated system.

The 1990s was an important decade in terms of policy changes, nationally as well as internationally. Since the beginning of 1990s policy changes have been taking place at three different levels- global, national and sectoral, which have implications for small industry functioning and performance in India. The first and the foremost development is "globalization" process at the international level through free movement of factor inputs (both labour and capital) and out puts between countries. However the developments that have been taking place since the early nineties are mostly with reference to the free movement of only one of the factor inputs i.e., capital

commonly known as Foreign Direct Investment (or FDI) and free movement of goods, particularly from the developed to the developing countries.

In 1995, after the formation of World Trade Organisation (WTO), process of scaling down of tariff and non tariff restrictions on imports has accelerated. India, as a member of WTO has substantially done away with its quantitative and non-quantitative restrictions by April 1, 2001 (Ministry of Finance, 2002). The process of removal of quantitative and non-quantitative restrictions across countries has led to free movement of goods between countries including India. As a result, world exports grew in dollar terms at an average rate of 5.9% during 1990-99 as against 5.2% during 1980-90 (Ministry of Finance and Company Affairs, 2003). The reduction of restrictions on the movement of goods between countries and the subsequent increase in world exports would have benefited Multinational Corporations much more than small enterprises. Globalization and liberalization is more on small and medium scale industries. Of course, the impact is both positive as well as negative.

Objective of globalization

- Improvements in local productivity can promote prosperity
- The movement and sharing of information, knowledge and expertise
- The improvement of international standards for variables such as education and health
- Increases the variety of goods available to the world market and provides a bigger range of markets for internationally sourced products

2. REVIEW OF LITERATURE

Following literatures are studies to know what is globalization, impact of globalization on small scale industries in India. A review of

imported studies is presented below:

Mathew, M.C. (2004) The study stated that the country needs a strong small and medium enterprises policy, which was closely linked to its international commitments. The study suggested that at the strategy level, there were need to be mechanism by which the demography of small and medium enterprises sector itself becomes a matter of public security.

Subrahmanyabala, M.H. (2004) highlighted the impact of globalization and policy reforms in small-scale industries sector. A study reveals growth rate of MSMEs come down terms of growth of units, employment, output and exports. Researcher highlighted that the policy changes had also thrown open new opportunities and markets for the small-scale industries sector. Sudan, F. K. (2005) explained the meaning, advantages, problems and policy options of MSE sector. The study concluded that all the policies which were opted by GOI were the efforts to form a dynamic MSE sector..

Rathod, C. B. (2007) explained the importance of small scale industrial sector and also the contribution of Indian small scale entrepreneurs in world economy. The main objective of the study was to study the growth and pattern of the SSI sector and identify the reasons for success/ failures, to evaluate the impact of globalization on SSIs and export opportunity, to identify the barriers and constraints that SSIs were facing to cope with globalization.

3. OBJECTIVES OF THE STUDY

Small Scale Industry in India has been confronted with an increasingly competitive environment due to Liberalization of the investment regime in the 1990s, favoring foreign direct investment at the international level, particularly in socialistic and developing countries. The formation of the World Trade Organisations (WTO) in 1995, forcing its

member- countries (including India) to drastically scale down quantitative and non quantitative restrictions on imports, and domestic economic reforms. The cumulative impact of all these developments is a remarkable transformation of the economic environment in which small industry operates, implying that the sector has no option but to 'compete'. On observing the present economic environment the research is carried on with following objectives.

1. The main objective of the study is to understand the impact of globalization on Indian MSMEs, in general
2. To know how conducive is the Indian economic environment for the growth of MSMEs in the changing scenario because of globalization
3. To understand the influence of globalization on the growth of MSMEs

4. METHODOLOGY

In the present study, an attempt has been made to analyze the impact of globalization on the growth of small scale industries and opportunities and challenges for this sector. For this, the growth pattern with reference to the data related to performance of small scale industries in India. The SSI sector has been studied with the belief that they hold the largest share of Industrial Sector in India. The reference period for the analysis of the data has been taken from secondary source for the period 1980 to 2010. The study period has been divided into 3 parts i.e.,

- pre-liberalization decade from 1980-81 to 1989-90
- post-liberalization decades i.e., from 1990-91 to 1999 and
- 2000-01 to 2009-10 to know the impact of globalization.

A comparative analysis of Average Annual Growth Rates for pre and post globalization

periods has been carried out with reference to parameters like number of units, production, employment and exports. One way ANOVA test is conducted to know the significant change in growth pattern between pre and post globalization decade. For this the data is divided into 3 groups. 1st Group is of pre globalization decade and other two groups are of post globalization decades. The significant changes in groups revealed the impact of globalization on MSMEs. The study has been based on secondary information. The data for the study purpose has been taken mainly from 'Ministry of Micro, Small and Medium Enterprises, Government of India' published by Reserve Bank of India in Handbook of Statistics on Indian Economy.

5. LIMITATION OF THE STUDY

All the indicators related to the growth of small scale industries have been computed from 1980 to 2010. In this study there is only one limitation that is;

- 1 In case of exports the data for 2006 and 2007 is not available. Hence growth rate of 2006-07 is ignored to calculate average growth rate of the decade 2000-10.
- 2 More over, after the enactment of MSME Act of 2006 the data of MSME is taken in place of SSI which has affected annual growth rate of 2006-07 as compared to 2005-06 for all the parameters such as number of MSMEs, Production, employment and export. Hence, this year growth rate is ignored while calculated Annual Average Growth rate of decade 1990s.

6. ANALYSIS OF DATA

(Performance of MSMEs in pre globalization and post globalization decades)

The policy changes at global, national and sectoral levels have radically changed the environment for the functioning of Small industry in India. The growth of small industry

in the country has to be analyzed with this back up.

The performance and contribution of MSMEs to Indian Economy is viewed in terms of its absolute growth in units, employment, production and exports in pre and post

globalization decades. The growth performance is evaluated to Compare the growth rates of units, employment, output and exports of Small industries (Now MSMEs) in the decade of 1980-90 (Pre globalization decade) with that of 1990-2000 and 2000-2010(Post globalization decades)

6.1 Performance of Small Scale Industries from 1980-81 to 1989-1990 (Pre-Globalization decadal growth)

Year	Total MSMEs(Lakh Numbers)	% Growth over Previous year	Production (Rs.in Crore)	% Growth over Previous year	Employment(Lakh Persons)	% Growth over Previous year	Exports (Rs.Crore)	% Growth over Previous year
1980-81	8.7		28100		71		1600	
1981-82	9.6	10.34	32600	16.01	75	5.63	2100	31.25
1982-83	10.6	10.42	35000	7.36	79	5.33	2000	-4.76
1983-84	11.6	9.43	41600	18.86	84.2	6.58	2200	10.00
1984-85	12.4	6.90	50500	21.39	90	6.89	2500	13.64
1985-86	13.5	8.9	61200	21.2	96	6.7	2800	12.0
1986-87	14.6	8.15	72300	18.14	101.4	5.63	3600	28.57
1987-88	15.8	8.22	87300	20.75	107	5.52	4400	22.22
1988-89	17.1	8.23	106400	21.88	113	5.61	5500	25.00
1989-90	18.2	6.43	132300	24.34	119.6	5.84	7600	38.18
AAGR		7.57		16.53		5.23		18.23

Source: Ministry of Micro, Small and Medium Enterprises, GOI.

AAGR= Annual Average Growth Rate or Exponential Growth Rate.

Analysis: Above table reveals that the Annual Average Growth Rate from pre- liberalization decade i.e., from 1980-81 in terms of number of units was 7.57%, production 16.53%, employment 5.23% and exports 18.23%.

6.2 Performance of Small Scale Industries from 1990-91 to 1999-2000 (Post-Globalization Decadal growth rate)

Year	Total MSMEs(Lakh Numbers)	% Growth over Previous year	Fixed investment at(Rs. in Crore)	% Growth over Previous year	Production (Rs.inCrore)	% Growth over Previous year	Employment(Lakh Persons)	% Growth over Previous year	Exports (Rs.Crore)	% Growth over Previous year
1990-01	67.9		93555		78802		158.3		9664	
1991-92	70.6	3.98	100351	7.26	80615	2.30	166	4.86	13883	43.66
1992-93	73.51	4.12	109623	9.24	84413	4.71	174.84	5.33	17784	28.10
1993-94	76.49	4.05	115795	5.63	98796	17.04	182.64	4.46	25307	42.30
1994-95	79.6	4.07	123790	6.90	122154	23.64	191.4	4.80	29068	14.86
1995-96	82.84	4.07	125750	1.58	147712	20.92	197.93	3.41	36470	25.46
1996-97	86.21	4.07	130560	3.83	167805	13.60	205.86	4.01	39248	7.62
1997-98	89.71	4.06	133242	2.05	187217	11.57	213.16	3.55	44442	13.23
1998-99	93.36	4.07	135482	1.68	210454	12.41	220.55	3.47	48979	10.21
1999-00	97.15	4.06	139982	3.32	233760	11.07	229.1	3.88	54200	10.66
AAGR		4.06		4.61		13.03		4.19		21.79

Table-2

Source: Ministry of Micro, Small and Medium Enterprises, GOI.

AAGR= Annual Average Growth Rate or Exponential Growth Rate.

The data presented in above table reveals that the Annual Average Growth Rate in the post

globalization decade i.e., from 1990-91 to 1999-2000 in terms of number of units was 4.06%, investment fixed assets 4.61%, production 13.03%, employment 4.19% and exports 21.79%.

6.3 Performance of Small Scale Industries from 200-01 to 2009-10 (Post-Globalization Decadal growth rate)

Year	Total MSMEs (Lakh Numbers)	% Growth over Previous year	Fixed investment at(Rs. in Crore)	% Growth over Previous year	Production (Rs.in Crore)	% Growth over Previous year	Employment(Lak h Persons)	% Growth over Previous year	Exports (Rs.Crore)	% Growth over Previous year
2000-01	105.21	8.29	154349	10.26	282270	20.75	249.33	8.8	69797	28.77
2001-02	109.49	4.07	162317	5.16	314850	11.54	260.21	4.36	71244	2.07
2002-03	113.95	4.07	170219	4.87	364547	15.78	271.42	4.31	86013	20.73
2003-04	118.59	4.07	178699	4.98	429796	17.90	282.57	4.11	97644	13.52
2004-05	123.42	4.07	188113	5.27	497842	15.83	294.91	4.37	124417	27.42
2005-06	261.01	111.5	500758	166.2	709398	42.49	594.61	101.6	150242	20.8
2006-07	272.79	4.51	558190	11.47	790759	11.47	626.36	5.34	182538	21.50
2007-08	285.16	4.53	621753	11.39	880805	11.39	659.35	5.27	202017	10.67
2008-09	298.08	4.53	693835	11.59	982919	11.59	695.38	5.46	NA	
2009-10	311.52	4.51	773487	11.48	1095758	11.48	732.7	5.37	391159	
AAGR		4.74		8.50		17.02		5.26		15.59

Table-3

Source: Ministry of Micro, Small and Medium Enterprises, GOI.

AAGR= Annual Average Growth Rate or Exponential Growth Rate.(The data for the period up to 2005-06 is of small scale industries (SSI). Subsequent to 2005-06, data with reference to micro, small and medium enterprises (MSMEs) are being compiled. While calculating AAGR growth rate of 2005-06 as compared to 2004-05 is ignored)

The above table clearly reveals that the Annual Average Growth Rate in the post globalization decade i.e., from 2000-01 to 2009-2010 in terms of number of units was 4.74%, investment fixed assets 8.50%, production 17.02%, employment 5.26% and exports 15.59%.

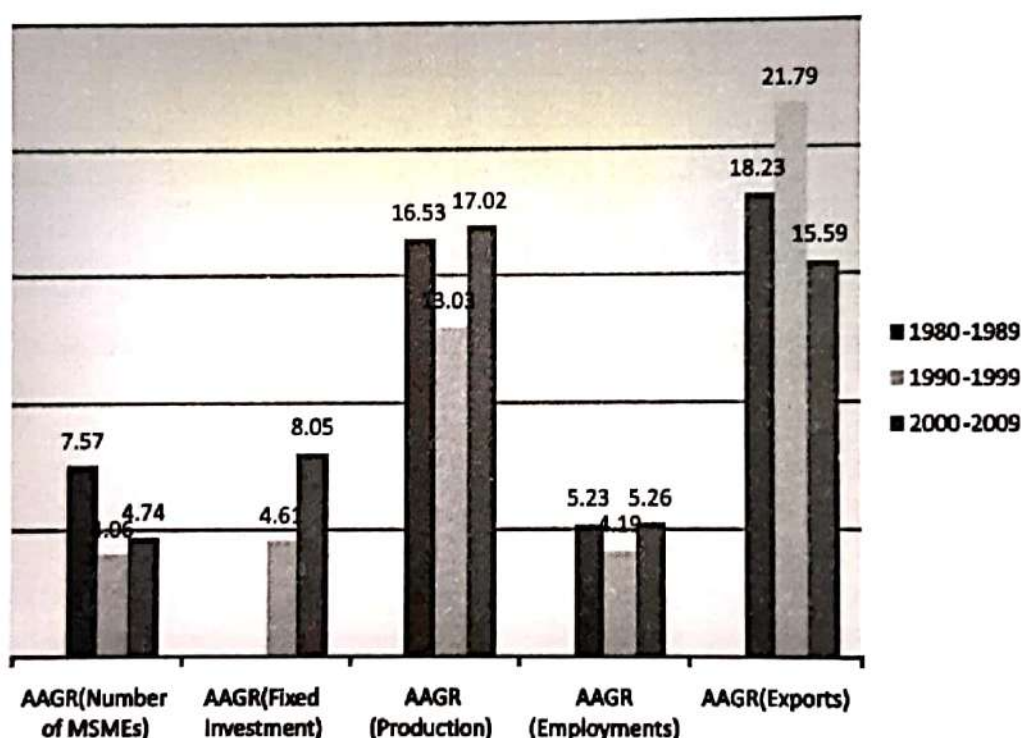
6.4 Annual Average Growth Rates in Pre and Post Globalization decades

Year	AAGR (Number of MSMEs)	AAGR (Fixed Investment)	AAGR (Production)	AAGR (Employments)	AAGR (Exports)
1980-1989	7.57	--	16.53	5.23	18.23
1990-1999	4.06	4.61	13.03	4.19	21.79
2000-2009	4.74	8.05	17.02	5.26	15.59

Table-4

Source: Ministry of Micro, Small and Medium Enterprises, GOI.

6.5 Chart Showing Decadal Growth rate of MSMEs



The above table and chart reveal the Annual Average Growth Rate of MSME during Pre and post globalization decades. The year 1980 – 1990 is the pre- globalization decade and the years from 1990-2000 and 2000-2010 are post globalization decades. Comparison of data between these two period reveals that AAGR in terms of number of SSI during pre globalization decade was 7.57% whereas AAGR in post globalization decades was 4.06 and 4.74. There

is decrease in average growth rate of MSMEs during post globalization decades.

The annual average growth of total investment in fixed assets by MSMEs has increased from 4.61% from 1990-1999 to 8.05 in 2000-2009. Growth rate of production from MSMEs during pre-globalization period was 16.53%, which had decreased initially to 13.03% during first decade (1990-99) and increased to 17.02

during second decade of post globalization. With respect to employment parameter, AAGR of pre-globalization period was 5.23% whereas it has come down to 4.19% and then increased to 5.26% during first and second decades of post globalization. Growth rate of export from MSMEs was 18.23% during pre-globalization which has increased initially to 21.79% in first decade and then decreased to 15.59% during second decade of post globalization.

7. ONE WAY ANOVA (Variance Analysis)

Typically, however, the one-way ANOVA is used to test for differences among at least three groups, since the two-group case can be covered by a t-test (Gosset, 1908). This Statistical tool (One Way Anova test) is applied here with an objective of knowing impact of globalization on MSMEs. For understanding impact of globalization data is compared between pre and post globalization decades. The First decade (1980-1989) is pre globalization decade. Second decade (1990-99) and third decade (2000-10) are post

globalization decades. Here the data is classified into 3 groups for applying ANOVA Test.

Group I- 1980-89

Group II -1990-99

Group III- 2000-10

The four parameters taken for comparison are ;

i)Number of MSMEs

ii)Production

iii)Employment

iv)Exports

7.1 NUMBER OF MSMEs

Our objective is to check whether there is impact of globalization on Number of MSMEs. Hence the statistical tool used to compare between 3 groups is ONE WAY ANOVA(Analysis of Variance) and the results are tabulated below.

Descriptive Statistics

Number of MSMEs	Mean	Variance	Co-efficient of variation
Group -1	13.21	3.0363	22.98%
Group-2	81.737	9.3420	11.429%
Group-3	199.92	86.835	43.435%

Source : Researcher's Compilation

Table-5

Above table indicates average number of MSMEs in each group i.e., each decade. The data mentioned above reveals that there is increase in average number of units over three decades. A small variance indicates that the data points tend to be very close to the mean (expected value) and hence to each other, while a high variance indicates that the data points are very spread out around the mean and from each other. Variance for the first two groups

variance are less and for the last group it is considerably high indicating wide variation in establishment of MSMEs units in last decade of post global period. Co-efficient of variation is used for comparison between data sets with different units or widely different means. Co-efficient of variation is high in case of group 3 indicating non-consistency in forming of MSMEs.

ONE WAY ANOVA(Variance Analysis)

Source of Variation	Degree of freedom	Sum of Squares	Mean sum of Squares	F-Value	P-Value
Between Groups	2	178416.716	89208.358	310.450	0.00001
Within Groups	27	76367.970	2828.443		
Total	30	254784.687			

Table-6

From the above table we observe that there is significant differences between the groups (i.e., there is impact of globalization), hence in

order to know which group differed significantly Tukey's post hoc test was carried on.

Tukey's post hoc test P-value

Group	2	3
1	0.020	0.0001
2	--	0.0001

Source : Researcher's Compilation

Table-7

(The result are said to be significant if the p-value is less than 0.05)

From the above table we observe that group 1 and group 2, group 2 and group 3 and group 3 and group 2 differ significantly indicating considerable impact of globalization number of MSMEs. This gives the information that globalization has not sudden effect. The impact is seen gradually.

7.2 PRODUCTION OF MSMEs (Rs. in Crores)

The objective here is to check the impact of globalization on Production. On applying statistical tool to observe the significant change between 3 groups, ONE WAY ANOVA (Analysis of Variance) is applied and the results are tabulated below.

Descriptive Statistics

Number of MSMEs	Mean	Variance	Co-efficient of variation
Group -1	64730	32979.87	94.96%
Group-2	141172.8	54019.37	38.26 %
Group-3	634894.4	280096.7	44.12%

Source : Researcher's Compilation

Table-8

According to above statistical compilation, average production has increased considerably from group 1 to group 2 and group 3 indicating considerable increase in production of MSME.

There is more variation in production of group 1 compared to group 2 and group 3 showing consistency in production for later two decades.

ONE WAY ANOVA

Source of Variation	Degree of freedom	Sum of Squares	Mean sum of Squares	F-Value	P-Value
Between Groups	2	1.916E12	9.578E11	31.362	.0001
Within Groups	27	8.246E11	3.054E10		
Total	30	2.740E12			

Source : Researcher's Compilation

Table-9

From the above table we observe that there is significant differences between the groups (i.e., there is impact of globalization), hence in

order to know which group differed significantly Tukey's post hoc test was carried on.

Tukey's post hoc test P-value

Group	2	3
1	0.597	0.0001
2	--	0.0001

Source : Researcher's Compilation

Table-10

(The result are said to be significant if the p-value is less than 0.05)

From the above table we can observe that Group-1 and Group2 do not differ significantly,

whereas significant difference is observed between Group 1 and Group 3 and Group-2 and Group-3. This indicates that impact of globalization is seen more in second decade of post globalization period.

7.3 EMPLOYMENT (In Lakh persons)

The objective here is to check whether there is impact of globalization on employment opportunities created by MSMEs. The

statistical tool used to compare between 3 groups is ONE WAY ANOVA(Analysis of Variance) the results of which are tabulated below.

Descriptive Statistics

Number of MSMEs	Mean	Variance	Co-efficient of variation
Group -1	93.62	15.72	16.79%
Group-2	193.97	22.409	11.55%
Group-3	466.68	198.36	42.50%

Source : Researcher's Compilation

Table-11

As per above statistical compilation, average employment opportunities created by MSMEs has increased from group 1 to group 2 and

group 3. The variance was less in first two groups and it is more in third group

ONE WAY ANOVA

Source of Variation	Degree of freedom	Sum of Squares	Mean sum of Squares	F-Value	P-Value
Between Groups	2	745390.129	372695.064	25.098	.0001
Within Groups	27	400945.861	14849.847		
Total	30	1146335.990			

Source : Researcher's Compilation

Table-12

From the above table we observe that there is significant differences between the groups (i.e., there is impact of globalization), hence in

order to know which group differed significantly Tukey's post hoc test was carried on.

Tukey's post hoc test P-value

Group	2	3
1	0.175	0.0001
2	--	0.0001

Source : Researcher's Compilation

Table-13

The result are said to be significant if the p-value is less than 0.05)

From the above table we can observe that Group-1 and Group2 do not differ significantly, whereas significant difference is observed between Group 1 and Group 3 and Group-2 and Group-3.

7.4 EXPORT (Rs.in Crores)

The objective here is to check whether there is impact of globalization on export of MSMEs. The statistical tool used to compare between 3 groups is ONE WAY ANOVA(Analysis of Variance) the results of which are tabulated below.

Descriptive Statistics

Number of MSMEs	Mean	Variance	Co-efficient of variation
Group -1	3403	1805.02	52.62%
Group-2	31903.9	14459.4	45.32%
Group-3	152785.4	95439.16	62.47%

Source : Researcher's Compilation

Table-14

As per above statistical compilation, average export of which has MSMEs has increased from group 1 to group 2 and group 3. The variance was less second group and it is more

in third group indicating vibrant change in export over the years of third decade of study period.

ONE WAY ANOVA

Source of Variation	Degree of freedom	Sum of Squares	Mean sum of Squares	F-Value	P-Value
Between Groups	2	1.174E11	5.869E10	18.143	.0001
Within Groups	26	8.410E10	3.235E9		
Total	28	2.015E11			

Source : Researcher's Compilation

Table-15

From the above table we observe that there is significant differences between the groups (i.e., there is impact of globalization), hence in

order to know which group differed significantly Tukey's post hoc test was carried on.

Tukey's post hoc test P-value

Group	2	3
1	0.511	0.0001
2	--	0.0001

Source : Researcher's Compilation

Table-15

(The result are said to be significant if the p-value is less than 0.05)

From the above table we can observe that Group-1 and Group2 do not differ significantly, whereas significant difference in observed between Group 1 and Group 3 and Group-2 and Group-3. The above statistical analysis indicates export has been increased in post globalization decades.

8. FINDINGS AND CONCLUSION

Micro, Small and Medium Scale industries play vital role in Indian economy. Its contribution to Indian economy is remarkable. MSMEs constitutes 94% of industrial enterprises, contributing 36% to total value of export. It

provides 80 million employments. 45% of output is originated from MSMEs. It has contributed 8.9 % to GDP. Major advantage of MSME is its employment potential at low capital cost. More over these industries are spread over wide geographical area covering rural and remote area of the country leading to balanced geographical growth of the country. On observing the contribution of MSMEs, it is necessary to ensure future growth of this sector. But present environment for this sector has changed. Globalisation and liberalization has significant impact on Indian MSMEs. Government has redefined this Small Scale industries covering Micro, Small Medium Scale industries and changed the policy frame work for this sector. Hence the objective of the

researcher is to observe the impact of globalization on this sector. For observation of growth rate the study period is from 1980 to 2010 i.e., three decades. The study period is divided into three decade First decade (1980-89) is called 'Pre Globalization decade and second (1990-1999) and third (2000-2010) decades are called 'Post Globalization decades'. To know the significant change in the parameters like number of MSMEs, production, employment generation and export between pre and post globalization decades, statistical tool 'One Way ANOVA' is applied. To apply this tool, the data is classified as Group 1, Group 2 and Group 3. The data for Group 1 is covered from the year 1980-89 (Pre globalization Decade) and the data for Group 2 is taken for the period from year 1990-99 and Group 3 covers the data from the 2000-2010. The later two decades are termed as Post globalization decades. From the study conducted on past three decade data the data, following findings are derived.

1. Annual Average Growth Rate(AAGR) of number of MSMEs during pre globalization decade was 7.57% which has reduced to 4.06% and 4.74% during post globalisation decades.

From the above analysis, one can infer that growth rate of MSMEs has come down during post globalization period indicating negative impact of globalization on number of MSMEs. The Dwarf MSMEs are unable to compete with giant MNC. Many units of MSME sectors have closed. And many of these units are working as sick units.

2. Rate of Investment in Fixed Assets of MSMEs has increased during post globalization decades. During first decade AAGR of investment in fixed asset was 4.62 which has increased to 8.05% in

second decade of globalization.

3. Annual Average Growth of Production of MSMEs in pre globalization decade was 16.53% this has reduced to 13.03% in first decade of post globalization and then decreased to 17.02% during second decade of post globalization period.
4. Above analysis and statistical derivation conducted to analyze the data, it found that there is positive change in value of goods produced by MSMEs during post globalisation decade. Due to globalization and liberalization policy many MNC are established in India. This led to migration of 'Man Power' from domestic industries to multinational companies.
5. Observation of first decade data of the study period reveals that, AAGR of employment for pre globalization decade was 5.23% which has decreased to 4.19% during initial decade and the slight increase to 5.26% in later decade of post globalization. Hence one can find that initially during first decade of post globalization period, there is a fall in employment opportunities provided by MSMEs but it was picked up during second decade
6. Annual Average Growth Rate in exports of MSMEs for post globalization decade was 18.23% this has increased to 21.79% in first decade of globalization and 15.59% in second decade of globalization period. The statistical tool ANOVA test reveals that there is significant change in the value of exports of MSMEs. Initially there was increase in rate of export and then it has reduced in later decade indicating negative impact of global environment on Indian MSMEs.

Comparative analysis of growth pattern of key parameters between Pre- and Post – Globalization periods reveals that the “globalization” had a negative impact on the growth of small scale sector measured in terms of number of units, , employment and exports. As far as production from MSMEs, there is increase in growth rate. A fall in the rate of growth of number of units and employment generation in post liberalization period is a matter of serious concern for the policy- makers and planners..

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RELATIONSHIP BETWEEN MACROECONOMIC VARIABLES AND STOCK MARKET INDICES: A SECTOR BASED STUDY

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Abstract:

The study aims to discover the dynamic effect of selected Macroeconomic variables on some of the sector based indices of Nifty from 2009 to 2014. Few Econometric models are used to find the relationship between Exchange rate, Interest rate and Inflation on Automobile and IT sector stock indices. Unit root test, Regression analysis, Johenson's co-integration and Granger Causality tests are used for finding the relation between the selected variables. Results confirm the existence of a co-integration relationship between the considered variables. The estimates of the Granger Causality shows a unidirectional causal relation from Exchange rate to stock price (CNXAUTO) and from Interest rate to Inflation. It is also evident that a unidirectional relationship also exists from Exchange rate to Stock price (CNXIT), Stock price (CNXIT) to Inflation. The results of the study have implications on domestic investors, foreign investors, policy makers, and stock market regulators.

Key words: Stock prices, Macroeconomic variables, Co-integration, Granger Causality

INTRODUCTION

Financial Markets play an essential role in establishing a balanced and efficient financial system of a country's economy. Various internal and external factors affect the working of the stock markets directly and indirectly. The link between the macroeconomic variables and the stock markets are well evidenced in the literature. This study extends the present literature in Indian context. This study considers three Macroeconomic variables like Exchange rate, Interest rate and Inflation and two sectorial indices of NSE stock market namely CNXAUTO and CNXIT (Patel, 2012)

Literature that investigates the link between Exchange rate and Stock prices is not conclusive. There exists two major theories related to financial markets. The first approach concludes that exchange rates should lead to Stock prices (TABAK, 2006). Exchange rate fluctuations that affect the value of the firm through changes in competitiveness and changes in the firm's assets and liabilities in foreign currency, eventually affecting firm's profits and the value of equity showing a positive effect. Contrarily, changes in stock

prices may affect the movements in Exchange rate through portfolio adjustments (inflow/outflow of foreign capital) (Phylaktis & Ravazzolo, 2005). If there were a persistent upward trend in stock price, inflows of foreign capital would increase. A decrease in stock price would cause a reduction in domestic investor's wealth leading to a fall in the demand for money and lower Interest rates, causing capital outflows that would result in currency depreciation. Therefore under this approach, stock prices would lead Exchange rates with a negative correlation (Fama, 1970).

One of the major macroeconomic variable that is directly linked to economic growth is Interest rate. Interest rate is generally considered as the cost of capital, meaning the price or amount of fee paid for using others money for a certain period of time. Interest rate is the cost of borrowing money from a borrower's perspective and a fee charged for lending money from a lender's perspective. Efficient investors always look for an efficient market to invest their funds effectively. Few people would be able to make extraordinary profits in an inefficient market which leads to loss of confidence in general public. In the event of an

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increase in the interest rate, investors would like to switch their investments from stock markets to bank deposits which would lead to a decrease in the demand for shares and decrease in share prices and vice versa. On the other hand, with the increase in the interest rate, interest paid by the banks to the depositors would also increase leading to the decrease in the investments in the economy which is another reason for decrease in share prices and vice versa. We can see an inverse or negative relationship between share prices and Interest rates.

Inflation has a positive relation with stock prices. Money supply and Inflation have a dual effect on stock returns. An increase in Money supply will lead to an increase in Inflation rate which increases expected rate of return. High expected return will decrease the value of the firm and results in lower stock prices. Secondly, increase in the inflation and money supply increases future cash flows, which in turn increases expected dividend and will increase stock prices. So there arises a need to find out the relation between Inflation and Stock prices (Patel, 2012).

REVIEW OF LITERATURE

Muktadir-al-Mukit, 2012, examine the impact of interest rates and exchange rate on stock index in Dhaka. He uses monthly time series data to investigate the effect of these variables for the period 1997 to 2010. Modern econometric techniques are used to know the short and long run relationship between the variables using co-integration and Error correction model, and analysis of variance decomposition. Granger casualty test has been used to calculate the causal relationship between the variables. With the aid of co-integration technique it is noticed that in the long run, a one percent increase in interest rate and exchange rate there is a 1.71% decrease and 1.04% increase in market index correspondingly. Estimated error correction coefficient proves 7.8 % deviation of stock

returns are corrected in the short run. The existence of the unidirectional causality from market index to exchange rates and from interest rates to market index is suggested by the Granger causality analysis.

Pallegedara, 2012, examines the dynamic relationships between stock market performance and the interest rates in Sri Lanka during June 2004 to April 2011. We use all share price index in the Colombo stock exchange as a measure of stock market performance indicator and Sri Lanka interbank offer rate as a measure of interest rate. We employ some conventional time series econometric techniques namely Unit root test, cointegration test, vector auto correction model (VECM), Granger-Causality test and Impulse response functions (IRF) to trace out the relationships between stock market index and interest rate. The findings of interest include stock market performance is negatively associated with interest rate in the long run while no causal relationship is found in the short run.

Maysami, Howe, & Hamzah, 2004, have performed a cointegration analysis towards some macroeconomic variables and the stock market indices of Singapore. They study showed that Singapore's stock market form cointegrating relationships with changes of interest rate, exchange rate, industrial production, price levels and money supply both in the long-run and short-run. The same empirical results were found by Bhattacharya and Mukherjee (2001). They have performed similar test using unit-root test, cointegration and Granger causality test between the stock market index BSE Sensitive Index and exchange rate, foreign exchange reserves and value of trade balance in India. Their study showed no causal linkage between the BSD Sensitive Index, interest rate and exchange rate.

Chong and Tan (2007) applied Kwiatkowski Philips, Shmidt and Shin (KPSS)

cointegration test on the macroeconomic factors against the volatility of exchange rate on 4 countries, Malaysia, Indonesia, Thailand and Singapore. Their study showed that the macroeconomic factors which are interest rate, money supply, consumer price index, trade balance and composite indices move in the same direction with exchange rate in the long run.

Adam & Tweneboah, 2008, observes that there exists a long run co-integration relationship between the macroeconomic variables and the stock index of Ghana by using quarterly data from 1991 to 2007 using co-integration and VECM model. The Vector Error Correction Model (VECM) analysis proves that the lagged values of inflation and interest rate has influences stock prices. The exchange rate, inward foreign direct investments and the oil prices has a weak impact on the price changes.

Kyereboah-Coleman, F, & Agyire-Tettey, 2008, contrarily proved that lending rates of bank has a negative impact on the performance of stock prices in Ghana which in turn hamper growth of business.

Bekhet & Matar, 2013, examined the short run and long run symmetric relation between the macro economic variables and the stock market index in Jordan. Annual time series data of macro-economic variables (Money supply, Industrial production, Exchange rate, and discount rate) were used. Time frame of the study was from 1978 to 2010. He used the ADF, bound testing approach, CUSUM, and CUSUMQ tests to test the stationarity of data and co-integration among the variables. They found there was a long run relationship between the examined macroeconomic variables and the stock price index in Jordan.

OBJECTIVES OF THE STUDY

1. To find the short run relationship between stock prices with Macroeconomic variables namely Exchange rate, Interest rate and Inflation.

2. To study the impact of these variables on stock prices of selected sectorial Indices.
3. To compare the impact of macroeconomic variables on stock index of different sectors considered for the study.

METHODOLOGY

This study is completely based on secondary data. The data have been drawn from various sources that have been acknowledged.

Research process: To find the impact of Macroeconomic variables on stock prices of two sectorial stock index which would help the investors and traders to forecast and diversify their investments.

Scope of the study:

Automobile and IT index listed in National Stock Exchange are taken for the study.

Time frame:

Time period considered for the study is from 2009 to 2014. The study uses monthly data.

Data collection:

This study is completely based on Secondary data. Data is collected from various published sources like journals, books, websites etc.

- Data on stock prices are collected from NIFTY.
- Data on interest rates are collected from RBI.
- Data on Exchange rates are collected from RBI.
- Data on Inflation are collected from Google.

Purpose: The purpose of this paper is to examine the linkage between the macroeconomic variables on the performance of the sector based stock market indices of NSE India.

Table 1: Description of Data

Name of the Variable	Symbol Used	Proxy Used
Stock Indices	CNXAUTO, CNXIT	Closing price of CNXAUTO and CNXIT
Exchange Rate	ER	Monthly average Rupee per unit of US\$
Interest rate	IR	Weighted Average Call Money Rate
Inflation	IN	Consumer Price Index (CPI)

Table 1 points out the symbols and proxies used for Macroeconomic variables. The below model is used to analyze the effect of macroeconomic variables on performance of stock markets in India.

$$\text{CNXAUTO} = f(\text{ER}, \text{IR}, \text{IN})$$

$$\text{CNXIT} = f(\text{ER}, \text{IR}, \text{IN})$$

There can be both short and long run relation between the time series data considered for the study. To find out the short-run co-movements and multi-collinearity among the variables, Correlation coefficients are used. If correlation coefficients are greater than 0.8, it indicates the existence of multi-collinearity.

As a fundamental step of VECM (Vector Error Correction Model), ADF (Augmented Dickey Fuller) test is applied. This test is based on simple inference that non-stationary process has infinite memory as it would not show decay in a shock that may take place in the process.

The ADF test is based on the hypothesis H_0 : Variable has a Unit root. If the calculate ADF value is less than the critical value or if the probability is less than 5%, null hypothesis is rejected and vice versa. If the variables are stationery at level, then they are tested at first difference. After testing for unit root, Johansen's co-integration method will be applied to test the existence of long run equilibrium relation between the variables. Johansen's test is based on two test statistics namely trace statistics and max-eigenvalue statistics. In the trace test statistics, the null hypothesis is that the number of distinct co-integrating vectors is less than or equal to the number of co-integrating relations. The Max-Eigen value statistics tests the null hypothesis of exactly r co-integrating relations against the alternative of $r + 1$ co-integrating relations with the test statistics λ . Finally the Granger Causality test is applied to test the direction of the relation between the variables.

Data Analysis and Observation

Table 2: Correlation Matrix

	CNXAUTO	CNXIT	ER	IR	IN
CNXAUTO	1.0000	0.8887	0.6593	0.8091	-0.2705
CNXIT		1.0000	0.5791	0.6723	-0.2524
ER			1.0000	0.6464	-0.2247
IR				1.0000	-0.5801
IN					1.0000

The results of the Correlation analysis between the stock market indices and macroeconomic variables are presented in Table 2. The results indicates that Exchange rate and Interest rates are positively correlated with the stock markets

but Inflation is negatively correlated with the two sector based stock indices. There high correlations signals the existence of multicollinearity among the variables.

Table 4: Unit root test

Variables	Test Critical Values			T-Statistics calculated	Probability	H0: Variable has a Unit Root	Is it Stationary
	1%	5%	10%				
CNXAUTO	-3.546099	-2.91173	-2.593551	-1.945082	0.3099	Accept	No
Δ CNXAUTO	-3.546099	-2.91173	-2.593551	-6.232225	0.0000	Reject	Yes
CNXIT	-3.546099	-2.91173	-2.593551	-1.52215	0.5156	Accept	No
Δ CNXIT	-3.546099	-2.91173	-2.593551	-5.49624	0.0000	Reject	Yes
ER	-3.546099	-2.91173	-2.593551	0.030887	0.9573	Accept	No
Δ ER	-3.546099	-2.91173	-2.593551	-6.075249	0.0000	Reject	Yes
IR	-3.550396	-2.91354	-2.594521	-1.386786	0.5825	Accept	No
Δ IR	-3.550396	-2.91354	-2.594521	-6.820736	0.0000	Reject	Yes
IN	-3.546099	-2.91173	-2.593551	-1.659284	0.4464	Accept	No
Δ IN	-3.546099	-2.91173	-2.593551	-6.08095	0.0000	Reject	Yes

Results of the Augmented Dickey fuller test is presented in Table 4. The null hypothesis H0 is accepted for all the variables which reflects the existence of unit root among the variables. As the variables are non-stationery at level, all the

variables are tested at first difference and the H0 variables are stationery is rejected. So it was found that all the variable considered for the study are stationery at first difference, i.e. I(1).

Table 5: Johansen's Co-integration test for CNXAUTO

H0	Trace Test	5% Critical value	Max. Eigenvalue test	5% Critical value
None	52.67641	47.85613	26.13305	27.58434
At most 1	26.54335	29.79707	16.6077	21.13162
At most 2	9.935653	15.49471	9.767922	14.2646
At most 3	0.16773	3.841466	0.16773	3.841466

Table 6: Johansen's Co-integration test for CNXIT

H0	Trace Test	5% Critical value	Max. Eigenvalue test	5% Critical value
None	55.66665	47.85613	31.62472	27.58434
At most 1	24.04193	29.79707	14.31392	21.13162
At most 2	9.728016	15.49471	9.717966	14.2646
At most 3	0.010051	3.841466	0.010051	3.841466

As all the variables are integrated of the same order i.e. at first difference $I(1)$, Johansen's Co-integration model is applied to test the long run relationship between the variables. CNXAUTO and CNXIT are the dependent variables to which ER, IR and IN are the independent variables. Lag selection is made by the system. If the Trace statistics is less than critical value, we accept null hypothesis and if the Trace statistics is greater than critical value we reject H_0 . In the below case as the Trace statistics is less than critical value and also the Max Eigen value is less than the critical value there is one co-integrating equation at 5% significance level for both CNXAUTO and CNXIT.

Results of the Granger Causality test is represented in Table 7. Pair wise Granger Causality test has been performed between all possible pairs to test the direction of causality between each pair of variables. From the below table it is evidenced that Exchange rate granger cause CNXAUTO as well as CNXIT. We can see a unidirectional causal relationship running from Exchange rate to both the stock indices. We can also see a unidirectional causal relation between CNXIT and inflation running from CNXIT to Inflation and Interest rate and Inflation running from IR to IN.

Table 7: Grangers Causality

Null Hypothesis:	F-Statistic	Prob.	Decision
ER does not Granger Cause CNXAUTO	5.12857	0.0092	Reject
CNXAUTO does not Granger Cause ER	1.92613	0.1558	Accept
IR does not Granger Cause CNXAUTO	2.28868	0.1113	Accept
CNXAUTO does not Granger Cause IR	2.0587	0.1377	Accept
IN does not Granger Cause CNXAUTO	1.90032	0.1596	Accept
CNXAUTO does not Granger Cause IN	2.74576	0.0733	Accept
ER does not Granger Cause CNXIT	4.71646	0.013	Reject
CNXIT does not Granger Cause ER	0.70989	0.4963	Accept
IR does not Granger Cause CNXIT	0.13406	0.8748	Accept
CNXIT does not Granger Cause IR	0.51766	0.5989	Accept
IN does not Granger Cause CNXIT	0.16878	0.8452	Accept
CNXIT does not Granger Cause IN	3.43154	0.0397	Reject
IR does not Granger Cause ER	1.31661	0.2767	Accept
ER does not Granger Cause IR	0.22258	0.8012	Accept
IN does not Granger Cause ER	2.02586	0.142	Accept
ER does not Granger Cause IN	1.63144	0.2053	Accept
IN does not Granger Cause IR	0.06877	0.9336	Accept
IR does not Granger Cause IN	4.01048	0.0239	Reject

FINDINGS AND CONCLUSION

This research work tested the effect of Macroeconomic variables on the performance of the sector based stock indices by taking monthly data for the period 2009 to 2014. From the above analysis the following results can be interpreted: At First CNXAUTO, CNXIT, ER, IR and IN are integrated at the same order and are stationery at first difference. Second, there exists a long run relationship between the dependent variables and the independent variables considered for the study. Third, it is evidenced that there exists a unidirectional causal relationship between some variables running from Exchange rate to CNXAUTO, Exchange rate to CNXIT, CNXIT to Inflation and finally from Interest rate to Inflation. So a change in Exchange rate causes a change in the stock prices but not vice versa as in the first example.

From the findings of the study has some important policy implications. At first it is evident that exchange rate incorporates some significant data in forecasting stock prices and its performance. This helps the Reserve bank of the country in controlling and maintaining a healthy Exchange rate. Inflation and money supply plays a very important role in the functioning of the stock markets. By controlling the Repo rates and the Reverse Repo rates, the controlling body will help the country in controlling Inflation. The central bank of the country should also control the Interest rates in order to maintain the flow of money from one type of investment to another which would help in stabilization, effective working and development of the economy.

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AN ASSESSMENT OF UNDERGRADUATE ENGINEERING STUDENTS SATISFACTION USING 5C TQM MODEL (WITH SPECIAL REFERENCE TO KARNATAKA)

Anitha G H*

Abstract:

Institutes offering engineering educations are increasing at a very fast rate to meet the ever increasing global demand for engineering graduates. A significant raise in the enrolment level of engineering institute is seen since the year 2006. The AICTE report (2013) on the growth of students' intake stresses on over three times increase in the last seven years. It is a matter of greatest concern for all stakeholders whether education provided by these engineering institutes is of a quality that is acceptable to the industry and whether the graduate engineers have acquired the necessity skill set to be employable in the job market. There are reports of graduate engineers struggling for the employment in the global workforce market. Hence there is an urgent need for addressing the issue of quality in higher education. The NASSCOM (National Association of Software and Services Companies) in its perspective 2020 report (2008) stressed on the four major challenges such as employability, infrastructure, favorable policies, and competition from other low cost countries. "There is a strong correlation between a country's competitiveness and quality of higher education provided within the country" says Borahan and Ziarati (2002).

Key Word: Economic Development, Commitment, Course delivery, Campus facilities, Customer feedback

INTRODUCTION

Institutes offering engineering educations are increasing at a very fast rate to meet the ever increasing global demand for engineering graduates. A significant raise in the enrolment level of engineering institute is seen since the year 2006. The AICTE report (2013) on the growth of students' intake stresses on over three times increase in the last seven years. It is a matter of greatest concern for all stakeholders whether education provided by these engineering institutes is of a quality that is acceptable to the industry and whether the graduate engineers have acquired the necessity skill set to be employable in the job market. There are reports of graduate engineers struggling for the employment in the global workforce market. Hence there is an urgent need for addressing the issue of quality in higher education.

The NASSCOM (National Association of Software and Services Companies) in its

perspective 2020 report (2008) stressed on the four major challenges such as employability, infrastructure, favorable policies, and competition from other low cost countries. "There is a strong correlation between a country's competitiveness and quality of higher education provided within the country" says Borahan and Ziarati (2002).

LITERATURE SURVEY

Research studies undertaken in the disciplines of Quality management and service quality by researcher and practitioners have brought out several conceptual and empirical findings and frameworks on total quality in the context of educational institutions with the aim of improving their quality standards.

Sakthivel et al (2005), conceptualized five TQM variables such as the commitment of top management, course delivery, campus facilities, courtesy and customer feedback and improvement and developed a 5-C TQM model

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of academic excellence in the technical institutions of India. According to Telford and Messon, (2005) course design, course marketing, students recruitment, induction, course delivery, course content, assessment monitoring, miscellaneous and tangibles are considered as variable for an framework of quality values in higher education.

Sohail and Shaikh, (2004) identified six factors, such as contact with personal, physical environment and reputations and responsiveness, excess of facilities and curriculum, which contributed to their expectations towards quality business educations while exploring Students expectations of quality in Business Education.

Sahney et al (2004), asserted that TQM is all in fussed covering the various aspects (ex: Quality of inputs in the form of students, faculty, staff and infrastructure) of academic life. Jenssen et al (2002), affirmed the role of students satisfactions approaches that could prove to be a tool for bridging traditional and academic views on how to improve higher education. Mergen et al (2000), proposed a three components model of Quality Management; quality of design (QD), Quality of Conformance (QC) and Quality of Performance (QP) to identify the opportunities for improvement in research, teaching and operations.

Literature on the five constructs

Commitment of Top Management: Rodgers et al,(1993), say that strong commitment of top management is the key any successful program implementation. According to Daellenbach et al,(1999),a firm's commitment to innovation is strongly influenced by the top management team. According to Sakthivel, (2007), top management commitment and leadership is an important factor for overall engineering education excellence. Chowdhury et al,(2007), say that high top management commitment drives the other TQM factors. Brah et al, (2000), say that successful implementation of

TQM lies with a strong top management support.

Course Delivery: McFarland et al, (2005), in their research have discussed on traditional and online course delivery methods and studied the impact of this method on student's satisfaction. The study also suggested possible ways to increase student's performance and satisfaction. Manson et al,(2000), suggests that the quality of printed course materials enhance the approach of students. Drennan et al,(2005), discussed the use of flexible web based learning material would improve the students satisfaction with the course. Carey, (2001), discussed the relationship between the course delivery mode and the course outcomes. Lim et al (2008), investigated the effects of different methods of instructional delivery on student achievement and satisfaction levels.

Campus Facilities: Altbach, (1998),in his book on comparative higher education: Knowledge, the University, the development, discussed about campus working conditions and impressive academic infrastructures will aid in the establishment of an independent academic culture. Thomas et,al,(2004), discussed about the services and facilities provided within the campus and its effects on students satisfaction. Jauch et,al,(1997),discussed the application of total quality management for improving the campus facilities. Oshagbemi, (1997), discussed that "beautiful campus" was a stimulating factor for job satisfaction. Tolley, (1996), discussed the concept of "Green Campus".

Courtesy: Lagrosen et,al,(2004),identified courtesy as on of the dimensions of quality in higher education. Owlia et,(1996),say that a positive and warm attitude from lectures towards students is an important factor for student performance and satisfaction. Hill, (1995), discussed responsiveness, reliability and courtesy of the service providers as important in measuring service quality in higher education. Chua, (2004), identified

concern for students as one of the quality attributes of higher education. Clewes, (2003), discussed about the knowledge and courtesy of employees in his students centered conceptual model of service quality in higher education.

Customer Feedback and Improvement: Fundin, et al.(2003),say that gathering available information and feedback from customers will help the organization to meet present and future customer expectations. Rowley,(1996),discussed about quality measurement and continuous quality improvement in measuring quality in higher education. O'Neill et al,(2004),developed a tool for continuous quality improvement higher education. Continuous quality improvements can be enhanced through the study of students' perceptions of quality using importance-performance analysis.

RESEARCH METHODOLOGY

Statement of the problem

It is a matter of greatest concern for all stakeholders whether education provided by these engineering institutes is of a quality that is acceptable to the industry and whether the graduate engineers have acquired the necessity skill set to be employable in the job market. There are reports of graduate engineers struggling for the employment in the global workforce market. Hence there is an urgent need for addressing the issue of quality in higher education. Hence there is a need to make an assessment of student satisfaction of all undergraduate engineering students in Karnataka.

RESEARCH OBJECTIVES

1. To determine the influence of five constructs of TQM on students satisfaction.
2. Comparing the students satisfaction between Rural and Urban Institutes.

3. Comparing the satisfaction between male and female students.

METHODOLOGY:

Research methodology includes the methods used by the researcher for collecting information and data of the study. Knowledge about the systematic way in which a research is conducted is essential for scientific analysis and interpretation of the data as the success of the research depends on the methodology used by the researcher.

With the view of improving the quality of education in engineering colleges a TQM model of academic excellence was used to assess the satisfaction of students. This research used a standard questionnaire based on the five constructs in the TQM model of academic excellence which are commitment of top management, course delivery, campus facilities, courtesy and customer feedback and improvement. Based on the model these constructs are the indicators of students satisfaction. Primary data will be collected from the sample students of engineering colleges of Bangalore region which are affiliated to VTU. Convenience sampling method will be used in this survey for analyzing the data through statistical package for social sciences (SPSS) is used.

Total Quality Management Model of Academic Excellence:

Researchers Sakthiven et al (2005) developed the 5-C TQM model of academic excellence. The model establishes a link between the five TQM variables the commitment of top management, course delivery, campus facility, and courtesy and customer feedback and improvement and students satisfactions of academic performance.

Sampling Design:

Sample unit:

All final year students of engineering institutes of Bangalore region, which were started in or after the year 2001 and affiliated to VTU constituted and defined population for this study.

Sample size :

For finding the sample size an online statistical sample size calculator (www.mccallum-layton.co.uk) will be used with an aim to test the results at the 95% confidence level and a n acceptable margin of error of $\pm 5\%$.

The online sample size calculator showed required sample size of 377 for the study. Online survey tool was used (www.kwiksurveys.com) and the questionnaire link was emailed to the sample respondents. A total of 380 questionnaires were found complete in all aspects and valid for the analysis. Out of 380 respondents 219 were male respondents and 161 were female respondents. 183 respondents were from Bangalore rural engineering institutes and 197 respondents were from Bangalore urban engineering institutes. Among the 380 respondents, 53 respondents were from the age group of 19-20 years and 327 respondents were from the age group of 21-22 years.

Sampling Type

Population sampling is the process of taking a subset of subjects that is representative of the entire population. The sampling type selected for the study is non probabilistic convenience sampling. The institutes and respondents will be selected through non probabilistic convenience sampling techniques. Non-probability sampling is a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected. Convenience sampling is a non-probability sampling technique where subjects are selected

because of their convenient accessibility and proximity to the researcher.

Data Collection

Primary data:

Questionnaire will be used to obtain the quantitative data needed. The questionnaire will be focused on

- i) Measurement of student satisfaction against the 5 TQM constructs which have been adapted from Shaktivel et al., (2005). Five point Likert scale will be used which is the common rating format for the survey.
- ii) The importance of 5-C constructs to students and
- iii) Demographic questions covering the respondent's gender, region and age.

Secondary data:

Secondary data will be collected from educational website, AICTE, UGC, journals, magazines and reports etc.

HYPOTHESIS BUILDING

The following hypotheses have been tentatively formulated for the purpose of study:

Hypothesis 1

Ho 1: Null Hypothesis

Ho : Commitment of top management has no significant influence on students' satisfaction

Ha 1: Alternate Hypothesis

Ha : Commitment of top management has a significant influence on students satisfaction.

Hypothesis 2

Ho 2: Null Hypothesis

Ho: Course delivery has no significant influence on students satisfaction.

Ha 2: Alternate Hypothesis

Ha : Course delivery has a significant influence on students satisfaction.

Hypothesis 3

H₀ 3: Null Hypothesis

Ho : Campus facilities have no significant influence on students satisfaction.

Ha 3: Alternate Hypothesis

Ha : Campus facilities have a significant influence on students satisfaction.

Hypothesis 4

Ho 4: Null Hypothesis

Ho : Courtesy has no significant influence on students satisfaction.

Ha 4: Alternate Hypothesis

Ha : Courtesy has a significant influence on students satisfaction.

Hypothesis 5

Ho 5: Null Hypothesis

Ho : Customer feedback and improvement has no significant influence on students satisfaction.

Ha 5: Alternate Hypothesis

Ha : Customer feedback and improvement has a significant influence on students satisfaction.

Hypothesis 6

Ho 6: Null Hypothesis

Ho : There is no significant difference in

students satisfaction between rural and urban engineering students.

Ha 6: Alternate Hypothesis

Ha : There is a significant difference in students satisfaction between rural and urban engineering institutes.

DATA ANALYSIS

This research used quantitative data and quantitative analysis have been carried out using the Statistical Package for social Sciences (SPSS) software version 2.0. The study also tested the reliability of the survey instrument so that valid results are obtained. For this the Cronbach's Alpha (Nunnally, 1978) has been used. Descriptive statistics like mean and standard deviation have been used for the analyses. To test the hypotheses paired t-tests and Mannwhitney tests are used

RESULTS AND ANALYSIS

Descriptive statistics

A total of 380 questionnaires were found complete in all aspects and valid for analysis. Out of 380 respondents 219 were male respondents and 161 were female respondents. 183 respondents were from Bangalore rural engineering institutes and 197 respondents were from Bangalore urban engineering institutes. Among the 380 respondents, 53 respondents were from the age group of 19-20 years and 327 respondents were from the age group of 21-22 years.

Hypothesis I

Ho : Commitment of top management has no significant influence on students satisfaction

Ha : Commitment of top management has significant influence on students satisfaction

Paired samples t-test: commitment of top management students satisfaction.

		Paired Differences				T test	df	Sig(2tailed)
	Mean	Std Deviation	Std Error Mean	95% confidence Interval of the difference				
				Lower	Upper			
Commitment of top management students satisfaction	.5088	.47832	.02454	.00263	.09912	2.073	379	.039**

Hypothesis 2

Ho : Course delivery has no significant influence on students satisfaction.

Ha : Course delivery has a significant influence on students satisfaction.

		Paired Differences				T test	df	Sig(2tailed)
	Mean	Std Deviation	Std Error Mean	95% confidence Interval of the difference				
				Lower	Upper			
Course delivery-student satisfaction	.04561	.44360	.02276	.09036	.00087	2.004	379	.046**

Hypothesis 3

Ho: campus facilities have no significant influence on students satisfaction.

Ha: campus facilities have a significant influence on students satisfaction.

		Paired Differences				T test	df	Sig(2tailed)
	Mean	Std Deviation	Std Error Mean	95% confidence Interval of the difference				
				Lower	Upper			
Campus facility - student satisfaction	.06667	.51165	.02625	.11827	.01506	2.540	379	.011**

The above table shows the results of paired sample T test between campus facilities and students satisfaction. The significance(2-tailed) value is $0.011 < (p=0.05)$. Hence Ha is accepted .hence it is concluded that there is a significant influence of campus facilities on students satisfaction.

Hypothesis 4

Ho: Courtesy has no significant influence on students satisfaction.

Ha: Courtesy has a significant influence on students satisfaction.

Paired sample t-test Courtesy -Students satisfaction.

		Paired Differences				T test	df	Sig(2tailed)
	Mean	Std Deviation	Std Error Mean	95% confidence Interval of the difference				
				Lower	Upper			
Coutesy -- students satisfaction	.09430	0.39596	0.02031	0.5436	0.13424	4.642	379	0.000**

The above table shows the results of a paired sample t-test between courtesy and students satisfaction. The significance (2-tailed) value is $0.000 < (p=0.01)$. Hence H_a is accepted. Hence it is concluded that there is a significant influence of courtesy on students satisfaction.

Hypothesis 5

H_o : Customer feedback and improvement has no significant influence on students satisfaction.

H_a : Customer feedback and improvement has a significant influence on students satisfaction.

Paired samples t-test : Customer feedback and improvement ---- Students satisfaction

		Paired Differences				T test	df	Sig(2tailed)
	Mean	Std Deviation	Std Error Mean	95% confidence Interval of the difference				
				Lower	Upper			
Customer feedback & improvement	.03289	0.39777	0.02041	- 0.07302	0.00723	1.612	379	.108**

The above table shows the results of paired sample T test between customer feedback and improvement and students satisfaction. The significance (2-tailed) value is $0.108 > (p=0.05)$. Hence it is concluded that there is no significant influence of customer feedback and improvement on student satisfaction.

Hypothesis 6

H_o : There is no significant difference in students satisfaction between rural and urban engineering institutes..

H_a : There is significant difference in students satisfaction between rural and urban engineering institutes

Mann-Whitney Test: Comparison of satisfaction between rural & urban regions.

	Students satisfaction
Mann-Whitney U	17837.500
Wilcoxon W	37340.500
Z	-176
Asymp.Sig(2-tailed)	0.860**

The above table shows the results of Mann-Whitney test for comparison of satisfaction between regions. The significance (2-tailed) value is $0.860 > (p=0.05)$. Hence H_0 is accepted. Hence it is concluded that there is no significant difference in students satisfaction between rural and urban institutes.

Hypothesis 7

H_0 : There is no significant difference in students satisfaction between male and female students.

H_a : There is significant difference in students satisfaction between male and female students

Mann-Whitney Test: Comparison of satisfaction between genders

	Students satisfaction
Mann-Whitney U	17457.000
Wilcoxon W	41547.000
Z	-163
Asymp.Sig(2-tailed)	0.870**

The above table shows the results of Mann-Whitney test for comparison of satisfaction between genders. The significance (2-tailed) value is $0.870 > (p=0.05)$. Hence H_0 is accepted. Hence it is concluded that there is no significant difference in students satisfaction between male and female students.

CONCLUSIONS

The aim of the study was to find the impact of the indicators of TQM on the students satisfaction of higher Engineering institutes. The goal of TQM in higher education is imparting quality education to students to ensure their satisfaction with the institute and to imparting quality education to students to ensure their satisfaction with the institute and to improve the academic performance.

The present study indicates that of the five factors of TQM "course delivery" & campus faculties" are most important to students. Hence efforts to continuous improvements in these areas would help the institutes attain greater students satisfaction. Students satisfaction surveys could serve two purposes, first being a robust tool for improving higher education quality by enhancing skill and knowledge of students and second, as a managerial instrument to the higher education institutions to adjust and adapt to the changing and tougher economic reality (Wiers-enssen et al 2002). The study also concluded that there was no significant difference in the satisfaction of students between the rural engineering institutes and urban engineering institutes. Also it was found that there was no significant difference in the

satisfaction between male students and female students. Commitment of top management being the most important factor affecting TQM implementation was seen to have a significant influence on students satisfaction. Waller and Ahire (1996), Course delivery, Campus facilities

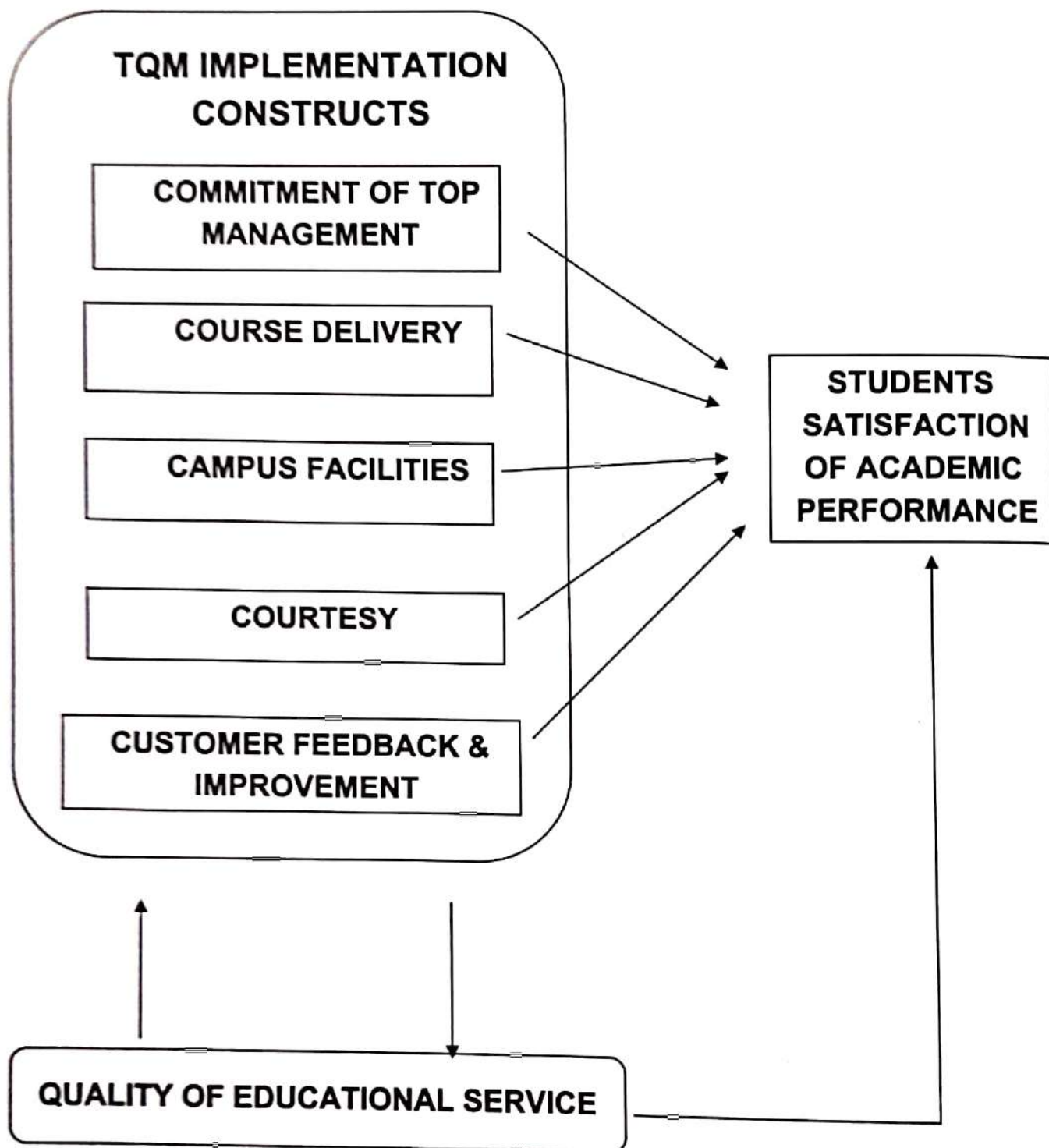
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ANNEXURE 1

5C TQM MODEL OF ACADEMIC EXCELLENCE



SOURCE: SAKTHIVEL et al,2005

ANNEXURE 2

NO OF STUDENTS INTAKE IN THE LAST 6 YEARS

YEAR	ENGG	MGMT	MCA	PHARM	ARCH	HMCT	TOTAL	ADDED IN THE YEAR
2006-07	550986	94704	56805	39517	4543	4242	750797	73566
2007-08	653290	121867	70513	52334	4543	5275	907822	157025
2008-09	841018	149555	73995	64211	4543	5794	1139116	231294
2009-10	1071896	179561	78293	68537	4133	6387	1408807	269691
2010-11	1314594	277811	872016	98746	4991	7393	1790751	381944
2011-12	1485894	352571	9222016	102746	5491	7693	2046611	255860
2012-13	1761976	385008	100700	121652	5996	8401	2236743	190132

SOURCE : AICTE REPORT,2013

ANNEXURE 3

TABLE : ENGINEERING COLLEGES IN KARNATAKA

UNDER VISVESVARAYA TECHNOLOGICAL UNIVERSITY – BELGAUM

REGION	RURAL	URBAN	TOTAL
BANGALORE REGION	14	87	101
BELGAUM REGION	14	17	31
GULBARGA REGION	4	13	17
MYSORE REGION	11	41	52

SOURCE : www.vtu.ac.in

ANNEXURE 4**TABLE : NUMBER OF ENGINEERING COLLEGES IN INDIA**

STATES	NUMBER OF ENGINEERING COLLEGES
Andhra Pradesh	681
Tamil Nadu	454
Maharashtra	385
Uttar Pradesh	344
Madhya Pradesh	226
Karnataka	207
Haryana	166
Rajasthan	141
Kerala	133
Gujarat	117
Punjab	115
Orissa	102
West Bengal	90
Chhattisgarh	60
Uttarakhand	38
Himachal Pradesh	21
Jharkhand	19
Bihar	16
Pondicherry	15
Assam	12
Jammu and Kashmir	7
Chandigarh	6
Goa	4
Sikkim	4
Tripura	4
Delhi	3
Arunachal Pradesh	2
Manipur	2
Meghalaya	2
Mizoram	2
Nagaland	2

SOURCE : AICTE Report 2013



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