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University of Hyderabad Campus  
Central University Post Office  
Hyderabad 500046, India  
Tel : 91-40-64543774/5226  
E-mail : amdisa@amdisa.org  
Website : www.amdisa.org

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# Determinant of Profitability in Indian Cement Industry: An Economic Analysis

Sanjay J Bhayani\*

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*Efficiency of any organization can be judge through its profitability. Profitability of the firm is highly influenced by internal and external variables, i.e., size of organizations, liquidity management, growth of organizations, component of costs and inflation rate. In the present paper an attempt has been made to identify which variable are judging the profitability of Indian Cement Industry. The study covers the all listed cement firms working in India for the period of 2001 to 2008. To determinant profitability backward regression analysis were used on the variables of the study. The result of the study shows that liquidity, age of the firm, operating profit ratio, interest rate and inflation rate has played a vital role in the determination of the profitability of Indian Cement Industry.*

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## INTRODUCTION

The capitalist firm being one of the prime economic institutions of a modern economy, analysis of its profitability assumes immense significance. Analysis of the determinants of firm's profitability is of utmost importance to all stakeholders of a firm, especially to its common equity investors. Though a firm's profitability determinant by the internal and external variables. In this study, we remain confined to the determinant the profitability of the large firm engaged in the Indian Cement Sector. From corporate finance literature the identified factors are: Growth in size, growth in sales, operating profit ratio, leverage liquidity, receivables turnover,

fixed assets turnover, age, interest rates and inflation rate. We will examine how a set of predictor variables that reflect operating characteristics of firms and strategic decisions of firm managers affects multiple measures of profitability of firms. The other important objective of the study is to measure quantitatively the impact of selected number of factors on profitability of Indian Cement Industry. The period of the study spans across the decade of the 2000s from 2000-01 to 2007-08, which will be divided into two sub-periods.

## LITERATURE REVIEW

Modern literature in industrial economics suggests two schools of thought explaining

\* Associate Professor, Department of Business Management (M.B.A. Programme), Saurashtra University, Rajkot 360005, Gujarat, India. E-mail: sanjaybhayani@yahoo.com

performance in terms of profitability: the structure-conduct-performance (SCP) and firm effect models. See Schmalensee (1989) and Mauri and Michaels (1998) for a discussion. In short, the SCP model argues that an exogenously given market structure determines firm behavior and profitability, whereas in firm effect models market structure is endogenous and the result of firm characteristics.

The SCP model is embedded in neoclassical theory and based on the notion of a representative firm. Any differences between firms are either transitory or not important, implying that profitability is determined by common structural characteristics of the industry. Bain (1951) proposes the market structure as the principal explanation of firm and industry profitability arguing that the average profitability of firms in highly concentrated industries is higher than in less concentrated industries. The underlying assumption is that concentration facilitates collusion and that colluding firms raise price above competitive levels. As pointed out by Bain (1956), barriers to entry, such as economies of scale or capital requirements, prevent high profits to be eroded by the entry of new firms into the market.

In firm effect models on the other hand, the fundamental assumption is that heterogeneity in profitability is due to persistent differences across firms. Within this school of thought, Demsetz (1973) introduces the superior firm hypothesis stating that firms differ with respect to their level of productivity and that these interfirm differences are the major factor behind profit heterogeneity. The logic

behind it is that firms operating at relatively higher productivity levels have competitive advantages over less productive competitors which are reflected in their profitability.

Another crucial argument in firm effect models is the persistence of differences across firms. With respect to productivity, this can be related to theoretical models, such as Jovanovic (1982) and Lambson (1991), where (despite the absence of barriers to entry) some firms are consistently more productive than others and firms with low productivity do not catch up with the leaders. Bartelsman and Doms (2000) provide evidence on this issue for a wide range of industries. Following this logic, this class of models relates profit heterogeneity not only to productivity differences but explicitly to persistent productivity differences.

From an empirical point of view, the above two schools of thought are not mutually exclusive. At its very essence, the SCP model excludes the influence of firm-level variables on profitability, whereas in firm effect models industry and firm effects can co-exist. In fact, there is consensus in the literature that both the SCP and firm effect models are plausible, implying that industry and firm effects are empirically relevant. McGahan and Porter (2002) and Slade (2004) comprehensively survey the empirical literature. However, there is ongoing debate about the relative importance of these two effects.

The relative contribution of industry and firm effects is important because the two models have contradictory implications for welfare. The SCP model

interprets the existence of persistent profit differences (across industries) as evidence of market failure implying sub-optimal social welfare. In firm effect models, high firm profitability is not necessarily associated with welfare losses. The reason is that markets function competitively and prices equal marginal costs. High profitability coincides with high industry concentration but is not necessarily caused by it.

In view of the assertions above, the question of whether firm or industry effects determine profitability has far-reaching implications for the design and implementation of competition policy. In the SCP model, a situation of persistent profit differences is not consistent with competition prevailing in the market, whereas in firm effect models, some firms can persistently perform better than others without a reduced degree of competition.

Detailed review of financial management literature reveals various researches have identified use of industry benchmarks is widespread in practice, the majority of academic research on the mean reversion of profitability measures implicitly assumes an economy-wide benchmark by pooling over the entire cross-section of firms (e.g., Brooks and Buckmaster, 1976; Freeman *et al.*, 1982; Penman, 1991; Lipe and Kormendi, 1994; Fama and French, 2000; and Nissim and Penman, 2001). These papers are based on the notion that Stigler (1963) espouses, "There is no more important proposition in economic theory than that, under competition, the rate of return on investment tends toward equality in all industries." Kakani *et al.* (2001) study

attempted to provide an empirical validation of the widely held existing theories on the determinants of firm performance in the Indian context.

On other hand few studied have identified and tested a number of factors affecting the profitability of business enterprises. Notable among them are Baker (1973), Phillips (1976), Rumelt (1982), Paul (1985), Brahmaiah (1991), Schwalback (1991), Kaur (1997), Sahu (2000), Vijayakumar and Kadirvrlu (2003), Raman and Dangwal (2003), Bhayani (2004 and 2006) and Mishra and Mishra (2006).

Most prior studies were built on western data. Very rare research was done in India and specifically on Cement Industry. Thus, this study will add to our understanding of the extent to which the result in Indian Cement Industry will be similar to past studies.

The remainder of this paper is organized as follows. Next section explains the data and methodology of the study. Empirical finding have been explain in the third sections. Final section explains conclusion, implications of the study and future scope of research.

## DATA AND RESEARCH METHODOLOGY

The study is based primarily on the data collected from CMIE (Centre for Monitoring Indian Economy)—PROWESS data base. The data used in the study relates to those cement companies listed on the Bombay Stock Exchange (BSE) for which the data is available in the PROWESS. The period



of study is from 2001 to 2008. However, for the sake of simplicity financial year 2000-01 henceforth be referred to 2001 and financial year 2007-08 will accordingly be referred to as 2008.

To construct the sample, all cement manufacturing firms in PROWESS (about 159 firms) were taken into consideration. The, public sector firms were excluded as their policies are highly influenced by so many political and social factors. Then further those firms are not listed in BSE was eliminated and then 59 firms were left. The analysis was further restricted to firms that have no missing data with respect to sales for the period of the study (i.e., central idea is to take those companies which have continued to exist throughout the period of study and financial information available in the database.) The final sample of this research study thus, consists of 28 cement firms (see Annexure) with 2,240 annual firm-year observations from 2001 to 2008.

### MODEL FORMULATION

In the present study backward linear multiple regression analysis has been used to identify the significant determinants of profitability. For the purpose of analyzing the effect of selected exogenous variables on the profitability, the following regression equation was developed:

$$\begin{aligned}
 Profitability_{i,t} = & \beta_0 + \beta_1 FAT_{i,t} \\
 & + \beta_2(OPR)_{i,t} + \beta_3(LR)_{i,t} \\
 & + \beta_4(AGE)_{i,t} + \beta_5(RT)_{i,t} \\
 & + \beta_6(GIS)_{i,t} + \beta_7(TA)_{i,t} \\
 & + \beta_8(DER)_{i,t} + \beta_9(INT)_{i,t} \\
 & + \beta_{10}(INF)v + \varepsilon_{i,t}
 \end{aligned}$$

where,

$Profitability_{i,t}$  = Return on Capital Employed of the firm  $i$  at time  $t$  (the dependent variable)

$FAT_{i,t}$  = Fixed Assets Turnover Ratio of the firm  $i$  at time  $t$ ,

$OPR_{i,t}$  = Operating Profit Ratio of the firm  $i$  at time  $t$ ,

$LR_{i,t}$  = Liquidity Ratio of the firm  $i$  at time  $t$ ,

$AGE_{i,t}$  = Age of Firm of the firm  $i$  at time  $t$ ,

$RT_{i,t}$  = Receivables Turnover Ratio of the firm  $i$  at time  $t$ ,

$GIS_{i,t}$  = Growth in Sales of the firm  $i$  at time  $t$ ,

$TA_{i,t}$  = Total Assets of the firm  $i$  at time  $t$ ,

$DER_{i,t}$  = Debt Equity Ratio of the firm  $i$  at time  $t$ ,

$INT_{i,t}$  = Interest Rate of the firm  $i$  at time  $t$ ,

$INF_{i,t}$  = Inflation Rate of the firm  $i$  at time  $t$ ,

$\varepsilon_{i,t}$  = the error term

$\beta_0, \beta_1, \dots, \beta_{10}$  régression coefficient.

In the backward linear multiple regression analysis, firstly all the selected explanatory variables regressed together in pooled data. Further to investigate influencing factors on profitability entire data set divided into two sub parts. First part covers study period of 2001 to 2004

data and second parts covers study period of 2005 to 2008. In the subsequent steps the explanatory variables are eliminated from the regression equation in order of their insignificance, i.e., the most insignificant variable being eliminated from the regression equation first and so on. In the final equation only those explanatory variables are left which have a significant influence on the dependent variable.

The statistical significance of the regression coefficient has been tested by applying students *t*-test distribution. The coefficient of determination ( $R^2$ ) has been computed to determine the percentage variation in the dependent variable explained by the independent variables. The *F*-value with *F*-distribution at 1, 5 and 10% levels of significance has also been used to strengthen the conclusion drawn from the analysis. Further, to study the multi-colinearity problem between dependent variables, the correlation analysis has been worked out.

## VARIABLES OF STUDY AND DEVELOPMENT OF HYPOTHESIS

As stated earlier, the independent variables (factors) were selected on the basis of their significance in existing theory and relevant past empirical studies. A total number of 10 independent variables were considered for the study. The importance of these variables could be as follows:

### GROWTH IN SIZE

Size is expected to be an important determinant of firm performance. Size can

have a positive effect on firm performance, since larger firms can leverage their size to obtain better deals in financial as well as product or other factor markets (Mathur and Kenyon, 1998). This variable may be important if economies of scale operate. Size as measured refers to total assets employed in the business. Growth in size is expected to reflect the direction of change in operating efficiency. In the present study natural logarithm of total assets of the firm has been used as independent variable. Thus, from this theoretical background, the researcher advances the following hypothesis.

*Hypothesis 1: Growth in firm size positively affects profitability.*

### GROWTH IN VOLUME OF BUSINESS

Growth in volume of business represents the changes similar to capacity utilization in a manufacturing enterprise. Growth in volume of business is likely to generate more revenue and hence a direct bearing on profitability of the organization. A review of empirical literature (Dess and Robinson, 1984) shows that the most used measures for growth have been compounded annual growth rate of sales and total assets. Hence, we use Compounded Annual Growth Rate of Total Sales (CAGRTS) as our growth measures. Thus, from the above reviews and discussion, the researcher proposes the following hypothesis.

*Hypothesis 2: Growth in volume of business positively affects profitability.*

### OPERATING PROFIT RATIO

Operating profit ratio being the ratio of operating profit to business income is certainly one of the significant explanatory variables to explore the financial efficiency of an organization. In order to test this general notion, the researcher postulates the following hypothesis.

*Hypothesis 3: Operating profit ratio positively affects profitability.*

### LEVERAGE

Capital structure of a firm is an important determinant influencing firm performance (Kakani and Reddy, 1996). Leverage reduces the financial costs since interest is tax deductible expense. Hence, post tax interest rate is less than the cost of equity. Leverage may thus have an impact on profitability, i.e., high leverage companies may yield higher profits than low leverage companies. The measures leverage includes long-terms loans to capital employed.

From the above reviews, the researcher concludes that most of the studies support the general notion that lower debt level decreases the risk of solvency with increases of profitability to a firm. In this study, debt ratio is defined as total debt by total assets. In order to test this, the researcher postulates the following hypothesis. Looking to above literature findings researcher has developed following hypothesis.

*Hypothesis 4: Debt ratio positively affects profitability.*

### LIQUIDITY

It refers to the ability of a firm to meet its short-term obligations. If a company maintains excess liquidity, it would result in low profitability since that extra funds held up in liquid assets become idle investments. For present research researcher has developed following hypothesis.

*Hypothesis 5: Liquidity negatively affects profitability.*

### RECEIVABLES TURNOVER

It indicates the speed with which receivable are being converted into cash. Higher the turnover of receivables, the better is the trade credit management and hence more profitability. The following hypothesis tested in the present research.

*Hypothesis 6: Receivable turnover positively affects profitability.*

### FIXED ASSETS TURNOVER

It shows the relationship between the amount invested in fixed assets and the results accruing in terms of sales revenue. It is expected that an increase in fixed assets turnover would result in increase in profitability. To validate this following hypothesis tested in the present research.

*Hypothesis 7: Fixed assets turnover positively affects profitability.*

### AGE

Several earlier studies (Batra, 1999, Lumpkin and Dess, 1999) argued that firm age has an influence on its performance. Sorensen and Stuart (1999) argued that organizational inertia operating in old firms

tend to make them inflexible and unable to appreciate changes in the environment. Age of enterprise indicates the experience and expertise gained over the years supposed to streamline the operating policies and should help in better management of the enterprise on prudent line. Year of incorporation of the firm was taken as year when it began operations. We deducted that from the year 2008 to get its age. Thus, according to this literature and in order to verify the same results for the Indian firms, the researcher postulates the following hypothesis.

*Hypothesis 8: Firm age positively affects profitability.*

#### INTEREST RATES

Interest is the important component of cost in manufacturing firm. Higher the interest burden lowers the profitability of the firm. In the present study it is calculated total interest paid by the firm divided by firm borrowings.

Thus, according to this, the researcher postulates the following hypothesis.

*Hypothesis 9: Interest rates negatively affects profitability.*

#### INFLATION

Developing economy faces the problems of the inflations. Demand of the manufacturing sectors is highly influenced by the inflation rate, which in turn affect the profitability of the firm. The inflation rate data collected from the Reserve Bank of India websites. The present study follows the following hypothesis.

*Hypothesis 10: Inflation rates negatively affects profitability.*

#### EMPIRICAL FINDINGS

Table 1 provides descriptive statistics for the key variables. Liquidity ratio, fixed assets turnover and operating profit have minimum deviations. While size of the assets is highly deviated.

Before selecting the independent variables for the regression model, it is decided to test whether there exist high

**Table 1: Descriptive Statistics**

Variables	N	Mean	Std. Deviation	Minimum	Maximum
GIS	214	23.506	77.247	-73.36	10,10.71
ROCE	223	2.810	20.785	-137.20	56.67
ASSETS	224	1,326.241	2,022.420	9.72	14,141.59
LR	223	1.347	0.642	0.22	4.25
DER	224	1.783	9.268	-16.64	130.98
RT	224	9.067	7.773	0.98	62.59
FAT	224	0.808	0.333	0.04	2.09
OPR	224	0.170	0.123	-0.54	0.54
AGE	216	3.558	0.610	1.61	4.49
INT	222	9.501	5.423	0.24	35.20
INF	224	4.869	1.704	3.02	7.69

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degree of correlation between independent variables, i.e., multicollinearity problem. The existence of high degree of correlation implies the independence of the set of variables upon each other in such a way that changes in the one are on sympathy which changes in the other.

For correlation between the independent variables were calculated and presented in Table 2. From the correlation matrix, it is evident that there is no high degree of correlation among any independent variables. So, backward regression analysis with 10 independent variables namely fixed assets turnover ratio ( $\beta_1$ ), operating profit ratio ( $\beta_2$ ), liquidity ratio ( $\beta_3$ ), age ( $\beta_4$ ), receivables turnover ratio ( $\beta_5$ ), growth in sales ( $\beta_6$ ), total assets ( $\beta_7$ ), leverage ( $\beta_8$ ), interest rate ( $\beta_9$ ) and inflation rate ( $\beta_{10}$ ) were estimated on pooled data as well as on two sub period were presented in Tables 3 to 5.

The results of regression analysis of pooled data for the firms for the year 2001

to 2008 are shown in Table 3. The variations in profitability explained in first equation by all the ten variables was 51.5% stated by  $R^2$  with significant  $F$ -value. In the last equation after elimination of insignificant variables liquidity ratio, fixed assets turnover ratio, operating profit ratio, age, interest rate and inflation rate emerged as most significant determinants explaining 50.4% variation in profitability of firm with  $F$ -value significant at 1% level. Liquidity ratio, fixed assets turnover ratio, operating profit ratio, age and inflation rate showed a positive influence on the profitability of firm, while interest rate negatively associated with profitability of the firm. The expected sign of regression result of liquidity and inflation rate are positive which is not supported by the corporate finance literature. Fixed assets turnover ratio, operating profit ratio, liquidity ratio, interest rate and inflation rate were found significant at 1% level and age of organization was significant at 5% level of significance. The value of Durbin-Watson statistics also validates the model.

**Table 2: Correlation Matrix of Independent Variables**

Variables	GIS	ASSETS	LR	DER	RT	FAT	OPR	AGE	INT	INF
GIS	1									
ASSETS	-0.034	1								
LR	-0.003	-0.023	1							
DER	-0.002	0.046	-0.085	1						
RT	0.072	0.175**	-0.101	-0.008	1					
FAT	0.089	-0.065	0.119	-0.119	0.122	1				
OPR	0.168*	0.359**	0.330**	-0.018	0.184**	0.155*	1			
AGE	-0.062	0.332**	0.165*	-0.048	-0.235**	0.051	0.097	1		
INT	-0.07	-0.089	-0.183**	0.058	0.104	0.058	-0.102	-0.089	1	
INF	0.04	0.12	0.181**	-0.064	0.043	0.225**	0.306**	0.096	-0.398**	1

**Note:** \* Correlation is significant at the 0.05 level (2-tailed).  
\*\* Correlation is significant at the 0.01 level (2-tailed).

**Table 3: Regression Results Pooled**

S. No.	$\beta_0$	$\beta_1$ (tr)	$\beta_2$ (fat)	$\beta_3$ (opr)	$\beta_4$ (age)	$\beta_5$ (int)	$\beta_6$ (inf)	$\beta_7$ (rt)	$\beta_8$ (gis)	$\beta_9$ (assets)	$\beta_{10}$ (der)	R <sup>2</sup>	Adj. R <sup>2</sup>	F-Value
1	-52.484 (-5.913)*	6.377 (3.421)*	17.604 (4.985)*	66.745 (6.2)*	4.535 (2.107)**	-0.513 (-2.41)*	1.761 (2.528)*	-0.481 (-1.716)***	0.016 (1.114)	0.764 (0.907)	0.028 (0.25)	0.515	0.49	20.637*
2	-52.275 (-5.93)*	6.352 (3.421)***	17.502 (5.001)*	66.772 (6.218)*	4.498 (2.1)**	-0.51 (-2.404)*	1.757 (2.529)*	-0.479 (-1.713)***	0.016 (1.118)	0.773 (0.921)		0.515	0.493	23.034*
3	-49.627 (-5.958)*	6.012 (3.305)*	17.082 (4.925)*	70.677 (7.166)*	5.16 (2.558)*	-0.526 (-2.489)*	1.746 (2.515)*	-0.457 (-1.643)***	0.014 (1.023)			0.513	0.493	25.827*
4	-48.683 (-5.88)*	5.859 (3.231)*	17.331 (5.009)*	72.438 (7.458)*	4.988 (2.481)*	-0.545 (-2.587)*	1.716 (2.474)*	-0.452 (-1.623)***				0.511	0.493	29.36*
5	-47.834 (-5.765)*	6.101 (3.363)*	15.369 (4.721)*	69.813 (7.26)*	4.255 (2.163)**	-0.539 (-2.549)*	1.651 (2.374)*					0.504	0.489	33.538*

**Note:** Figures in the parentheses represent t-values for regression coefficients.  
\*, \*\*, \*\*\* depict significance at 1, 5 and 10% levels, respectively.

It is reveals from the Table 4 that in the first sub data set of year 2001 to 2004 the variation in profitability explained in the first equation by all the ten variables was 44.2% depicted by R<sup>2</sup> with significant F-value. In the last equation liquidity ratio, receivables turnover ratio, operating profit ratio, and age turned out to be significant determinants explaining 42.4% variation in profitability of firm. F-value comes out to be significant at 1% level of significance in all equations. Operating profit ratio, liquidity ratio and age of the firm showed a positive relationship with profitability while receivables turnover showed a negative relationship with Profitability of the firm. The value of Durbin-Watson statistics is 1.613.

The regression results for Indian Cement Industry with dependent variable on Profitability for the year 2005 to 2008 have been presented in Table 5. In the backward analysis of regression 10 equations generated and in all equations growth in sales found significance variable in determining profitability of Indian Cement industry firm during period 2005 to 2008. In the first equation growth in sales turned out to be significant determinants explaining 18.3% variations in profitability of the firm. In the last equation growth in sales found as significant at 1% level and it explains 11.2% variation in Profitability of the firm with F-value significant at 1% level.

### CONCLUSION AND IMPLICATION OF THE STUDY

From the above analysis it is revealed that judging the profitability of the firm is not an independent decision. It is affected a

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**Table 4: Regression Results 2001 to 2004**

S. No.	$\beta_0$	$\beta_1$ (lr)	$\beta_2$ (rt)	$\beta_3$ (opr)	$\beta_4$ (age)	$\beta_5$ (inf)	$\beta_6$ (der)	$\beta_7$ (gis)	$\beta_8$ (assets)	$\beta_9$ (int)	$\beta_{10}$ (fat)	R <sup>2</sup>	Adj. R <sup>2</sup>	F-Value
1.	-65.585 (-3.589)8	11.939 (3.419)*	-1.502 (-2.43)*	54.915 (3.356)*	8.082 (2.413)*	3.66 (1.193)	0.339 (0.638)	0.013 (0.776)	0.885 (0.626)	0.034 (0.092)*	0.185 (0.026)	0.442	0.381	7.22*
2.	-65.491 (-3.678)*	11.953 (3.482)*	-1.496 (-2.69)*	54.943 (3.383)*	8.072 (2.439)*	3.658 (1.199)	0.337 (0.645)	0.013 (0.783)	0.883 (0.628)	0.037 (0.102)		0.442	0.388	8.11*
3.	-64.807 (-3.948)*	11.919 (3.506)*	-1.488 (-2.714)*	55.168 (3.447)*	8.071 (2.452)*	3.649 (1.203)	0.335 (0.645)	0.013 (0.781)	0.839 (0.630)			0.442	0.394	9.21*
4.	-62.279 (-3.975)*	11.502 (3.461)*	-1.488 (-2.722)*	58.393 (3.863)*	8.853 (2.914)*	3.619 (1.197)	0.37 (0.719)	0.011 (0.698)				0.440	0.398	10.53*
5.	-60.689 (3.875)*	11.255 (3.415)*	-1.49 (-2.733)*	60.037 (4.032)*	8.715 (2.882)*	3.394 (1.132)	0.394 (0.769)					0.437	0.401	12.28*
6.	-61.18 (3.918)*	11.009 (3.364)*	-1.554 (-2.890)*	62.286 (4.275)*	8.866 (2.944)*	3.672 (1.237)						0.433	0.404	14.68*
7.	-47.372 (-4.328)*	10.421 (3.209)*	-1.543 (-2.863)*	64.242 (4.423)*	8.947 (2.964)*							0.424	0.400	17.87*

Note: Figures in the parentheses represent t-values for regression coefficients.  
\*, \*\*, \*\*\* depict significance at 1, 5 and 10% levels, respectively.

**Table 5: Regression Results 2005 to 2008**

S. No.	$\beta_0$	$\beta_1$ (gis)	$\beta_2$ (age)	$\beta_3$ (opr)	$\beta_4$ (inf)	$\beta_5$ (lr)	$\beta_6$ (int)	$\beta_7$ (rt)	$\beta_8$ (asset)	$\beta_9$ (fat)	$\beta_{10}$ (der)	R <sup>2</sup>	Adj. R <sup>2</sup>	F-Value
1.	85.821 (2.608)*	0.681 (1.872)***	-9.884 (-1.354)	53.973 (1.177)	-2.287 (-1.061)	-7.083 (-1.28)	-0.515 (-0.659)	0.787 (0.997)	-1.915 (-0.699)	-5.683 (-0.408)	-0.102 (-0.371)	0.183	0.094	2.058**
2.	84.116 (2.594)*	0.686 (1.897)***	-9.583 (-1.327)	54.359 (1.191)	-2.209 (-1.035)	-6.973 (-1.268)	-0.553 (-0.718)	0.776 (0.987)	-1.965 (-0.721)	-5.321 (-0.385)		0.182	0.102	2.293**
3.	78.228 (2.749)*	0.588 (2.297)**	-9.469 (-1.318)	60.293 (1.41)	-2.179 (-1.026)	-6.824 (-1.25)	-0.644 (-0.883)	0.725 (0.94)	-1.759 (-0.661)			0.180	0.111	2.585*
4.	73.685 (2.676)*	0.591 (2.313)**	-10.806 (-1.572)	48.902 (1.254)	-2.16 (-1.02)	-6.272 (-1.166)	-0.688 (-0.95)	0.715 (0.931)				0.176	0.116	2.909*

Table 5 (Cont.)

S. No.	$\beta_0$	$\beta_1$ (gis)	$\beta_2$ (age)	$\beta_3$ (opr)	$\beta_4$ (inf)	$\beta_5$ (tr)	$\beta_6$ (int)	$\beta_7$ (rt)	$\beta_8$ (asset)	$\beta_9$ (fat)	$\beta_{10}$ (der)	R <sup>2</sup>	Adj. R <sup>2</sup>	F-Value
5.	76.651 (2.804)*	0.647 (2.609)*	-10.052 (-1.474)	53.552 (1.385)	-2.373 (-1.128)	-6.158 (-1.146)	-0.606 (-0.843)					0.169	0.117	3.253*
6.	74.987 (2.755)*	0.673 (2.738)*	-11.048 (-1.647)	51.067 (1.327)	-2.408 (-1.146)	-5.291 (-1.004)						0.163	0.12	3.773*
7.	70.354 (2.622)*	0.635 (2.615)*	-11.523 (-1.722)	47.779 (1.246)	-2.459 (-1.171)							0.154	0.12	4.464*
8.	56.146 (2.342)**	0.584 (2.44)*	-11.303 (-1.687)	43.717 (1.142)								0.142	0.116	5.474*
9.	57.872 (2.415)*	0.741 (3.77)*	-9.817 (-1.491)									0.131	0.114	7.536*
10.	22.659 (5.539)*	0.696 (3.563)*										0.112	0.103	12.695*

Note: Figures in the parentheses represent t-values for regression coefficients.  
\*, \*\*, \*\*\* depict significance at 1, 5 and 10% levels, respectively.

number of considerations. The result of pooled data indicates that the profitability of the Indian Cement Industry influenced by the fixed assets turnover, operating profit ratio, leverage ratio, age of the firm, interest rate and inflation rate. But the result of the regression analysis of first sub parts of data for the year 2001 to 2004 shows that in determining the profitability of Indian cement industry during this period operating profit ratio, liquidity ratio, age of the firm and receivables turnover ratio has played role of 42.4%. Growth in sales is only influencing factor in determining profitability of the firm in data set of year 2005 to 2008, its explanatory power over profitability is only 11.2%. So it can be concluded that the profitability of the organization is mostly dependent on the above mentioned factors.

In Conclusion, these findings have an interesting policy implication, which may add to the ongoing debate on the issues of determinant of profitability firm. The empirical findings of this study suggest that efficiency, liquidity and age of emerge as an important factor affecting profitability. However, the results indicate that some of the independent variables considered in this study have weak impacts on profitability. These findings should be useful to the managerial authorities to decide on the extent to which firm structure needs to be monitored and controlled. Specifically, the results appear to indicate that liquidity ratio is a useful factor influencing firm performance. Provided these finding



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**Table 6: Regression Results (Summary)**

S. No.	Variables	Pooled Data	2001 to 2004	2005 to 2008
1.	FAT	(*)		
2.	OPR	(*)	(*)	
3.	LR	(*)	(*)	
4.	AGE	(**)	(*)	
5.	RT		(*)	
6.	GIS			(*)
7.	TA			
8.	DER			
9.	INT	(*)		
10.	INF	(*)		
Variations explained by all the variables		51.5	44.2	18.3
Variations explained by most significant Variables		50.4	42.4	11.2
Durbin-Waston		2.02	1.613	1.953

are confirmed in national contexts, it is suggested that smoothing and successful firms' improvement rely much on the effectiveness of the national level policies and plans for adjustment on specific actions. The validity and the generalization of the conclusions mentioned are pending future research in other industries or sectors that ratifies or refutes them.

As for limitations, this study measured firm size by sales and the choice of firm age, debt ratio, ownership structure and firm size as the only independent variables affecting profitability was dictated by the available data sources. The database employed is unique and reliable consisting of the annual balance sheets, income

statement, and relevant ratios. The measurements of profitability are consistent with those used in previous studies, using Return on Capital Employed (ROCE).

Given the limitations mentioned above, there are several lines of research which could be undertaken as a follow up on this paper: (1) adding more variables to study the relationships between firm structure and profitability, (2) improved ways to measure/detect profitability as well as investigate it in different contexts, e.g., different time periods, economic cycles, or stock exchange, and (3) Examination of the impact of industrial market structure and firm conduct in a homogeneous sample.

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## ANNEXURE

## List of Sample Firms

S. No.	Name of Firm	S. No.	Name of Firm
1.	A C C Ltd.	15.	Kalyanpur Cements Ltd.
2.	Ambuja Cements Ltd.	16.	Madras Cements Ltd.
3.	Anjani Portland Cement Ltd.	17.	Mangalam Cement Ltd.
4.	Binani Cement Ltd.	18.	Mysore Cements Ltd.
5.	Birla Corporation Ltd.	19.	N C L Industries Ltd.
6.	Century Textiles & Inds. Ltd.	20.	O C L India Ltd.
7.	Chettinad Cement Corpn. Ltd.	21.	Sagar Cements Ltd.
8.	Dalmia Cement (Bharat) Ltd.	22.	Sanghi Industries Ltd.
9.	Deccan Cements Ltd.	23.	Saurashtra Cement Ltd.
10.	Grasim Industries Ltd.	24.	Shiva Cement Ltd.
11.	India Cements Ltd.	25.	Shree Cement Ltd.
12.	J K Lakshmi Cement Ltd.	26.	Shree Digvijay Cement Co. Ltd.
13.	K C P Ltd.	27.	Shri Keshav Cements & Infra Ltd.
14.	Kakatiya Cement Sugar & Inds. Ltd.	28.	Vinay Cements Ltd.

# Entrepreneurship Education in Bangladesh: A Study Based on Program Inputs

M Tahlil Azim\* and Mohammad Muzahid Akbar\*\*

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*The study attempts to conduct an input-based evaluation of the Entrepreneurship Development courses offered at BBA and MBA level in different public and private universities in Bangladesh. It has used primary data collected through a survey by using a structured questionnaire prepared based on an Entrepreneurship Education Model proposed by Azim (2007). It is observed that the entrepreneurship courses in different universities in Bangladesh as a whole operates with medium level of effectiveness.*

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## INTRODUCTION

Thus, 'entrepreneurship' is widely recognized as a critical factor in economic development. Schumpeter viewed entrepreneurship as the major conducive factor to economic growth (Schumpeter, 1934). McClelland treated entrepreneurship as the causal factor of development (McClelland, 1961). Cole and Cochran also emphasized the critical role of entrepreneurship in economic growth (Kilby, 1971). In describing the significance of entrepreneurs in the process of development of a country, Maslow (1968), a Psychologist known for his epoch-making theory of human needs, points out, "The most valuable 100 people to bring advancement into a deteriorating society would not be economists, or politicians, or engineers, but rather 100 entrepreneurs." Entrepreneurs are recognized as central to the process of mobilizing capital, adding value to natural

resources, producing necessary goods and services, creating employment and developing the means by which trade is carried on.

Over the years, the concept of entrepreneur has undergone transformation and broadened to traverse the traditional connotation of 'creating a new and innovative venture.' Entrepreneurship is more than the mere creation of business. Although that is certainly an important facet, it's not the complete picture. It may also be viewed from skill perspective. The entrepreneurial skills, such as seeking opportunities, taking risks beyond security, and having the tenacity to push an idea through to reality can be exhibited by an individual working for someone else in profit or not-for-profit enterprises, and in business or non-business activities. Hytti and O'Gorman (2004) argue that these entrepreneurial skills of the general

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\* Associate Professor, School of Business, Chittagong Campus, Independent University, Bangladesh, 12 Jamal Khan Road, Chittagong, Bangladesh; and is the corresponding author. E-mail: tahlilazim@yahoo.com

\*\* Senior Lecturer, School of Business, Independent University, Bangladesh, Baridhara, Dhaka. E-mail: zahid2002@iub.edu.bd

people are now considered as a competitive advantage of a nation over others. National competitive advantage is increasingly dependent on the skill base of the workforce, and more specifically, on the ability of both firms and individuals to engage in innovative activity and in new economic activity (Hytti and O’Gorman, 2004). Kuratko and Hodgetts (2004) postulate that it is this perspective that has revolutionized the way business is conducted at every level and in every country.

Therefore, it is imperative that the economic progress of a country largely depends upon the availability or development of the pool of entrepreneurs or people with entrepreneurial skills. For this, depending solely on natural supply of entrepreneurial talents will leave the destiny of a nation to the vagary of the nature. So, it is important to adopt means to develop such scarce human resources through intervention and many scholars have genuine conviction that entrepreneurship can be taught through education and training (Kuratko and Hodgetts, 2004). Consequently, in many countries entrepreneurship education has become an important part of both industrial policy and of educational policy. Emphasizing the potential benefits of entrepreneurship education, in 1997, the National Committee of Inquiry into Higher Education of UK (1997, p. 201) recommended universities to: “. . . consider the scope for encouraging entrepreneurship through innovative approaches to program design . . .” and by 2000 business and entrepreneurial development had been listed as one of four strategic goals for British universities (Universities UK, 2000). In the same line of reasoning it is believed that,

in developing countries where unemployment and international competitiveness are the major concerns, the need for entrepreneurial development should be emphasized more.

Keeping the critical role of entrepreneurship in mind Bangladesh has paid attention to the development of entrepreneurship in the country in order to uplift the standard of living of its people. In this connection, among other measures, there are both public and private efforts for Entrepreneurship Development (ED) in the country through education and training intervention. Courses on ‘entrepreneurship’ have been introduced at different academic levels and Entrepreneurship Training Programs have been designed and offered through different public, private, and development institutions or organizations in Bangladesh.

However, the poor level of industrialization, modest level of economic growth and massive unemployment in the country indicate that Bangladesh could not make significant headway in ED. So, naturally it points to the effectiveness of entrepreneurship education and training in the country. Against this backdrop, the present study focuses on the evaluation of entrepreneurship education at University levels of Bangladesh. The study attempts to evaluate the Entrepreneurship Development course(s) offered at BBA and MBA level in different public and private universities in Bangladesh in terms of the ‘program inputs,’ including their objectives and contribution in developing trait, skill, and knowledge among the students. It also focuses attention to understand the facilitators’ characteristics and teaching approaches of these courses offered in Bangladesh.

## CAN ENTREPRENEURSHIP BE TAUGHT?

Despite exponential growth in the entrepreneurship education and training, the debate on whether entrepreneurs are born or made and whether entrepreneurship can be taught or not still rears its head from time to time. Some biographies of successful entrepreneurs often read as if such people entered the world with an extraordinary genetic endowment. Their personal characteristics, family heritage or exceptional opportunities, etc., are believed to be instrumental for transforming them into great entrepreneurs. Entrepreneurial education has also been criticized for attempting to teach what, until recently, has been considered 'unteachable'. It has been the established understanding among business professionals that some people are born entrepreneurs and will succeed with or without education, while no amount of education can provide business success for someone who lacks the 'entrepreneurial spirit.' It is also argued that much entrepreneurial learning is 'implicit', being hard to verbalize, occurring incidentally, and drawing on intuition and 'tacit' skills (Marsick and Watkins, 1990) and hence it is difficult to transmit from facilitator to the students. Contrary to the above propositions there are many arguments and evidences that speak for the contribution of entrepreneurship education and training in developing entrepreneurs and entrepreneurial people. There are many counter stories of those who hit on the entrepreneurial jackpot without the benefits of genetics (Henry *et al.*, 2005, Part II). The entrepreneurial traits and genetics do not fall into any sensible pattern for start-up successes.

Banfe (1991) suggests that there is a serendipity of unpredictable events that does not have much to do with family heritage.

Most of the proponents of entrepreneurship education take a mid-way considering the teachable and non-teachable aspects of entrepreneurship. Miller (1987) believes that not all aspects of entrepreneurship can be taught, and that educators cannot create entrepreneurs any more than they can produce foolproof, step-by-step recipes for entrepreneurial success. However, Miller (1987) believes that educators can provide an understanding of the rigorous analytical techniques required to set-up a new business and an appreciation of the limitation of those techniques. He also claims that many of the entrepreneurial characteristics, like self-confidence, persistence and high energy levels, cannot be wholly acquired in the classroom. Stuart Meyer, Professor at the J.L. Kellogg Graduate School of Management at Northwestern University comments on teaching entrepreneurs: "They either have it or they don't. I can't teach students the personality traits necessary to take risks, but I can teach them to analyze those risks, to be analytical about their choices, and to learn from mistakes made in the past" (Farrell, 1984, p. 63). John R Thorne, Professor at the Graduate School of Industrial Administration at Carnegie-Mellon University agrees that we can't teach entrepreneurship, but we can teach the mechanics of starting a new business, and impart practical knowledge to our students (Farrell, 1984, p. 63). David (2005) maintains that while education can provide cultural awareness, knowledge and skills for entrepreneurship, the 'art' of entrepreneurial practice is learned experientially in business rather

than the educational environment (Gorman *et al.*, 1997; and Jack and Anderson, 1998).

Gorman *et al.* (1997) report that the findings from the studies indicate that entrepreneurship can be 'taught', or if not taught, at least 'developed' by entrepreneurship education. This supports the findings of Vesper's (1982) US-based study of university professors, which demonstrated an overwhelming consensus that entrepreneurship can be taught. Supporting this view, Kantor (1988) claims that, based on his study of 408 entrepreneurship students in Ontario, most generally believed that the majority of entrepreneurial 'traits' and 'abilities' can be taught, with 'abilities' perceived as being more teachable than 'traits.' This concurs with the findings of the study conducted by Clark *et al.* (1984), which indicates that teaching entrepreneurship skills aided the creation and success of new businesses.

Thus many factors are unrelated to genetics and support the counter paradigm that "entrepreneurs are often made, not born". However, the success of an education program in developing entrepreneurs and entrepreneurial people or in other words, the answer to the question, whether entrepreneurship can be taught or not is not a mere 'yes' or 'no', rather it is inextricably linked with the objectives, content, structure, pedagogy and approaches of teaching of entrepreneurship programs.

### WHY INPUT BASED ASSESSMENT?

The common sense argument is that the evaluation of any program must be in terms of its output. But in this study, assessment is done based on inputs. In fact, a number of reasons can be cited in this regard

which are related to the nature of the subject matter, methodological complexity, teaching context and usefulness of the study. Following are some of the points outlined in this respect.

- There is considerable debate over the most appropriate method of measuring the effectiveness of entrepreneurship programs (Westhead *et al.*, 2001). Indeed, there does not appear to be a standard methodological approach for evaluation, nor does there exist a common set of evaluation criteria for determining effectiveness (Wan, 1989; and Henry *et al.*, 2003). There is also obscurity in determining causality (Wyckham, 1989).
- There is an attempt to measure the effectiveness of Entrepreneurship Education Program based on intention as suggested by Shapero and Sokol (1982), Bird (1989), Krueger and Carsrud (1993), Autio *et al.* (1997) and Tkachev and Kolvereid (1999). However, Westhead *et al.* (2001) counter argue that the subsequent behavior of respondents is actually more important than reporting their opinions.
- Regarding the measurement methodology issues, measurement biases can arise from both time and contextual effects. For example 'venture creation' cannot possibly be measured during or immediately after an Entrepreneurship Education Program (EEM), since the venture creation process usually takes time. On the other hand, the more delayed the measurement, the harder it is to isolate the role



played by a single factor regarding its impact on a specific outcome, such as venture creation (Hytti and Kuopusjärvi, 2004).

- Indeed, a number of authors have noted the need for longitudinal studies within the area of entrepreneurship (Clark *et al.*, 1984; Wyckham, 1989; Barrow and Brown, 1996; and Fleming, 1996). However, Garavan and Cinneide (1994, p. 5) have suggested that “longitudinal research designs, using control groups to compare participants with individuals who did not have entrepreneurial educational experience, are needed to examine the lasting effects of entrepreneurship education and training interventions”. But to find the causal relationship it is very important to include a control sample of matched individuals who are identical on the basis of age, sector, ownership and geography. It is also important that the two groups should remain identical throughout the study period. And in reality it is certainly a daunting task to have two identical groups.
- The orientations and behaviors of students and young graduates are influenced by a number of personal and environmental factors (Luthje and Franke, 2003). As an example, researchers have shown the importance of the social status of entrepreneurial activities and situations (Begley *et al.*, 1997) in the participant’s environment. Particularly, empirical evidence of the relationship between the parental role model and preference for a self-employment career has been repeatedly reported (Scott and Twomey, 1988; and Matthews and Moser, 1995). Failure to take into account the personal and environmental characteristics of individuals might also lead to an exaggeration of the effectiveness of a program.
- As the main focus of this research is the entrepreneurship education at University level where this course is offered for business school students only, it is rather futile to measure program effectiveness on the basis of traditional venture creation. Because the students enter into business schools with the aim to work for large organizations. In other words, the purpose of business schools is to prepare students for being employed in large organizations. Therefore it is rather unreasonable to think that one single course on entrepreneurship will redirect their attention from employment in high profile large organizations to self-employment.
- It is argued that entrepreneurship course should be taught in a different manner than other courses. It should be more learner-centered, inductive and action-oriented (Davies and Gibb 1991, Henry *et al.*, 2005, Part I). So it is more important to see what are being taught, how it is taught, who is teaching, etc.
- The entrepreneurship courses are offered by different individuals in different universities or even in the same university emphasizing on dissimilar contents and approaches. So, it is important to provide a

standard format regarding contents, approaches of teaching and faculty characteristics in relation to entrepreneurship course so that uniformity can be brought in terms of inputs of this course.

## METHODOLOGY

The study has been based on primary data collected through a survey by using a structured questionnaire with five-point Likert scale (0-4). The respective instructors in different Academic Departments offering entrepreneurship course(s) in public and private universities have been chosen as the respondents of the survey. A total of 58 questionnaires (78% of the total respondents) have been received and found up to the expectation, of which 16 from Public Universities and the rest 42 from Private Universities. The questionnaire is prepared based on an Entrepreneurship Education Model (EEM) proposed by Azim (2007). Data analysis is based on simple descriptive statistics. In order to sketch a comprehensive picture of Entrepreneurship Education in Bangladesh at University level the most common descriptive statistics like, Mean, Percentage, Standard Deviation (SD), Variance, etc., are extensively used.

## EEMMODEL

Based on extensive survey of literature on Entrepreneur, Entrepreneurship and Entrepreneurship Education and Training, Azim (2007) visualizes an EEM.

Considering the importance of efforts (inputs) in determining the effectiveness of an entrepreneurship education program, the model is developed on the basis of three key inputs viz. (1) 'Contents' (what is taught?), (2) 'Approaches' (how

it is taught?) and (3) 'Facilitation' (who is teaching?). In other words, the model envisions that the effectiveness of an entrepreneurship education is determined by its 'content effectiveness, approach effectiveness' and 'facilitation effectiveness.' The content of the program is further divided into three major components of *traits, skills* and *knowledge*. The model is shown above in Figure 1.

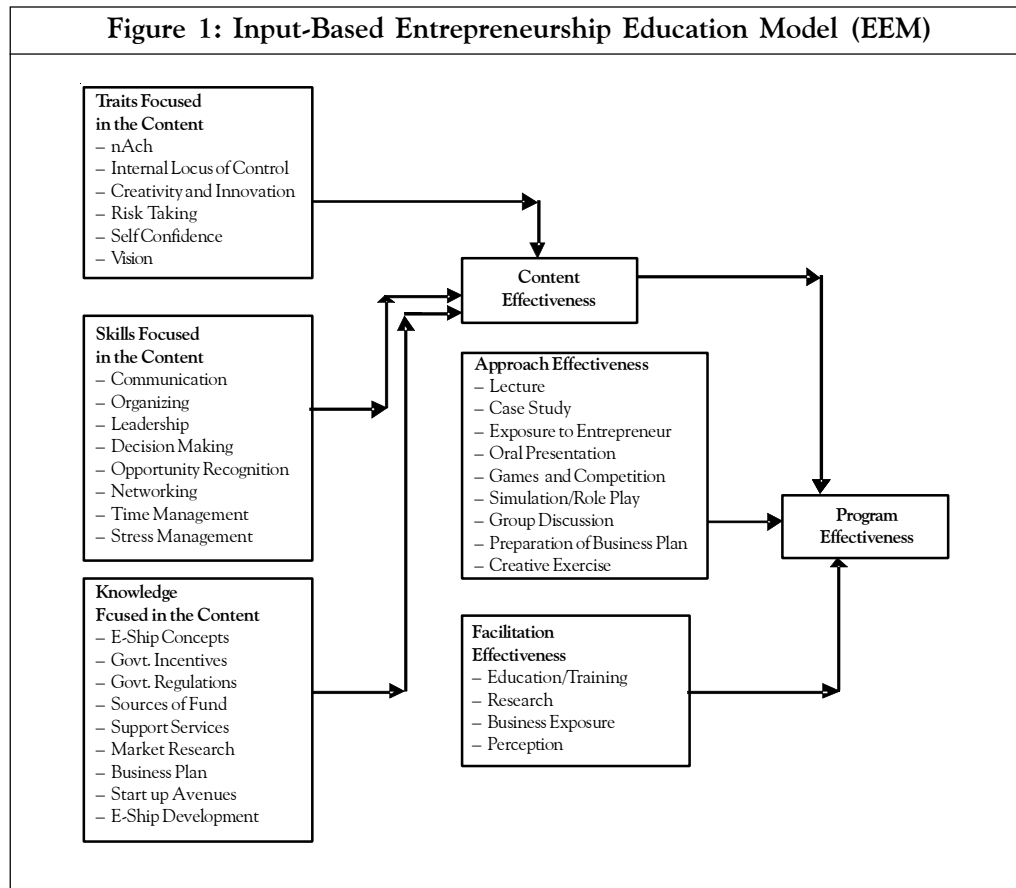
## FINDINGS AND ANALYSIS

There are 27 public and 53 private universities approved by University Grants Commission operating in Bangladesh. Of them entrepreneurship development course is offered by almost all the universities having commerce/business faculty. No university in the public or private sector is found to offer a full fledged honors or Masters Program in Entrepreneurship. A total of 20 departments/faculties in public universities are found to offer at least one course in entrepreneurship either in undergraduate or graduate level or in both level.

Private universities typically offer BBA/MBA degree under the business faculty/School. Each program usually has a number of core courses which are compulsory for all the students in the faculty/school. With few exceptions, entrepreneurship course is taught as a core course in most of the Private universities. Various aspects of entrepreneurship courses offered in different public and private universities in Bangladesh are described in the following sections.

### **Objectives of the Courses**

An enquiry is made to know what objective(s) the entrepreneurship courses are offered in the country. In line with the



Gibb's (1999) typology of objectives of entrepreneurship education programs where he outlined three objectives (mutually not exclusive) like (i) to inform about entrepreneurship, (ii) to prepare student to be entrepreneurial, and (iii) to prepare students to become entrepreneur; the survey finds that the teachers at universities in Bangladesh offer entrepreneurship courses more or less with all three objectives in mind. However it is interested to note that around 70% of the respondents mention that they teach entrepreneurship with an aim to let their students prepared to become entrepreneur. It indicates that around 30% don't have even the objective to let their students prepared to become entrepreneur.

### *Levels of Traits Developed Through Entrepreneurship Programs*

In the survey an attempt is made to identify what levels of efforts are exhorted to develop six most sought after traits among the students through the entrepreneurship course. In Table 2 the mean score of 2.77 on a scale with maximum ceiling of 4 indicates that the facilitators of the courses give medium levels of efforts to develop these traits. As it is evident from Table 1 below that the most effort is found to discharge to develop creativity and innovation followed by self confidence, vision, need for achievement, risk taking and internal locus of control. Since traits are the major determinants of being successful

entrepreneurs, without developing these traits at high level it is more unlikely that the students will be able to initiate ventures by putting their personal endowments at risk.

As regard the difference between public and private universities in relation to traits, it is found that only in case of self confidence trait, there is significant difference at 10% level.

#### **Levels of Skills Developed Through Entrepreneurship Programs**

Entrepreneurs are doers. With their above average skills they make things happen. Presence of certain skills makes them different from non-entrepreneurs. Consequently the experts on entrepreneurship recommend for developing certain skills among the students in entrepreneurship courses. In the study, eight very important skills are surveyed and it is found that with a

mean score of 2.66 (out of 4), the faculty members pay medium level of efforts in developing these skills among their students through entrepreneurship courses in Bangladesh in Table 3. No single skill is found to receive high level of effort i.e. score more than or equal to 3. The most taken care of skill is organizing skill followed by 'leadership', 'decision making,' 'opportunity', 'recognition,' 'communi-cation' and 'networking skill'. 'Stress management and time management' skills are observed to be paid least attention. Moreover, the high standard deviation for these two skills indicates that there are wide variations in efforts among the faculty members to develop these skills.

Concerning the difference between public and private universities in relation to skills, it is observed that only in case of *networking skill*, there is significant difference at 10% level.

**Table 1: Objectives of the Course**

Objectives of the Course	Frequency	% of Respondents (58)	% of Total Responses (109)
Let my students know about entrepreneurship	37	63.79	33.94
Make my students entrepreneurial (not necessarily that they will start their own business)	31	53.45	28.44
Let my students become entrepreneur (start their own business in future)	41	70.69	37.61
<b>Total</b>	<b>109</b>		<b>100%</b>

**Table 2: Traits Developed Through Entrepreneurship Courses**

Item	Mean	SD	Public	Private	Levene's Test for Equal Variance F(Sig.)	t (Sig.)
Creativity and Innovation	2.91	0.28	2.81	2.95	0.001	0.204
Self-Confidence	2.89	0.44	2.63	3.00	0.000	0.083**

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Table 2 (Cont.)

Item	Mean	SD	Public	Private	Levene's Test for Equal Variance F(Sig.)	t (Sig.)
Vision	2.89	0.35	2.75	2.95	0.000	0.190
Need for Achievement	2.72	0.45	2.69	2.74	0.475	0.706
Risk Taking	2.68	0.65	2.81	2.64	0.092	0.266
Internal Locus of Control	2.51	0.80	2.31	2.60	0.979	0.232
Average of mean scores	2.77					
<b>Note:</b> ** Significant at 10% level.						
<i>Source: Field Survey</i>						

**Levels of Knowledge Disseminated Through Entrepreneurship Programs**

Awareness about the whole process of entrepreneurship/starting a business is crucial for developing self-efficacy and desirability among the potential entrepreneurs. To this end, it is expected that an entrepreneurship course will keep its students/participants informed about certain important information and facts. The survey on this area finds that with the mean score of 2.81 (out of 4) the teachers of entrepreneurship courses in Bangladesh pay medium level of attention to this area (Table 4).

An investigation into the various components of knowledge and information disseminated through entrepreneurship courses shows that theoretical aspects of entrepreneurship, preparation of business plan, franchising as a Business Start up avenue and ways to develop entrepreneurship in the country receive high level of attention from the entrepreneurship educators in Bangladesh while institutional sources of fund, government and private support services for entrepreneurs, legal issues related to starting a business, acquisition as an avenue to start a business, government incentive for entrepreneurs,

Table 3: Skills Developed Through Entrepreneurship Courses

Item	Mean	SD	Public	Private	F (Sig.)	t (Sig.)
Organizing Skill	2.93	0.36	3.00	2.90	0.070	0.160
Leadership Skill	2.86	0.34	2.88	2.86	0.727	0.863
Decision Making Skill	2.79	0.61	2.94	2.74	0.027	0.116
Opportunity Recognition Skill	2.72	0.72	2.69	2.74	0.665	0.813
Communication Skill	2.64	0.74	2.56	2.67	0.961	0.637
Networking Skill	2.60	0.64	2.25	2.74	0.000	0.060**
Stress Management Skill	2.55	1.09	2.94	2.29	0.142	0.278
Time Management Skill	2.18	1.08	1.94	2.29	0.142	0.278
Average of mean scores	2.66					
<b>Note:</b> ** Significant at 10% level.						
<i>Source: Field Survey</i>						

and procedures of market research receive medium level of attention. Tax regulation related to starting and running a business gets the least consideration.

As evident from the Table 4 high degree of standard deviation for institutional sources of fund, ways to develop entrepreneurship in the country, acquisition, market research, tax regulation, government incentives, and government regulations indicate that there are marked variations among the universities in relation to teaching these aspects in the entrepreneurship courses. As far as the difference between public and private universities is concerned, significant difference at 10% level is observed for information about the government support services and tax regulations for starting a business in favor of public and private universities respectively.

#### **Approaches Used by the Faculty Members in Entrepreneurship Programs**

To prepare students with the right set of traits, skills and knowledge base so as to start their own businesses it is far more important to use appropriate approaches in imparting entrepreneurship education. However, the survey in this respect shows rather a wearisome picture in Bangladesh. With mean score of 2.12 (out of 4) the educators in Bangladesh are found to use slightly over low level of assortments of approaches in teaching entrepreneurship courses (Table 5). It is noted that the teachers are more comfortable with the traditional lecture-based teaching. However, moderate level of scores for student presentation, business plan project, group discussion, case study analysis and exposure to the successful entrepreneurs are indications of concerns of the teachers about using various approaches of teaching entrepreneurship.

**Table 4: Knowledge Disseminated Through Entrepreneurship Courses**

Item	Mean	SD	Public	Private	F (Sig.)	t (Sig.)
Entrepreneurship concept, benefits, functions, qualities, theories, etc.	3.71	0.46	3.81	3.67	0.014	0.25
How to prepare a Business plan	3.57	0.92	3.63	3.55	0.589	0.77
Franchising as a Business Start up avenue	3.00	0.99	2.94	3.02	0.504	0.77
Entrepreneurship development in a country	3.00	1.30	3.06	2.98	0.267	0.82
How the entrepreneurs can avail Institutional sources of Fund	2.81	1.37	2.94	2.76	0.189	0.66
What government organizations provides support services to the entrepreneurs	2.78	1.08	3.13	2.64	0.008	0.064**
What private organizations provides support services to the entrepreneurs	2.69	0.99	2.81	2.64	0.670	0.56
Government regulations (related to starting a business)	2.67	1.03	2.69	2.67	0.864	0.94

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Table 4 (Cont.)

Item	Mean	SD	Public	Private	F (Sig.)	t (Sig.)
Buy out (acquisition) as a Business Start up avenue	2.62	1.24	2.63	2.62	0.166	0.980
Government incentives	2.53	1.14	2.44	2.57	0.436	0.694
How to conduct Market research	2.53	1.22	2.31	2.62	0.264	0.396
Tax regulations	1.83	1.20	1.38	2.00	0.819	0.076**
Average of Mean Scores	2.81					
<b>Note:</b> ** Significant at 10% level.						
<i>Source: Field Survey</i>						

One grave concern is that the poor scores for using approaches like exercise for nurture creativity, simulation and games and competition. These approaches are believed to be instrumental in developing creativity and innovation, need for achievement, internal locus of control, organizing skill, leadership skill, etc., among the participants which are the back bone of entrepreneurship. The poor score in using non-traditional approaches may be attributed to the class size. In many universities, class size is more than 50 or nearly 50 which is not a convenient size for practicing various innovative approaches in the class.

About the difference between public and private universities concerning approaches used, it is noted that assigning students to prepare a business plan, group discussion and exercise to nurture creativity are found to have significantly different at 5% level.

***Level of Facilitation Effectiveness in Entrepreneurship Programs***

As regard facilitation effectiveness of entrepreneurship courses in Bangladesh it is observed that (see Table 6) the teachers offering the course have medium level of efficacy with the mean score of 2.52 (out of 4). However, the teachers

have very high level of perception (3.6) about the viability of entrepreneurship as a career choice for their students which is very important for enthusiastic delivery of the lessons. The level of education/training and research experience of the teachers maintains medium level with score 2.47 and 2.31 respectively.

The business exposure of the teachers is found to be the least available criteria among the teachers. And in a country where job opportunities are limited, a person has to choose a career upon completion of his/her university degree and usually sticks to it. So those who choose teaching at universities as career at the early stage of their career by and large don't switch to other job opportunities and vice versa. So it is natural that the university teachers will have low level of business exposure. However, some teachers are involved in family business or with other business in the form of consultancy etc. Very high level of standard deviations indicates wide dispersions among the universities in relation to facilitation criteria.

As regard, the difference between public and private universities about teacher's qualifications, it is observed that the teachers in private universities have

**Table 5: Approaches Used by the Faculty Members in Entrepreneurship Programs**

Item	Mean	SD	Public	Private	F (Sig.)	t (Sig.)
Lecture Method	4.00	00	4.00	4.00	–	–
Oral Presentation by the Students	2.89	1.80	2.50	3.05	0.082	0.305
Prepare a Business Plan	2.75	1.86	1.75	3.14	0.013	0.023*
Group Discussion	2.55	1.93	1.50	2.95	0.152	0.010*
Case Study	2.27	1.29	2.44	2.21	0.217	0.562
Exposure to Entrepreneurs	2.00	0.91	1.81	2.07	0.602	0.341
Exercise to Nurture the Creativity	1.79	2.00	0.50	2.29	0.000	0.000*
Role Play/Simulation	0.55	1.39	0.25	0.67	0.029	0.230
Games and Competitions	0.27	1.02	0.50	0.19	0.046	0.409
Average of the Mean Scores	2.12					

Note: \* Significant at 5% level.

significantly (at 5% level) better education/training and business exposure than their public counterparts. This can be attributed to the fact that in most of the public universities, the teachers are elderly and did their masters while entrepreneurship course was not offered at the University level whereas at the private universities most of faculty members are relatively younger and have their BBA/MBA where they could take a course on entrepreneurship. Regarding, business exposure it can be argued that many teachers in the private universities join the university at different levels from corporate jobs whereas in public universities, usually the teachers join the university just after completion of their Master's level education.

### Overall Program Effectiveness

The entrepreneurship courses in different universities in Bangladesh as a whole are found to operate with medium level of effectiveness with the mean score of 2.36 on the scale of 4. In terms of frequency it is observed that most of the programs (53.4%) are run at medium level while 27.6% at low level and only 19% at high level. Table 7 shows the overall picture of program effectiveness of entrepreneurship courses in Bangladesh.

### CONCLUSION

Thus from the study is it confirmed that Entrepreneurship course(s) is (are) being offered in different Public and private

**Table 6: Facilitation Effectiveness in Entrepreneurship Programs**

Criteria	Mean	SD	Public	Private	F (Sig.)	t (Sig.)
Education/Training	2.47	1.16	1.75	2.74	0.542	0.003*
Business Exposure	1.71	1.64	0.75	2.07	0.000	0.001*
Research	2.31	1.33	2.44	2.26	0.192	0.656
Perception	3.60	0.85	3.06	3.48	0.010	0.167
Average of the Mean Scores	2.52					

Note: \* Significant at 5% level.

*Source: Field Survey*



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universities in Bangladesh mostly as either mandatory or optional course(s) for the students of business schools. There are variations in terms of objectives, contents, approaches of teaching and the characteristics of facilitators offering the courses. The study observes that the entrepreneurship courses in different universities in Bangladesh as a whole operates with medium level of effectiveness. As regards the efforts for developing traits, skills and knowledge relevant for entrepreneurship, the facilitators put medium level of efforts. Concerning the methods of teaching, it is noted that the teachers are more comfortable with the traditional lecture based teaching. However, moderate level of scores for student presentation, business plan project, group discussion, case study analysis and exposure to the successful entrepreneurs indicates their concern about using various approaches of teaching entrepreneurship. As regard facilitation effectiveness of entrepreneurship courses in Bangladesh it is observed that the teachers offering the course have medium level of efficacy with the mean score of 2.52 (out of 4).

In the face of the weaknesses identified in the study the following recommendations may be useful in improving the standard and utility of entrepreneurship education offered in different public and private universities in Bangladesh.

- The entrepreneurship courses should be offered with the objective of creating entrepreneurs

rather than just as a means of letting the students know about entrepreneurship.

- Having exposure to entrepreneurship as a career option may lead the students to self employment or starting their own businesses. So the course should be mandatory for all the students in business. Moreover, the contents of the course particularly, traits and skills, if developed properly will increase the student's employability as well.
- To make the courses more effective the facilitators in both public and private universities should focus more on the use of multiple approaches, such as business plan writing, group discussion, exposure to entrepreneurs in the form of either life story analysis or presentation of live entrepreneurs, role play/simulation, games and competition, student presentation, creative exercises, etc.

In order to improve the facilitation of the entrepreneurship course it should be taught by the teachers who have attended this course or received training on entrepreneurship, have research experience in entrepreneurship, and have exposure to business either in the form of involvement in family business, prior employment in business houses or operation of own businesses.

**Table 7: Overall Program Effectiveness**

Level of Effectiveness	Frequency	Percentage
Low	16	27.6
Medium	31	53.4
High	11	19
<b>Total</b>	<b>58</b>	<b>100</b>

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# The Impact of Government Policies on the Development of Regional Entrepreneurship: An Exploratory Study in the North-Eastern Region of India

S S Khanka\*

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*There has been consensus about the role of entrepreneurs as change agents of economy, but no agreement on where do they come from and who they are. The evidences indicate that the emergence and characteristics of entrepreneurs are largely contextual and, therefore, cannot be generalized. Nonetheless, the significance of empirical evidences gained in a particular context to the body of existing knowledge and new learning can be, by no account, contested because proceeding from the general to the particular is often perilous because authenticating the particular from the general may not fit in a particular context. Also, the secondary sources often offer contestable interpretations and alternate views. It is against this background, the present paper makes an attempt to find out where entrepreneurs come from and who they are in a relatively less developed state of Assam in the North-East India (NEI). It is found that entrepreneurs come from a broad-base background and there is no typical entrepreneur as such.*

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## INTRODUCTION

Few terms have been discussed and deliberated so much in the recent times such as entrepreneur and entrepreneurship development. The reason is that entrepreneurs serve as 'spark plug' in transforming the industrial and economic scene of the economy. Hence, entrepreneurs are also termed as 'change agents'. Cross-country examination also reveals that entrepreneurial development precedes industrial development and the latter has become almost *sine qua non* with the former. The wide differences in the

levels of economic development of different regions within India are attributed mainly to differences in their levels of entrepreneurship development. Gujarat and Bihar, for example, present two examples of high and low levels of economic development with their high and low level of entrepreneurship development respectively. It is, therefore, best put as "an economy is the effect for which entrepreneurship is the cause." That is why ever increasing emphasis has been given to entrepreneurship development everywhere in the world including India. India is the number one

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\* Professor (HRM) and Coordinator, Fellow Programme in Management, National Institute of Financial Management, (Ministry of Finance, Government of India). Sector 42, Pali Road, Faridabad 121001, Haryana, India. E-mail: khanka@nifm.ac.in

country in Asia which operates the largest initiatives for entrepreneurship development. Then, the basic and vexing question haunting the researchers has been to exactly know what causes of entrepreneurship development in an economy. One way to answer this question lies in understanding the entrepreneurs in terms of their origin and characteristics. To begin with, let us present an overview of entrepreneurial origin in historical perspective.

### **ENTREPRENEURIAL ORIGIN IN HISTORICAL PERSPECTIVE**

The term 'entrepreneur' which was used for the first time in economic sense by Cantillon (1755) in the 18<sup>th</sup> century has by now become buzzword in the economic terminology. The reason is the crucial role the entrepreneurs play in economic development of a country. They are regarded as change drivers in the process of economic development. That is why the emergence and development of entrepreneurs has been given utmost importance in entrepreneurship research. Many researchers have studied the background from which entrepreneurs emerge. To cite, Weber (1930) traced out the Protestant Christianity as a source for the emergence of entrepreneurs. Sayigh (1962), Alexander (1964) and Carrol (1965) provided empirical evidences from Lebanon, Greece and Philippines respectively to argue that entrepreneurs do emerge from highly educated background. Other researchers like Kunkel (1970) and Young (1971) reported that entrepreneurial talent is not equally distributed among population across societies and regions. According to Ronstadt (1983), entrepreneurs mainly

emerge from between the ages of 25 and 45. Hisrich and Peters (1995) identified one's past experience in business as a source of emergence of entrepreneurs. Sharma (1980) identified particular social groups such as Marwaris and Paunjabis in India having high entrepreneurial talent. Nath (2000) has reported typical emergence of entrepreneurs by regions and social groups in India.

Apart from the socioeconomic background of the entrepreneurs, some researchers have also laid considerable emphasis on entrepreneurs' personality characteristics to know better who these people are. From this point of view, the two influential theoretical viewpoints are that of Schumpeter (1934) and Rotter (1966). In Schumpeter's opinion, persons with innovative nature are more likely to emerge as entrepreneurs. According to Rotter, persons with internal locus of control, i.e., those who believe that the most part of their fate lies in their hands, have more tendencies to assume the entrepreneurial career.

Some researchers hold the view that environment affects the emergence and responsiveness of entrepreneurs in an economy. In order to verify whether or not environment affects entrepreneurial emergence and responsiveness, Manimala (1999, pp. 95-98) has tried to test the hypothesis of environmental determinism: if different kinds of environmental conditions can produce similar impacts on entrepreneurial responsiveness, or if the same environment can produce differential responses for different entrepreneurs. The above hypothesis of environmental determinism will hold true if there is a found significant difference

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in the entrepreneurial responsiveness across the environments in terms of regions, time periods, and industries. It was found that environment did not have any impact on entrepreneurial emergence and responsiveness as none of the three chi-squares was significant at 5% or below. Thus, the research evidence does not offer any support to the theory of environmental determinism or the 'population ecology model' at least inasmuch as it concerns the or task environment. The historical evidences do also support this finding. The researcher (Manimala, 1999, p. 93) presents global examples at industry level and reports that the oil boom in US brought about revolutionary innovations in the automobile industry, on the one hand, the like of which occurred again in opposite conditions, especially in Japan after the 1973 oil crisis, on the other. Thus, the entrepreneurial initiative,

though of different nature and degree, may take place equally under conditions of abundance (say, favorable) as well as scarcity (say, unfavorable). This is duly illustrated by the national (entrepreneurial) performance of Japan and the USA. Japan with its scarcity of natural resources, could be as innovative as the United States with its abundance. An overview of research on entrepreneur and/or entrepreneurship in a chronological order is presented here to give a historical perspective on entrepreneurship research.

There is no denying the fact that entrepreneurship development is a result of complex interactions between the traits of an entrepreneur and his environment. To understand what matters more in entrepreneurship development: whether entrepreneur or environment, some researchers have resolved this dilemma by citing the analogy of jockey and horse.

Research Paradigms in Entrepreneurship Studies: A Chronological Overview		
Researcher(s)	Year	Research Perspectives
Cantillon	1755	Buys inputs at certain prices to market some thing at uncertain prices and, thus, becomes risk-taker.
Say	1803	Distinguished between investor and entrepreneur. The latter was seen as an organizer of business who buys land, labor and capital from respective owners and pays them rent, wages and interest respectively.
Weber	1930	Individual traits like hard work, thrift and desire for material advancement make one entrepreneur.
Schumpeter	1934	Innovation is the hallmark of entrepreneurship.
Baldwin	1959	Entrepreneurial behavior varies between the communities.
Gadgil	1959	Economic opportunities rather than religion or communities are the cause of entrepreneurship.
McClelland	1961	Achievement motivation is the most critical element to become an entrepreneur.
Hagen	1962	Displacement or status withdrawal is the cause of becoming an entrepreneur.
Papanek	1962	Noneconomic factors serve as cause for entrepreneurship.

(Cont.)

Researcher(s)	Year	Research Perspectives
Rotter	1966	Internal locus of control of an individual is a crucial construct to become an entrepreneur.
Guha	1970	Entrepreneurship is religious phenomenon like Parsi seths as entrepreneurs.
Cooper	1973	Entrepreneurship is a function of conducive environment.
Shapero	1975	Entrepreneurs come from among displaced persons who are characterized by a high degree of persistence.
McClelland and Burnham	1976	A high need for power, a low need for affiliation, and an ability to discipline oneself are the characteristic elements to become an entrepreneur.
Brockhaus	1980	One's ability to control the environment in his/her favor makes one entrepreneur.
Shapero and Sokol	1982	Entrepreneurship depends on situational and cultural factors.
Shepherd	1991	A constellation approach makes entrepreneurship happen.
Manimala	1992	The general and task environments affect entrepreneurship in different degrees and directions.
Clarke and Aram	1997	Behavioral ethics within the context of entrepreneurial dilemmas differ from country to country, though the fundamental values remain the same.
Knight	1997	Entrepreneurial orientation of people/firms is determined by the cross-cultural reliability and validity of a scale known as Entrescale).

Just as there cannot be a jockey without a horse, there cannot be an entrepreneur without an enterprise. Nonetheless, while an entrepreneur is the creator of an enterprise, jockey is not the creator of horse. This indicates that entrepreneurs matters more in enterprise and/or entrepreneurship development.

There is evidence and research to believe that the entrepreneurs form a distinct class in the society and all are not and cannot become entrepreneurs. Although the entrepreneurial history is replete with successful entrepreneurs, yet no one is typical entrepreneur. As such, there is really nothing as a "true entrepreneurial profile". Entrepreneurs come from a variety of educational backgrounds, family occupations,

age-groups, and work experiences. Therefore, a potential entrepreneur may presently be a student, housewife, soldier, unemployed, secretary, salesperson, mechanic, manager or engineer. A potential entrepreneur can also be male or female and of any race, religion, region, or nationality. Hence, it seems pertinent, to first identify who they are before probing into what they are and how they become an entrepreneur. This, therefore, underlines the need for delineating the entrepreneurial profile in terms of their origin and characteristics.

Literature on entrepreneurship research indicates that most of the researches have focused on understanding what causes entrepreneurship development. However, a relatively less



research work has been conducted on where entrepreneurs come from and who they are, i.e., entrepreneurial origin and characteristics. In regards to North-East India (NEI), research on entrepreneurship conducted in NIE has so far been with interest and efforts for developing entrepreneurship in the region (SIET, 1974; Sharma and Akhouri, 1978; Mali and Bandopadhyay, 1995; Mali, 1995; and Dutta, 2000). However, no systematic research work has so far been conducted on where entrepreneurs come from and who they are. It is against this backdrop, the present study proposes to address the two research questions: (1) Where do entrepreneurs come from in the NEI? (2) Who they are?

### THE PRESENT STUDY

The NEI of India consisting of eight states, namely, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim presents a typical case of low level of entrepreneurship development and, in turn, industrial and economic development. As such, the NEI has been reeling under the twin problems of poverty and unemployment which has by now assumed the proportion to “poverty anywhere is dangerous for prosperity everywhere”. Hence, the demand of the situation is to foster and promote economic development in the NEI. Given the limited scope for agricultural development and large-scale industries due to undulating and unfavorable topographical conditions, development of small-scale industries through entrepreneurship development has been considered as the most effective means to foster economic development in the region and, in turn, solve the twin

problems of poverty and unemployment. As such, a number of initiatives have also been taken by the Government for quite some time to develop entrepreneurship and, in turn, industrial and economic development in the region. For example, the Government of Assam started a noble initiative called ‘the Entrepreneurial Motivation Training Centers (EMTCs)’ way back in 1973, to motivate people to become entrepreneurs. The EMTC experiment had been considered as the pioneering effort after Gujarat, in 1971, in the field of entrepreneurship development in India (Nagayya, 2000). Since then, there has been no looking back in this direction. A number of Entrepreneurship Development Programmes (EDPs) have been conducted to develop entrepreneurs in the NEI. Besides, the Government has announced several incentives and concessions to create a favorable environment for the establishment of small-scale enterprises in the region and make entrepreneurship broad-based. In spite of all these, as indicated by various measures of industrial and economic development and findings of some research studies (Sharma and Akhouri, 1978; Awasthi and Sebastian, 1996; Datta, 2000, pp. 73-88), there has not been perceptible improvement in the entrepreneurial and industrial scene of the region. Then, a vexing question arises, that is what are the reasons for low level of entrepreneurship development in the region? Research studies conducted in different countries have shown that along with external factors forming business environment, host of internal factors such as entrepreneur’s demographic characteristics, family background,

psychological attributes, etc., exert their influence on the entrepreneurial responsiveness to the entrepreneurial roles and functions in a given environment (Glade, 1967; McClelland, 1971; Kristiansen, 2001; Khanka, 2009a; and 2009b). Without going into the semantics of the different definitions of the term 'entrepreneur' given by different thinkers (Say, 1827; Schumpeter 1934; and Cantillon, 1755), we in our study adopt a more dynamic view of looking at entrepreneur as a person undertaking activities concerned with the discovery and exploitation of profitable opportunities (Stevenson and Jerillo, 1990; and Shane and Venkataraman, 2000). The present study is confined to the internal factors of entrepreneurs in a specific context like NEI and addresses the two main questions: (1) Where do entrepreneurs come from? (2) Who they are?

**Hypotheses:** The present study sets the following three hypotheses for testing:

1. That people come from far and near to establish industries in the study region to avail incentives and concessions.
2. That given the government's incentives and concessions to establish industries, the entrepreneurs come from all kinds of backgrounds, i.e., both business and nonbusiness backgrounds.
3. That it is mainly locally educated and unemployed individuals entering into entrepreneurship.

## RESEARCH METHODOLOGY

Recognizing that the true display of the entrepreneurial origin and characteristics can well be seen only in case of the owners

of the small-scale enterprises, the present study has, therefore, deliberately been limited to the small-scale entrepreneurs. The definition of small-scale enterprises has been changed from time to time. In accordance with the recent provision of Micro, Small and Medium Enterprises Development (MSMED) Act, 2006, the Micro, Small and Medium Enterprises (MSME) are classified into two classes: manufacturing enterprises and service enterprises. These are defined as follows:

Since, the present study was conducted in the year 2005; the small enterprises covered in the study are as per the previous definition of small-scale industry, i.e., fixed investment in plant and machinery up to ₹ 1 cr.

After selecting the size of industry for the study, the next task was to choose a region, a state and districts subsequently for identifying suitable place for conducting this study. The three considerations that (1) the NER of India has been one of the most backward regions in India, (2) the various studies undertaken so far on entrepreneurship development in India do not cover the NER entrepreneurs for in depth investigations into entrepreneurial phenomenon; and (3) the maximum number of industries in the NER (around 54% of small-scale industries and around 74% of large and medium-scale industries) are located in Assam alone followed by Manipur, became the important bases for selecting Assam and Manipur as the universe of the present study. Considering the dispersal of small-scale industries across the districts in the two states viz., Assam and Manipur, finally in all six districts-05 districts (namely,

THE IMPACT OF GOVERNMENT POLICIES ON THE DEVELOPMENT OF REGIONAL ENTREPRENEURSHIP: AN EXPLORATORY STUDY IN THE NORTH-EASTERN REGION OF INDIA

<b>Manufacturing Sector</b>	
<b>Enterprises</b>	<b>Investment in Plant and Machinery</b>
Micro Enterprises	Does not exceed ₹25 lakh
Small Enterprises	More than ₹25 lakh but does not exceed ₹5 cr
Medium Enterprises	More than ₹5 cr but does not exceed ₹10 cr
<b>Service Sector</b>	
<b>Enterprises</b>	<b>Investment in Equipments</b>
Micro Enterprises	Does not exceed ₹10 lakh
Small Enterprises	More than ₹10 lakh but does not exceed ₹2 cr
Medium Enterprises	More than ₹2 cr but does not exceed ₹5 cr

Sonitpur, Kamrup, Nagaon, Dibrugarh and Jorhat) from Assam and 01 district (namely, Imphal) from Manipur were selected as the survey universe for the study. The survey work was conducted during June-October 2005.

In order to collect the primary data on entrepreneurial origin and characteristics, a structured schedule was prepared at the entrepreneur level. Entrepreneur's places of origin, duration of stay in the NER, family occupational background, their demographic characteristics such as gender, age, education, and status before becoming entrepreneurs were the key variables used in the schedule in consonance with the hypotheses set for the study. For survey purpose, firstly, an up-to-date list of the registered SSIs was obtained from the office of the General Managers, District Industry Centers (DICs) of the 06 sample districts. Then, the two criteria were formulated to satisfy one's inclusion in the sample to suit the main objectives of the study. The two criteria formulated were:

- The entrepreneurs must be the first generation entrepreneurs, i.e., the entrepreneurs must have started

their own enterprises even though they might have family business background. Thus, the entrepreneurs who were just running and managing the ancestral units have not been included in the study.

- Both manufacturing and service units running at least for the last three years were included in the sample study.

For arriving at the actual size of the sample units, two approaches could have been employed. The first approach would have been to have a preliminary survey of all the small-scale industries working at these six districts collecting information regarding the two criteria mentioned above and, then, excluding those units which did not satisfy any one or both the conditions listed as criteria for selection. This process would have given the total units for the study and the size of the sample could have been drawn from this number. The second approach would have been to select more units than the desired sample size and then exclude those units that do not satisfy any one or both the conditions for their inclusion in the

sample. Here, it was assumed that there is a random distribution of such units that are discarded from the total units. The first approach for the selection of the sample could not be employed because it would have involved the cumbersome preliminary survey of all the units situated at the six selected districts to adjudge the above mentioned two criteria for selection. Thus, the second approach was found to be more suitable and feasible for selection of sample in the present study.

In this approach, in the beginning a 75% sample size was drawn from the total number of small-scale entrepreneurs working at the six districts, as reported by the respective District Industry Centers (DICs), by a simple random procedure using lottery method of selection. Then, those units which either did not respond or did not satisfy the two criteria set for one's inclusion in sample study were excluded from the total number of 75%. Thus, schedules were put to those entrepreneurs who satisfied the two basic criteria formulated for this purpose.

In this way, 243 small-scale entrepreneurs (45%) were finally selected to collect the required data with a common schedule canvassed personally. Because of English language difficulties and reading and writing deficiencies, it was decided that the local interviewer would ask the questions and fill out the responses of the interviewee. This was done for all the respondents. Interviewers were trained by the researcher through role-playing the administration of the schedule. A pre-test was made where the interviewers administered the questionnaire to 30 numbers of respondents. They rehearsed the process

of asking the questions and filling in the responses. The survey work was conducted during June-October 2005. These 243 entrepreneurs represented seven categories of industries which appeared that all the categories have been well represented in the sample. With regard to the personal information (bio-data) of the entrepreneurs, in case of a partnership enterprise, bio-data of the most active partner who also initiated the promotion of the enterprise has been collected. Similarly, in case of private limited type of units, bio-data of the managing director, who also was the promoter of the company, has been collected. Thus, the information collected for 243 enterprises contain information of 243 entrepreneurs spread over six district headquarters in the region.

**Limitations:** The present study is subjected to the following two limitations:

1. The region covered in the study is a typically backward one and has certain special characteristics of its own kinds. Therefore, the findings of the study may not or may have only a limited validity in regions which have witnessed a relatively higher level of development and which have different contextual settings in terms of different endowments.
2. The selection of enterprises is again purposive with a view to covering enterprises of diverse nature, each of which has a sizeable number of units operating in one or more districts. In fact, the focus has been on enterprise categories rather than on the area.

## ANALYSIS AND INTERPRETATION

### WHERE DO ENTREPRENEURS COME FROM?

#### *Periodic Origin*

Most of the entrepreneurs covered in this study are relatively of recent origin. Nearly three-fourths of the total entrepreneurs started their enterprises during the post-liberalization period (see Table 1). Thus, this is suggestive of the fact that the industrial activity in Assam and for that matter, in the NER is of a recent origin mainly due to the Government's various incentives and concessions offered to establish small-scale industries during the post-liberalization period, on the one hand, and expansion of entrepreneurial education and training in the recent years creating awareness about the entrepreneurial career among the local people, on the other.

#### *Geographical Origin*

Nearly half of the entrepreneurs (48.56%) are of local origin and around one fourth (24.69%) are from the other districts of the state. The corresponding numbers of women entrepreneurs are expectedly larger, i.e., 66.67% and 25.00% respectively (see Table 2).

The dominance of entrepreneurs with local origin is understandable in terms of what is called "Homeland Factor" in the location of the industries (Weber, 1910), i.e., one's familiarity with the local environment, market, government officials, nexus with family, friends and relatives which make it easier to establish and run the enterprise. It is interesting to note that not a single entrepreneur has come from other states within the NER. This is suggestive of the two things. One, unlike agriculture, industrial activity/enterprise is not a freely mobile factor, willing to move any place for only marginal advantages. *Two*, the fiscal concessions and financial assistance offered on soft terms and conditions to establish industries cannot possibly compensate for the lack of inadequacy of infrastructural facilities like transport, communication, and marketing services (Papola and Tiwari, 1981; and Khanka, 1990, p. 131). People in the North Eastern Region (NER) know very well about the poor infrastructural facilities and unfavorable law and order situation in different states of the North East India (NEI).

The choice of enterprise location has been a subject of research interest since the seminal work of Weber (1910) on "Theory of Location of Industry". Over the

**Table 1: Enterprises by Period of Establishment**

Period of Establishment	Number of Units
Prior to 1947	3 (1.22)
1948-1970	4 (1.64)
1971-1990	55 (22.71)
1991-2000	149(61.30)
2001-2003	32 (13.13)
<b>Total</b>	<b>243(100.00)</b>

**Table 2: Geographical Origin of the Entrepreneurs**

Geographical Origin	Sonitpur		Kamrup		Nagaon		Dibrugarh		Jorhat		Imphal		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Local	18	1	18	01	11	0	28	06	08	01	11	0	94	24
		0				4						2	(45.41)	(66.67)
Beyond the Local but within the State	01	0	13	03	01	-	04	-	01	-	31	0	51	09
		2										4	(24.64)	(25.00)
Beyond the state but within the NER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beyond the NER	18	-	25	-	04	-	07	02	07	01	01	-	62	03
													(29.95)	(8.33)
<b>Total</b>	<b>37</b>	<b>1</b>	<b>56</b>	<b>04</b>	<b>16</b>	<b>0</b>	<b>39</b>	<b>08</b>	<b>16</b>	<b>02</b>	<b>43</b>	<b>0</b>	<b>207</b>	<b>36</b>
		<b>2</b>			<b>4</b>						<b>6</b>		<b>(100)</b>	<b>(100)</b>
														<b>243</b>
														<b>(100)</b>
														<b>(26.75)</b>
														<b>(48.56)</b>
														<b>(60)</b>
														<b>(24.69)</b>

century, this research has resulted in a prodigious volume of publication. However, research on the changes relating to location of industries, also called 'the spatial distribution of industries,' has mainly relied on two broad aspects: enterprise and territory. In the first case, the attention is focused on factors that determine the location choice of an industrial unit. In the second case, the attention is shifted to the nature of the industrial development in a specific region.

Of late, consequent upon the modification of the competitive milieu in the globalized economy, the considerations relating to industry/enterprise location, among other things, have also been modified, and even changed. The choice of location of industry has, therefore, assumed significance in the entrepreneurial decision-making activity. Keeping this in view, we also tried to know the factors considered by our sample entrepreneurs while selecting a specific location for their enterprises.

**Location Choice**

In order to know the influence of various factors in the choice of location, we asked the entrepreneurs in our schedule whether or not he or she had taken into account the factors of location. The degree of influence of various factors on the location choice was measured in terms of the percentage of positive answers obtained by the factors in relation to all 243 entrepreneurs. For the

convenience of analysis, we further classified all the influencing factors into three categories- (1) qualitative (e.g., strategic considerations, agglomeration economies and market features); (2) subjective (e.g., the entrepreneurs' bondage in the area on account of personal circumstances); and (3) regulative factors (e.g., factors related to state subsidies and regulations). Table 3 bears out the factors that influence the location choice of our sample entrepreneurs in aggregate.

The subjective factors have been found to have the most influence (65.60%) in the choice of enterprise location for which reasons are not difficult to seek. Running enterprise at one's native place provides inevitable advantages like knowledge about the market, nexus and rapport with the

various organizations to be dealt with while running the enterprise and, moreover, enjoying the psychological confidence of being the "son of the soil". The female entrepreneurs, like else where in the country (Sethi, 1999, p. 193), are more inclined to locate enterprises at the place of their residence so as to be able to simultaneously attend to their domestic responsibilities as well.

Thus, our first hypothesis that incentives and concessions attract people from far and near to establish industries does not hold true.

Next comes qualitative factors (33.69%) influencing entrepreneurs' choice of industrial location. Market; infrastructural facilities; raw material; population size; economic, social and political milieu; and financial services

**Table 3: Aggregation of Factors Which Influenced the Location Choice**  
(in %)

<b>Qualitative Factors</b>		<b>33.69</b>
1.	Low cost of Labor	10.32
2.	Availability of skilled laborers	28.67
3.	Availability of land at low cost	21.00
4.	Existence of basic infrastructural facilities	55.38
5.	Availability of raw material	40.62
6.	Availability of financial services	31.93
7.	Climate and environmental conditions	18.56
8.	Economic, social and political milieu	32.76
9.	Proximity to densely populated areas	38.39
10.	High number of customers in the area	63.43
11.	Low number of competitors in the area	29.56
<b>Subjective Factors</b>		<b>65.60</b>
12.	Location coincides with the entrepreneur's residence	69.62
13.	Location belongs to the neighborhood of the entrepreneur's residence	61.58

Table 3 (Cont.)

(in %)

	<b>Qualitative Factors</b>	<b>33.69</b>
	<b>Regulative Factors</b>	<b>12.30</b>
14.	Availability of incentives, concessions and subsidies	9.38
15.	Availability of tax exemptions and concession	8.94
16.	Labor and industrial law	11.23
17.	Bureaucratization of the administration	19.68

rank in that order in influencing the choice of enterprise location. The regulation factors are, however, found the least influencing the choice of enterprise location (12.30%). The likely reasons attributable to it are the entrepreneurs' awareness of the government regulations, complex and cumbersome procedure involved in availing of the facilities like subsidies and exemptions, and lack of infrastructural facilities making the government schemes ineffective.

It is worth mentioning that the subjective and objective (qualitative) factors are likely to undergo changes in their influence on the choice of enterprise location. In pursuant to the entrepreneurial maturity, the subjective considerations like family/community/personal contacts become weaker and that of qualitative/economic imperatives grow stronger. This is because the entrepreneurial maturity equips one better to avail of entrepreneurial opportunities wherever they arise (Raghupati, 1995).

#### **Occupational Origin**

While looking at the entrepreneurs in terms of their family occupational background, it is found that, like elsewhere in India, the majority of the entrepreneurs still tend to come from business background (60.49%) and, thus, only a few are drawn from nonbusiness

background, i.e., farming (11.52%) and other professions (27.99%).

This is because having an entrepreneurial/business family background provides a strong inspiration for becoming an entrepreneur. Besides, the independent nature of flexibility of self-employment exemplified by the entrepreneur parent is ingrained in the mind of child at an early age. This is duly validated by one of our sample entrepreneur who stated: "My father was so consumed by the venture he started and provided such a strong example, it never occurred to me to go to work for any one else." This feeling of independence is often further enforced by an entrepreneurial mother. In this way, one's business background is still found to serve as a cushion to opt for entrepreneurial career. As reported in other studies also (Nair and Pandey, 2006), it is seen from our data (see Table 4) that, as a result of government initiatives to develop entrepreneurship across regions and sections of the society, the entrepreneurship is becoming broad-based as increasing number of people belonging to nonbusiness backgrounds are branching out into business/ entrepreneurship.

Thus, our second hypothesis, to a great extent, stands valid that entrepreneurs come from business as well as nonbusiness backgrounds.



**Table 4: Family Background of the Entrepreneurs**

Districts	Entrepreneurs' Family Occupation			Total
	Farming	Trade and Industry	Profession	
Sonitpur	07 (14.28)	35 (71.44)	07 (14.28)	49
Kamrup	01 (1.67)	41 (68.33)	18 (30.00)	60
Nagaon	01 (5.00)	11 (55.00)	08 (40.00)	20
Dibrugarh	02 (4.26)	26 (55.32)	19 (40.42)	47
Jorhat	01 (5.56)	11 (61.11)	06 (33.33)	18
Imphal	16 (32.69)	23 (46.94)	10 (20.41)	49
<b>Total</b>	<b>28 (11.52)</b>	<b>147 (60.49)</b>	<b>68 (27.99)</b>	<b>243</b>

An examination of the entrepreneurs' last occupation or status before entering entrepreneurship, given in Table 5, reveals that nearly one-fourth (23.46%) shifted from paid/salaried job to business.

Nearly 30% of the entrepreneurs came directly to their present venture either after completing their studies or undergoing some period of unemployment. One-fifth of the entrepreneurs who joined entrepreneurship with their previous status as unpaid family workers also might be previously either unemployed or disguisedly unemployed. One-fourths of entrepreneurs (25.92%) were engaged in trading before coming to their present enterprises. On the whole, nearly 70% of the entrepreneurs were engaged in some activity before they entered into entrepreneurship. This is suggestive of the fact that, as reported in some other studies also (Nair and Pandey, 2006), better-off economic and experiential background impacts more to venture into entrepreneurial pursuits.

The above evidence thus does not validate our last hypothesis that it is mainly educated and unemployed individuals who join entrepreneurship.

#### **Occupational Mobility**

Occupational mobility denotes movement or changes in occupation which may take place in two forms. It may be a movement of a son or daughter from the principal occupation of his or her father or it may be a drift in one's own occupation during his/her occupational career. The first type of movement is called inter-generation occupational mobility and the latter type of movement is called intra-generation occupational mobility. The mobility is called horizontal when it takes place between the occupational classes of the equal rank or vertical when it occurs between classes of the unequal rank. Several factors like one's freedom of choice, motivation, efforts of an individual and opportunities available in the society determine one's occupational mobility.

Keeping this fact in view, an attempt has been made to trace out the occupational mobility from paternal grandfathers to the fathers of the entrepreneurs in the region of our study.

**Table 5: Previous Occupation/Status of the Entrepreneurs**

Districts	Previous Occupation/Status of the Entrepreneurs				Total
	Business	Paid Worker	Unpaid Family Worker	Student/ Unemployed	
Sonitpur	7	13	16	13	49
Kamrup	22	10	07	21	60
Nagaon	4	6	3	7	20
Dibrugarh	18	9	11	9	47
Jorhat	5	9	1	3	18
Imphal	7	10	3	19	49
<b>Total</b>	<b>65 (25.92)</b>	<b>57 (23.46)</b>	<b>51 (20.99)</b>	<b>72 (29.63)</b>	<b>243 (100)</b>

**Note:** Figures in parentheses denote percentages to total.

There is some evidence of occupational inheritance or stability, i.e., the tendency to follow one's own father's principal occupation (see Table 6). To cite, out of 228 grandfathers, 148 (65%) of the entrepreneurs followed their fathers' occupation. And, this inheritance is very much evident in the traditional occupations. For example, of the 102 business/industry owner grandfathers, 76 (75%) stayed in their fathers' occupation. Likewise, the occupational inheritance is also well observed in other occupations, i.e., farming and profession.

In spite of above observed occupational stability, there is definitely some degree of occupational mobility as well. For example, of the 73 farmers (first generation), three-fifths (60%) of the individuals have drifted from their fathers' main occupation. At the same time, a comparison of the 102 businesses/industry (owned by First generation individuals) with their 121 businesses/industry owner sons clearly reveals that the sons of farmer and professional grandfathers (first

generation individuals) have drifted to business and industry occupation. This suggests that the change in occupation is from the primary to the secondary occupations.

### WHO THEY ARE?

Demographic variables are the hyperactive areas of behavioral research. Over the past half century and above, this research has resulted in a prodigious volume of literature. However, the entrepreneurial research as a relatively young field has been rife with controversy, breakthroughs and multiple paradigms. The question of how the entrepreneurial characteristics can affect the entrepreneurial roles has, however, been posed and pursued relatively infrequently. This underlines the need for identifying the entrepreneurial characteristics in a research study like the present one.

### Gender

Like elsewhere in the world and India, the number of women entrepreneurs is far less that of male entrepreneurs in the

**Table 6: Inter-Generation Occupational Mobility of Entrepreneurs**

Occupation of the Entrepreneurs' Fathers	Occupation of the Paternal Grandfathers				Total
	Farming	Profession	Business and Industry	Not Known	
Farming	29	–	15	–	44 (18)
Profession	19	43	11	5	78 (32)
Business and Industry	25	10	76	10	121 (50)
Not Known	–	–	–	–	–
<b>Total</b>	<b>73</b> <b>(30)</b>	<b>53</b> <b>(22)</b>	<b>102</b> <b>(42)</b>	<b>15</b> <b>(6)</b>	<b>243</b> <b>(100)</b>

**Note:** Figures in parentheses denote percentages to total.

North-East India is indicated by over four-fifth proportion (85.19%) of the latter in the total sample size (see Table 7).

The reason for such male dominance is not difficult to seek. As Birley and Westhead (1990, pp. 535-590) note, entrepreneurship is an activity that is situationally and culturally bound. The role of women has traditionally been seen by both men and women—to be that of wife and mother. Women bear the reproductive roles of childbearing and rearing, caring for elders and home management, and these responsibilities often lead to work-family conflicts. These, combined with problems arising from the lack of business experience, adequate education and training, spousal and/or family support, role models, inaccessibility to funds due to lack of collaterals, funders' perception of women's weak repaying capacity, difficulty in gaining the confidence of suppliers and clients, etc., have bearing on women in initiating, running and succeeding in business (Stevenson, 1986; Haq, 1992; Kanitkar

and Contractor, 1994; and Ghosh *et al.*, 1998). The nonacceptance of women in business in an orthodox, traditional, and sociocultural driven society of the North-East India is yet an additional reason that explains the lesser number of women entrepreneurs in the region. On the whole, these, perhaps, are the main reasons why there are quite less studies and books published in India on women entrepreneurs than male entrepreneurs in NEI, in particular, and in India, in general.

Some states like Meghalaya, Mizoram, Manipur and Nagaland in NEI are characterized by what is known as matriarchic culture. In regards to the impact of matriarchic culture on entrepreneurship development in the region, it did not have any significant impact on emergence and development of entrepreneurs for the simple reason that women have been involved mainly in trading activities, not in manufacturing and service activities. Furthermore, the present study is mainly confined to Assam which has not been characterized by the

**Table 7: Sex-Composition of Entrepreneurs**

Districts	Entrepreneurs		Total
	Male	Female	
Assam: Sonitpur	37 (75.51)	12 (24.49)	49
Kamrup	56 (93.33)	4 (06.67)	60
Nagaon	16 (80.00)	4 (20.00)	20
Dibrugarh	39 (82.98)	8 (17.02)	47
Jorhat	16 (88.89)	2 (11.11)	18
Manipur: Imphal	43 (87.76)	6 (12.24)	49
<b>Total</b>	<b>207</b> <b>(85.19)</b>	<b>36</b> <b>(14.81)</b>	<b>243</b> <b>(100.00)</b>

**Note:** Figures in parentheses denote percentages to total.

so called matriarchic culture like other states as mentioned above. That is why, like elsewhere in India, entrepreneurs in the present study have also been predominantly men for reasons understandable to the researchers.

#### **Marital Status**

It is seen from Table 8 that married individuals are more in numbers than unmarried ones to join the entrepreneurial careers. This finding is similar to those found in other nations also (Upadhaya and Rutten, 1997).

This is suggestive of the fact that, people join entrepreneurship mainly due to 'push factors', or say, 'economic reasons' which is also termed as 'forced entrepreneurs'. However, this finding is contrary to the findings of earlier study carried out by the present researcher (Khanka, 1990) in Kumaun Division of

Uttaranchal (earlier Uttar Pradesh) in which more unmarried persons (two-thirds) than married ones were found joining entrepreneurship. Most possibly, the contextual differences between the two regions explain the differences in findings. For example, Kumaun Division has been characterized by high degree of out-migration of married males from hills to plains in search of jobs (Khanka, 1990).

Looking at the gender-wise marital status of entrepreneurs, less number of married women (77.78%) than married men (86.47%) joined entrepreneurship for the understandable reasons as the former are to discharge the roles as mother, wife, and home manager/homemaker.

#### **Age**

Table 9 that presents data on breakup of entrepreneurs by age shows that the entrepreneurs are mostly young to middle

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aged (with average age of 41 years) with lowest female literacy rate (46.7%).  
 around 70% being within 30-50 years of age- On the whole, the urn-shaped age-

**Table 8: Marital Status of Entrepreneurs**

Districts	Marital Status of the Entrepreneurs (At the Time of Entry into Entrepreneurship)					
	Married		Unmarried		Total Married	Total Unmarried
	Males	Females	Males	Females	Males	Females
<b>Assam:</b> Sonitpur	28	7	9	5	35	14
Kamrup	54	4	2	-	58	2
Nagaon	16	4	-	-	20	-
Dibrugarh	33	6	6	2	39	8
Jorhat	11	2	5	-	13	5
<b>Manipur:</b> Imphal	37	5	6	1	42	7
<b>Total</b>	<b>179</b> (86.47)	<b>28</b> (77.78)	<b>28</b> (13.53)	<b>8</b> (22.22)	<b>207</b> (85.10)	<b>36</b> (14.82)

bracket. This proportion is as high as 86% in case of women entrepreneurs.

The fact that women entrepreneurs are comparatively younger to their male counterparts is well indicated by quite lower average age (37 years) of the former than that of the latter (42 years). This is explained by the fact that women, due to their reproductive roles in the later ages of marriage, find difficult to enter business. This finding is, however, contrary to the findings of other studies (Das, 1999) carried out in the Southern India (Kerala) in which larger number of women was found entering entrepreneurship during the later years of their middle age. This is, very possibly, because of Kerala's highest sex-ratio (1,050) and the 100% literacy rate of both male and female as against the Assam's one of the lowest sex-ratio (932) and

composition of the entrepreneurs is suggestive of the fact that the propensity to assume the entrepreneurial role, i.e., risk-taking role becomes the maximum in the prime of working age which tends to decline with the advancement in age.

In an attempt to find out if the birth-order has any effect on individual's becoming an entrepreneur, more entrepreneurs (129 out of 243) in our sample were found to be the firstborn. There has so far not been any study conclusively establishing the relationship between the birth-order and entrepreneurs, nonetheless at least two reasons are attributed to such relationship in the present study. One, being the first born or only child is postulated to result in the child receiving special and warm attention and thereby developing more self-confidence. Second, the first-born or only child is inevitably asked to do some petty-

**Table 9: Age-Composition of Entrepreneurs**

Age-Composition	Number of Entrepreneurs		Total
	Men	Women	
20-30	21 (10.14)	5 (13.89)	26 (10.70)
31-40	68 (32.86)	22 (61.11)	90 (37.04)
41-50	75 (36.23)	9 (25.00)	84 (34.57)
51-60	43 (20.77)	–	43 (17.69)
<b>Total</b>	<b>207</b> <b>(100.00)</b>	<b>36</b> <b>(100.00)</b>	<b>243</b> <b>(100.00)</b>
Average Age	42 Years	37 Years	41 Years

**Note:** Figures in parentheses denote percentages to total.

petty type of works relating to family matters including business matters which mould and tune the child subtly towards doing/achieving attitude, i.e., the essential element, according to McClelland (1961), for becoming an entrepreneur.

### **Education**

That the formal education is not a necessary condition for starting business enterprise is well evidenced from the success of high school drop-outs as Andrew Carnegie, William Durant, Henry Ford, William Lear, and Dhirajlal Hirachand Ambani (fondly known as Dhirubhai Ambani).

Nonetheless, it is interesting to note that around two-thirds of the entrepreneurs (65%) are either holding university degrees or technical diplomas (see Table 10), thus, the number of the entrepreneurs with school level of educational qualification is low (35%). This is suggestive of the fact that the propensity or willingness to take risk tends

to increase with increase in level of education and vice versa (Nafziger, 1979). This is because education enlarges one's horizons of knowledge; helps deal with people and communicate effectively which is very important in any entrepreneurial activity. The smaller number of technical diploma and/or degree holders in spite of their more likelihood to make debut into manufacturing ventures is understandable in terms of much less number of such institutions imparting technical education in the region.

### **CONCLUDING REMARKS**

This study on entrepreneurial origin and characteristics offers some interesting and useful insights into entrepreneurial scene in a specific context like Assam in North-East India. The data do not indicate that business acumen is hereditary and, therefore, confined to some families only. The evidence also indicates that family background to which one belongs does not impact much on one's venturing into

Level of Education	Assam												Manipur			Total
	Sonitpur		Kamrup		Nagaon		Dibrugarh		Jorhat		Imphal		M	F	Persons	
	M	F	M	F	M	F	M	F	M	F	M	F				
Upto High School	20	10	5	2	9	-	5	2	4	1	20	3	63 (30.43)	18 (50)	81 (33.33)	
Intermediate	4	-	-	-	-	-	1	-	-	-	-	-	5 (2.42)	-	05 (02.06)	
Graduation and Post-Graduation	13	2	35	2	6	4	25	6	9	1	21	3	109 (52.66)	18 (50)	127 (52.26)	
Technical Education (Diploma or Degree)	-	-	16	-	1	-	8	-	3	-	2	-	30 (14.49)	-	30 (12.35)	
<b>Total</b>	<b>37</b>	<b>12</b>	<b>56</b>	<b>4</b>	<b>16</b>	<b>4</b>	<b>39</b>	<b>8</b>	<b>16</b>	<b>2</b>	<b>43</b>	<b>6</b>	<b>207</b> <b>(100)</b>	<b>36</b> <b>(100)</b>	<b>243</b> <b>(100)</b>	

Note: M = Male, F = Female, P = Person; Figures in parentheses denote percentages to total.

entrepreneurial pursuits. As a result, entrepreneurship is becoming broad-based. It is also evident from data that more economically better-off one is, the greater the chances of his/her embarking on entrepreneurial venture. As for individual characteristics, the evidence shows that there is no typical entrepreneur as such. The fact is that an entrepreneur may be any person with any educational, occupational background, age, with or without work experience, etc. He/she can be male or female, belong to any race, and religion. So to say, entrepreneurs belong to highly heterogeneous backgrounds.

With continuous globalization, it is bound for economies to become more and more industrialized and competitive. In such entrepreneurial context, it is more likely that the entrepreneurs in future will emerge from more diverse backgrounds and will display rather typical characteristics in terms of educational background and work experience.

### DIRECTION FOR FUTURE RESEARCH

The findings flowing from the present study indicate some important areas but not confined to the following only for future research on entrepreneurship development in the North-East India:

- Entrepreneurial inducements offered by the contextual setting of NER.
- Identifying the indigenous social group(s) possessing entrepreneurial acumen and attitudes.
- Investigating into the socio-psychological barriers and taboos inhibiting the emergence and development of entrepreneurship in the region.
- Develop a context-based model on entrepreneurship development in the NER.

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# Trade, Financial Development and Economic Growth Nexus in the Globalize India

Rudra P Pradhan\*

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*The paper examines cointegration and causality between internationalization of trade, financial development and economic growth in India during the globalization era of 1990s, using the monthly data over the period 1994-2010. The analysis is based on cointegration test advanced by Johansen (1991) and Causality test advanced by Granger (1988). The Johansen's test suggests that there is long run equilibrium relationship between internationalization of trade (exports and imports), finance development (market capitalization and money supply) and economic growth (index of industrial production). The Granger causality test confirms the bidirectional causality between economic growth and internationalization of trade (for both exports and imports) and financial development (money supply only). It also finds a unidirectional causality from financial development (market capitalization only) to internationalization of trade (exports only) and economic growth. Based on the empirical findings, the paper suggests that India should go for more internationalization of trade and financial development to enhance economic growth. The continuation of such policies with sustained economic growth is also very desirable for faster internationalization of trade and financial development.*

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## INTRODUCTION

Globalization is a process whereby domestic product, capital and labor markets become more integrated across borders (Stiglitz, 2002). It is a process that has deep historical roots (OECD, 2005). In India, it is not something new. India's economic integration with rest of the world was initially initiated during the decade 1970s and 1980s. However, as per the researchers and economists view, these attempts were considered as half-hearted, self-contradictory and often self-reversing in nature (Harris, 1987).

In contrast, globalization in 1990s had been much wider and much deeper (Sachs *et al.*, 1991) and decidedly marked a 'U-turn' (Wadhva, 2003; and Pradhan, 2006) in many ways in the direction of economic policy followed by India during the last 40 years of centralized economic planning (1950-1990). The only difference between globalization today and before was its speed, which is mostly due to advent of science and technology and improved infrastructure in the economy.

The full phase of globalization has covered one and a half decades in India

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\* Assistant Professor, Vinod Gupta School of Management, Indian Institute of Technology, Kharagpur, India.  
E-mail: rudrap@vgsom.iitkgp.ernet.in

and during these periods, the country receives both achievements and failures. One of such achievements is the flows of trade, financial development and economic growth and their interrelationship. The fundamental question is “whether internationalization of trade or financial development causes economic growth” or “economic growth causes internationalization of trade or financial development”. The issue leads to two different hypotheses. First, supply leading hypothesis, where the causality draws from internationalization of trade and financial development to growth (McKinnon, 1973; Neusser and Kugler, 1998; Levine *et al.*, 2000; and King and Levine, 2003). Second, demand following hypothesis, where the causality draws from economic growth to internationalization of trade or financial development (Jung, 1986). In fact, the nexus between internationalization of trade, financial development and economic growth has been investigated on number of divergent lines and well documented in the finance literature (Demetriades and Luitel, 1996; Beck *et al.*, 2000; Khan and Senhadji, 2000; Tadesse, 2002; Calderon and Liu, 2003; Bhattacharya and Sivasubramanian, 2003; and Katricioglu *et al.*, 2007). A piece of literature suggests a positive association between internationalization of trade, financial development and growth. They are in the view that internationalization of trade and financial liberalization policies reduce the inefficiency in the production process and positively influence economic growth. In other words, the countries with more internationalization of trade and financial

policies certainly grow faster than those with restricted internationalization of trade and financial policies (Pradhan, 2010). The growing anticipation is that globalization is expected to exert a positive link between trade, financial development and economic growth (Pradhan, 2009).

In the last few decades, there are copious studies that have examined the casual relationship between trade, finance development and economic growth. But these empirical findings present conflicting views, particularly with respect to the direction of causality. That means they may or may not cause each other. On the one hand, financial development is caused by economic growth when real growth has been taken place so that the expansion of financial institutions is only a result of the need of the expansion of the real economic activities (Demetriades and Hussein, 1996). On the contrary, the expansion of financial institutions can foster economic growth by increasing savings and borrowing options and the reallocation of capital (Levine, 1997; Neusser and Kugler, 1998; Beck *et al.*, 2000; Levine *et al.*, 2000; and Xu, 2000). In the similar line, trade (both exports and imports) plays a key role in economic growth (Frankel and Romer, 1999). While an expansion of exports will induce a higher rate of economic growth (Michaely, 1977; Balassa, 1978; Heller and Porter, 1978; Tyler, 1981; Feder, 1983; Kavoussi, 1984; Ram, 1985; Ahmad and Harnhirum, 1996; Chandra, 2002; and Mallick, 2005), an increase of imports will raise the expenditure base of the country

(Nandi and Kumar, 2005). But the increase of imports expenditure entirely depends upon the level of economic growth in the country, which is partly financed through increasing exports. By this process, imports and exports are also interrelated to each other, though this relation may be influenced by number of factors like terms of trade (Basu and Mcleod, 1991), trade policies (Clark, 1997) and level of financial development, etc. (Pradhan, 2009). But in the developing countries like India, there is instability of exports and that may affect economic growth adversely (Krishnamoorthy and Reddy, 2002).

The volatility of exports may come up due to number of reasons such as change in price, exchange rate, terms of trade, financial development, etc. (Lim, 1976). The uncertainty in exports and the resulting volatility in economic growth cause fluctuations in the levels of imports. The latter can also disrupt the private development expenditure. This way we get an export-import-finance-growth nexus in an economy. But the major issue in this nexus is the direction of causality. That is in the form of presence/absence of unidirectional/bidirectional causality between trade, financial development and economic growth (Lucas, 1988; Berthelemy and Varoudakis, 1996; Greenwood and Bruce, 1997; Luintel and Khan, 1999; Calderon and Liu, 2003; and Levine, 2003). In this paper, an initiative has been taken to investigate the same in India, particularly during the globalize regime of 1990s.

The remaining of the paper is organized into three sections. Section 2 describes

the empirical model. Section 3 presents the empirical results and its discussion thereof. Section 4 presents conclusion with policy implications.

## 2. EMPIRICAL MODEL AND DATA DESCRIPTIONS

Modelling and forecasting the dynamic relationship among time series could be well established through various time series technique. Perhaps, the simplest one to examine the cause and effect relationship between the variables is the simple regression model. However the shortcomings the simple regression model is that it fails to capture the underlying dynamic causality between variables, which is subsequently analyzed by Granger (1986; and 1988) in terms of Granger Causality (GC) test. The preliminary of GC test is to test the stationarity of the time series variables and their cointegration relationship. Hence, the paper first examines the stationarity and possible cointegrating relationship between internationalization of trade, financial development and economic growth. It then tests the direction of causality between these variables based on the observation made in the above.

### 2.1 UNITY ROOT TESTS FOR STATIONARITY

We start by testing the existence of a long run relationship between internationalization of trade, financial development and economic growth. For this purpose, Johansen (1988) cointegration test would be used after establishing non-stationarity of the series by applying both the Phillips-Perron (Phillips and Perron, 1988) and

Augmented Dickey Fuller (Dickey and Fuller, 1981) unit root tests. It is very common for time series data to demonstrate signs of non-stationarity; particularly both mean and variance of macroeconomic variables trend upwards over time. In any case, test of non-stationarity are carried out as a preliminary step to explore the possibility of a significant long run relationship between the variables concerned, i.e., cointegration tests. The test statistic is used as follows:

$$\Delta X_t = \alpha_1 + \alpha_2 X_{t-1} + \sum_{i=1}^p \beta_i \Delta X_{t-i} + \varepsilon_t \quad \dots(1)$$

where  $Y$  is the variable of choice;  $\Delta$  is the first-difference operator;  $\alpha_i$  and  $\beta_i$  are constant parameters; and  $\varepsilon_t$  is a stationary stochastic process. The number of lags has been chosen by Akaike Information Criterion (AIC).

To determine the order of integration of the series, the equation has to be modified to include second differences on lagged first and  $p$  lags of second differences. This is as follows:

$$\Delta^2 X_t = \eta_1 \Delta X_{t-1} + \sum_{i=1}^p \mu_i \Delta^2 X_{t-i} + \zeta_t \quad \dots(2)$$

where  $\Delta^2$  is the second-difference operator;  $\eta_i$  and  $\mu_i$  are constant parameters; and  $\zeta_t$  is a stationary stochastic process. The  $p$  lagged difference terms are included so that the error terms ( $\varepsilon_t$  and  $\zeta_t$ ) in the respective equations are serially independent. To test for stationarity, the Augmented Dickey

Fuller (ADF) and Phillips and Perron (PP) tests are applied to Equations 1 and 2 respectively. The null hypothesis are  $\alpha_2 = 0$  and  $\eta = 0$  respectively. That means a unit root exists in  $X_t$  and  $\Delta X_{t-1}$ , implying that the series are non-stationary.

## 2.2 COINTEGRATION TEST

The next task is to check whether the series are cointegrated. Specifically, having established the presence of a unit root in the first difference of each variable, we need to test whether the series in each country has different unit roots (non-cointegrated), or shares the same unit root (cointegrated). Cointegrated variables, if disturbed, will not drift apart from each other and hence, possess a long run equilibrium relationship. Testing for the existence of cointegration among economic variables has been widely used in the empirical literature to study economic interrelationships. Its existence would imply that the two series would never drift too far apart. A non-stationary variable, by definition, tends to wander extensively over time, but a pair of non-stationary variables may have the property that a particular linear combination would keep them together, that is, they do not drift too far apart. Under this scenario, the two variables are said to be integrated, or possess a long run (equilibrium) relationship.

The Johansen (1991; and 1988) maximum likelihood test is used to examine the existence of a long run equilibrium relationship between internationalization of trade, finance development and economic growth. The method approaches two statistics:

Trace ( $T_r$ ) test and maximum Eigenvalue ( $\lambda_{max}$ ) test. The estimation procedures of these statistics are as follows:

Let  $X_t$  be a  $(n \times 1)$  vector of variables with a sample of  $t$ . Assuming  $X_t$  follows I(1) process, identifying the number of cointegrating vector involves estimation of the vector error correction representation:

$$\Delta X_t = A_0 + \prod X_{t-p} + \sum_{i=1}^{p-1} A_i \Delta X_{t-i} + \varepsilon_t \quad \dots(3)$$

where the vector  $\Delta X_t$  and  $\Delta X_{t-1}$  are I(1) variables. Hence, the long run equilibrium relationship among  $X_t$  is determined by the rank of  $P$ , say  $r$ , is zero, then Equation (3) reduces to a VAR model of  $p^{th}$  order and the variables in level do not have any cointegrating relationship. If  $0 < r < n$  then there are  $n \times r$  matrices of  $\alpha$  and  $\beta$  such that:

$$\Pi = \alpha\beta' \quad \dots(4)$$

To estimate all these parameters, we have to follow two-step procedures. First, regress  $\Delta X_t$  on  $\Delta X_{t-1}, \dots, \Delta X_{t-p+1}$  and obtain residuals  $\hat{u}_t$ . Second, regress  $X_{t-1}$  on  $\Delta X_{t-1}, \dots, \Delta X_{t-p+1}$  and obtain residuals  $\hat{e}_t$ . The next step is to find the variance-covariance matrices by above residuals.

$$\hat{\Sigma}_{uu} = \left(\frac{1}{T}\right) \sum_{t=1}^T \hat{u}_t \hat{u}_t' \quad \dots(5)$$

$$\hat{\Sigma}_{ee} = \left(\frac{1}{T}\right) \sum_{t=1}^T \hat{e}_t \hat{e}_t' \quad \dots(6)$$

$$\hat{\Sigma}_{ue} = \left(\frac{1}{T}\right) \sum_{t=1}^T \hat{u}_t \hat{e}_t' \quad \dots(7)$$

The maximum likelihood estimator of ' $\beta$ ' is obtained by solving:

$$\left| \lambda \hat{\Sigma}_{ee} - \hat{\Sigma}_{eu} INV(\hat{\Sigma}_{uu}) \hat{\Sigma}_{ue} \right| = 0 \quad \dots(8)$$

with the eigenvalues  $\hat{\lambda}_1 > \hat{\lambda}_2 > \dots > \hat{\lambda}_n$ .

The normalized cointegrating vectors

are  $\hat{\beta} = (\hat{\beta}_1, \hat{\beta}_2, \dots, \hat{\beta}_n)$ , where  $\hat{\beta}' \hat{\Sigma}_{ee} \hat{\beta} = I$

The null hypothesis is  $r = h$  ( $0 \leq h < n$ ) against  $r = n$  and is obtained by:

$$\lambda_{trac} = L_A - L_0 \quad \dots(9)$$

where,

$$L_0 = -\left(\frac{Tn}{2}\right) \log(2\Pi) - \left|\frac{Tn}{2}\right| - \left(\frac{T}{2}\right) \text{Log} \left| \hat{\Sigma}_{uu} \right| - \left(\frac{T}{2}\right) \sum_{i=1}^h \text{Log}(1 - \hat{\lambda}_i) \quad \dots(10)$$

$$L_A = -\left(\frac{Tn}{2}\right) \log(2\Pi) - \left|\frac{Tn}{2}\right| - \left(\frac{T}{2}\right) \text{Log} \left| \hat{\Sigma}_{uu} \right| - \left(\frac{T}{2}\right) \sum_{i=1}^n \text{Log}(1 - \hat{\lambda}_i) \quad \dots(11)$$

and

$$L_A - L_0 = -\left(\frac{T}{2}\right) \sum_{i=h+1}^n \text{Log}(1 - \hat{\lambda}_i) \quad \dots(12)$$

$$2(L_A - L_0) = -T \sum_{i=r+1}^n \text{Log}(1 - \hat{\lambda}_i) \quad \dots(13)$$



Where  $\hat{\lambda}_{r+1}, \dots, \hat{\lambda}_p$  are the estimated  $p-r$  smallest eigenvalues. The null hypothesis is that there are at most  $r$  cointegrating vectors.

The max eigenvalue statistics ( $\lambda_{max}$ ) is:

$$\lambda_{max} = -T \text{Log}(1 - \hat{\lambda}_{r+1}) \quad \dots(14)$$

Here, the null hypothesis of  $r$  cointegrating vectors is tested against an alternative hypothesis of  $r + 1$  cointegrating vectors.

### 2.3 VECTOR ERROR CORRECTION (VEC) MODEL

It is true that many time series variable contain a unit root and the existence of non-stationarity in the time series model lead to spurious regression results and invalidate the conclusions. Toda and Phillips (1993) have led the methods to deal with Granger causality in I(1) systems of variables. A causal long run relationship between non-stationary time series when they are cointegrated could be inferred. Therefore, if cointegration analysis is omitted, causality tests present evidence of simultaneous correlations rather than causal relations between variables. The presence of a cointegration relation forms the basis of the VEC specification. Moreover, Granger Causality test may provide invalid causal information due to the omission of error correction terms from the test (Doyle, 2001).

The simple Granger's causality test becomes inappropriate when cointegrating vectors are obtained in the series. According to Granger's representation theorem, the results of

cointegration imply that  $X$  and  $Y$  have the following error correction representations:

$$\begin{aligned} \Delta Y_t = & \phi_1 + \sum_{i=1}^p \alpha_i \Delta Y_{t-i} \\ & + \sum_{j=1}^q \beta_j \Delta X_{t-j} + \delta_j EC_{t-1} + \xi_t \end{aligned} \quad \dots(15)$$

$$\begin{aligned} \Delta X_t = & \phi_2 + \sum_{i=1}^r \eta_i \Delta X_{t-i} \\ & + \sum_{j=1}^s \mu_j \Delta Y_{t-j} + \delta_j EC'_{t-1} + \zeta_t \end{aligned} \quad \dots(16)$$

where,  $EC_{t-1}$  and  $EC'_{t-1}$  are the error correction terms and are the first lagged values of the disturbance terms from the equivalent cointegration regressions;  $\delta_1$  and  $\delta_2$  are the error-correction coefficients, which are expected to capture the adjustments of  $\Delta Y_t$  and  $\Delta X_t$  towards long run equilibrium  $\Delta Y_{t-i}$  and  $\Delta X_{t-j}$  are expected to capture the short-run dynamics of the system;  $\Delta$  is the difference operator;  $t$  stands for time and  $\xi$  and  $\zeta$  are non-serially correlated disturbance terms. The Equation 7 represents that  $X$  Granger causes  $Y$ , if  $\beta_j$  and  $\delta_j$  are significantly different from zero. The Equation 8 represents that  $Y$  Granger causes  $X$ , if  $\mu_j$  and  $\delta_j$  are significantly different from zero.

The investigation has been undertaken in India during the globalization regime of 1990s. The data used for this empirical investigation is monthly from 1994 to 2010 and has been collected from *Handbook of Statistics on Indian Economy*, Reserve Bank of India,

Mumbai. The variables used in this study are: Index of Industrial Production (IIP), used as a proxy to economic growth; broad money (M-S)<sup>1</sup> and stock market capitalization (MC)<sup>2</sup>, used as an indicator to financial development; Export (EX) and Import (IM), used as an indicator to internationalization of trade. It is to be noted that some of the variables are taken in proxy because of the month-wise analysis only.

## RESULTS AND DISCUSSION

Following convention, the data on Index of Industrial Production (IIP), Market Capitalization (MC), real Exports (EX),

real Imports (IM) and broad Money Supply (MS) are first transformed into logarithmic form so that first differences of these variables reflect the rate of change. A univariate analysis is carried out to investigate the stationary properties of the data (see Table 1). In the first stage of the empirical investigation, the order of integration of the data is investigated. The ADF and PP unit root tests are deployed for the same. The unit root results for IIP, MC, EX, IM and MS are reported in Table 2. The results indicate the acceptance of unit root hypothesis in the levels of IIP, MC, EX, IM and MS.

**Table 1: Descriptive Statistics**

Variable	Mean	Median	St. Dev.	JB
IIP	2.272	2.252	0.142	7.847
MC	6.035	5.846	0.397	23.98
EX	3.709	3.606	0.289	18.43
IM	3.822	3.671	0.340	19.17
MS	5.654	5.631	0.273	11.56
Variable	Minimum	Maximum	Skewness	Kurtosis
IIP	2.0022	2.756	0.159	2.602
MC	5.5422	6.856	0.678	1.924
EX	3.2639	4.305	0.487	1.836
IM	3.2891	4.525	0.540	1.891
MS	5.1970	6.175	0.173	1.849

**Note:** IIP: Index of Industrial Production; MC: Stock Market Capitalization; EX: Exports; IM: Imports; and MS: Money Supply ( $M_2$ ).

- <sup>1</sup> Money supply means the total amount of money that available in the country at a particular point of time. It can be expressed in two ways: narrow measure and broad measure. Narrow money is directly affected and controlled by monetary policy, while broad money is closely related to monetary policy actions. In India,  $M_1$  is considered as narrow money, while  $M_2$  is considered as broad money. Analysts use  $M_2$  when looking to quantify the amount of money in circulation and trying to explain different economic monetary conditions. It can be noted that  $M_2$  is a key indicator for forecasting inflation and finance development. That is why  $M_2$  is used in this study as a proxy to finance development to examine the nexus between trade, financial development and economic growth in India during the globalization era of 1990s.
- <sup>2</sup> Stock market capitalization is capital market instrument, which is used for enhancing economic growth. It is the discount rate used to determine the present value of future earnings. It is one of the major determinants of the market size of any stock exchange. The size of market capitalization and its rate pose a major influence on the economic growth and development of an economy. The rate is based on the forces of demand and supply of securities (Bakare, 2000). The component is used here as a proxy to financial development.

**Table 2: Unit Root Test Results**

	ADF		PP		Conclusion
	LD	FD	LD	FD	
IIP	0.12	-2.79*	0.19	-35.6*	I(1)
MC	0.18	-12.3*	0.08	-12.3*	I(1)
EX	0.78	-4.94*	0.16	-29.0*	I(1)
IM	-0.97	-23.3*	-0.15	-22.9*	I(1)
MS	2.38	-3.24*	1.87	-15.5*	I(1)

**Note:** 1. ADF: Augmented Dickey Fuller Test; PP: Phillips- Perron Test; LD: Level Data; FD: First Difference Data; I(1): Non-stationarity; I(0): Stationarity; \*: Indicates Statistical Significance; and other notations are defined earlier.  
2. MacKinnon's (MacKinnon, 1991) tabulated value has been used to test the level of significance.

However, the tests reject the unit root hypothesis at the first difference level. This represents that the first differences of variables are stationary and indicates that the variables are integrated of order one [I(1)].

In the second stage, the Johansen Maximum Likelihood test is used to ascertain whether or not the variables are cointegrated. This provides a unified framework for estimation and testing of cointegrating relations in context of a VAR error correction model (VECM). The cointegration rank 'r' of the time series was tested using two test statistics. Denoting the number of cointegrating vectors by 'r<sub>0</sub>', the maximum eigen value ( $\lambda$ -Max) test is calculated under the null hypothesis  $r_0 = r$  against an alternative hypothesis  $r_0 > r$ . The trace test ( $\lambda$ -Tra) is calculated under the null hypothesis that  $r_0 \geq r$  against  $r_0 < r$ . The results of both the statistics are reported in Table 3. The results indicate that, for each pair, there is at least one cointegration between the variables, implying the presence of long run equilibrium relationship between the two. In combination, it can be inferred that there is evidence of a long run equilibrium

relationship between trade, financial development and economic growth.

According to the Granger representation theorem, a system of cointegrated variables has an error correction representation that combines the short run dynamics of the variables with their long run properties as implied by the cointegrating relationships. Consequently, Vector Error Correction Model (VECM) has been formed and estimated to determine the direction of causality between trade, financial development and economic growth. Table 4 presents the estimated results of VECM within the bivariate system for IIP, MC, EX, IM and MS. The F-statistics has been used for the joint significance of the lagged independent variables, while t-statistics has been used to test the significance of error correction term. The results represent the followings:

- Unidirectional causality between economic growth and market capitalization [MC => IIP], market capitalization and export [MC => EX] and money supply to import [MS => IM].

**Table 3: Johansen Cointegration Likelihood Ratio Test Results**

	NH	AH	$\lambda$ -Max	CV	$\lambda$ -Tra	CV
IIP and MC	$H_0: r = 0$	$H_A: r = 1$	19.30*	12.320	12.20*	11.220
	$H_0: r \leq 1$	$H_A: r = 2$	7.14*	4.129	7.13*	4.129
IIP and EX	$H_0: r = 0$	$H_A: r = 1$	17.90*	12.320	15.30*	11.220
	$H_0: r \leq 1$	$H_A: r = 2$	2.67	4.129	2.67	4.129
IIP and IM	$H_0: r = 0$	$H_A: r = 1$	14.70*	12.320	11.60*	11.220
	$H_0: r \leq 1$	$H_A: r = 2$	3.08	4.129	3.08	4.129
IIP and MS	$H_0: r = 0$	$H_A: r = 1$	84.70*	12.320	80.60*	11.220
	$H_0: r \leq 1$	$H_A: r = 1$	4.08*	4.129	4.08*	4.129
MC and EX	$H_0: r = 0$	$H_A: r = 1$	16.10*	12.320	11.90*	11.220
	$H_0: r \leq 1$	$H_A: r = 1$	6.21*	4.129	6.21*	4.129
MC and IM	$H_0: r = 0$	$H_A: r = 1$	12.70*	12.320	7.38*	11.220
	$H_0: r \leq 1$	$H_A: r = 1$	5.33*	4.129	5.33*	4.129
MC and MS	$H_0: r = 0$	$H_A: r = 1$	52.50*	12.320	49.80*	11.220
	$H_0: r \leq 1$	$H_A: r = 1$	2.65	4.129	2.65	4.129
EX and IM	$H_0: r = 0$	$H_A: r = 1$	24.70*	12.320	18.40*	11.220
	$H_0: r \leq 1$	$H_A: r = 1$	6.29*	4.129	6.29*	4.129
EX and MS	$H_0: r = 0$	$H_A: r = 1$	44.10*	12.320	43.50*	11.220
	$H_0: r \leq 1$	$H_A: r = 1$	0.61	4.129	0.61	4.129
IM and MS	$H_0: r = 0$	$H_A: r = 1$	53.20*	12.320	52.40*	11.220
	$H_0: r \leq 1$	$H_A: r = 1$	0.77	4.129	0.77	4.129

**Note:** NH: Null Hypothesis; AH: Alternative Hypothesis;  $\lambda$ -Max: Maximum Eigen value;  $\lambda$ -Tra: Trace Statistics; CV: Critical Value at 5% significance level;  $r$  denotes the number of cointegrating vectors; \*: Indicates Statistical Significance at 5%; and other notations are defined earlier.

**Table 4: Results of Vector Error Correction Model**

CR	NH	Lag 1		Lag 2		Lag 3		C
		EC	F	EC	F	EC	F	
IIP and MC	MC => IIP	-2.20**	20.60*	-2.20**	14.30*	-2.30*	10.60*	√
	IIP => MC	2.07	2.19	2.10	1.469	2.00	1.18	X
IIP and EX	EX => IIP	-0.70*	20.50*	-0.80**	15.80*	-1.35	12.00*	√
	IIP => EX	2.50**	21.50*	2.28	15.30*	1.66	12.70*	√
IIP and IM	IM => IIP	20.80*	3,791*	-2.40**	16.80*	-2.77*	13.20*	√
	IIP => IM	2.14	5,057*	2.46**	15.00*	2.67	10.90*	√
IIP and MS	MS => IIP	-3.40**	26.40*	-2.60**	16.70*	-4.03**	14.70*	√
	IIP => MS	4.89*	7.98*	5.39*	5.88*	3.30**	14.70*	√
MC and EX	EX => MC	-1.49	1.52	-1.66	1.03	-1.59**	0.83	X
	MC => EX	3.77*	27.00*	3.49**	18.90*	3.12*	13.70*	√
MC and IM	IM => MC	-1.86*	3.05*	-2.11*	2.28**	-1.95**	2.63**	√
	MC => IM	3.67**	26.90*	3.88*	16.40*	3.63	11.70*	√

Table 4 (cont.)

CR	NH	Lag 1		Lag 2		Lag 3		C
		EC	F	EC	F	EC	F	
MC and MS	MS => MC	-2.17	2.57	-2.25	1.65	-2.25	1.66	X
	MC => MS	0.72	0.44	0.78	0.33	0.78	0.32	X
EX and IM	IM => EX	-1.91*	22.9*	-0.08	15.5*	-0.95	11.4*	√
	EX => IM	4.78*	29.2*	4.82*	17.9*	4.11*	13.1*	√
EX and MS	MS => EX	-2.52	23.3*	-2.01	16.9*	-2.24	12.7*	√
	EX => MS	1.36	1.75	1.09	1.18*	0.15	5.84*	√
IM and MS	MS => IM	-2.45	22.3*	-2.47	13.7*	-2.6	9.98*	√
	IM => MS	0.21	0.02	0.58	0.91	0.46	2.56	X

**Note:** CR: Causal Relationship; NH: Null Hypothesis; EC: Error Correction; F: *F*-statistics; C: Causality; √: Supports causality; X: Does not support causality; and other notations are defined earlier.

- The bidirectional causality between economic growth and exports [IIP  $\Leftrightarrow$  EX], economic growth and imports [IIP  $\Leftrightarrow$  IM], economic growth and money supply [IIP  $\Leftrightarrow$  MS], market capitalization and import [MC  $\Leftrightarrow$  IM], import and exports [IM  $\Leftrightarrow$  EX] and export and money supply [EX  $\Leftrightarrow$  MS].
- No causality between market capitalization and money supply [MC  $\nrightarrow$  MS].

Hence, the notions of short run and long run causality between trade, financial development and economic growth have interesting economic interpretation. For instance, the change of market capitalization leads to change of economic growth and exports; and change of money supply leads to change of imports. Similarly, change of economic growth leads to change of exports (and vice versa), change of imports and change of money supply (the vice versa is also true). Similarly, the change of market capitalization leads to imports (and vice

versa); change of imports lead to change of exports (and vice versa); and change of exports leads to change of money supply (and vice versa). However, change of market capitalization does not influence the money supply (and vice versa) in the economy.

## CONCLUSION

The study explores the cointegration and direction of causality between trade, financial development and economic growth in India during the globalization era of 1990s. The results reveal that there is long run equilibrium relationship between trade, financial development and economic growth during the period 1994 to 2010. The causality test confirms that economic growth (IIP) leads to internationalization of trade (for both exports and imports) and financial development (for money supply only). The reverse causality does valid here, representing that internationalization of trade (for both exports and imports) and financial development (money supply only) leads to economic growth. Moreover, financial development (market

capitalization only) leads to internationalization of trade (exports only) and economic growth (IIP), but the reverse causality does not valid. The result shows bidirectional causality between exports and imports under internationalization of trade, while no causality between market capitalization and money supply under financial development.

To conclude, an enhanced economic growth is responsible for internationalization of trade and financial development in the economy. This is quite obvious as with enhanced economic growth, the country opts for internationalization of trade and financial development. It is also expected that the future of economic growth in the country will also foster internationalization of trade

and financial development. Similarly, the dynamism of internationalization of trade and financial development will faster the economic growth in the economy. Based on the empirical findings, it is suggested that India should go for more internationalization of trade and financial development to enhance economic growth. The continuation of such policies with sustained economic growth is also required to promote more internationalization of trade and financial development.

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# HRM Practices, Attitudinal Outcomes and Turnover Intent: An Empirical Study in Indian Oil and Gas Exploration and Production Sector

Giri Raj Dhiman\* and R P Mohanty\*\*

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*This paper presents a study, which examines the relationship between Human Resource Management (HRM) practices, attitudinal outcomes and turnover intent in oil and gas exploration and production sector in India. Results indicate that significant relationship exists between HRM practices, affective organizational commitment, employee satisfaction and turnover intent. All HRM practices and attitudinal outcomes have significant negative relationship with turnover intent. Further, it establishes that affective commitment and employee satisfaction partially mediate the relationship between HRM practices and turnover intent. The study has a number of important implications for HRM interventions.*

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## INTRODUCTION

The role of Human Resources Management (HRM) in organizational performance and growth has been widely accepted by the researchers (Delaney and Huselid, 1996; Paul and Anantharaman, 2003; Godard, 2004; and Singh, 2004). There exists a need to prove it empirically (Wood, 1999; Wright *et al.*, 2003; and Boselie *et al.*, 2005). According to resource-based view propounded by some researchers (Block and Kossek, 2000; Daft, 2001; and Ulrich *et al.*, 2001) competitors can copy technologies and strategies and they may not be the instruments of competitive advantage for organizations. However, HRM systems

and practices because of their inimitability can become potential strategic lever and core strength of the organization. Though many studies have indicated positive relationship between HRM practices and organizational performance, yet direct linkage has always been a matter of concern in HRM research. Higher-level outcomes such as operational and financial performance are influenced by the increasing complexity of factors (Boselie *et al.*, 2005; and Paauwe and Boselie, 2005). Previous studies emphasize the need for establishing causal linkage between HRM practices and more proximal HR outcomes (Dyer and Reeves, 1995; Becker and Gerhart, 1996; Delery, 1998; Agarwala, 2003; Paul and

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\* Manager (HR), ONGC and Research Scholar, BITS Pilani, India; and is the corresponding author. E-mail: gr\_dhiman@rediffmail.com

\*\* Dean and Adviser, ITM Group of Institutions, Navi Mumbai, India. E-mail: rpmohanty@gmail.com

Anantharaman, 2003; and Wright *et al.*, 2003). According to Guest (1997), HRM practices impact organizational performance through proximal measures such as commitment, organizational citizenship behavior and employee retention. However, very few studies have been carried out on examining such relationship (Agarwala, 2003; Harmon *et al.*, 2003; and Paauwe and Boselie, 2005). Most of the research studies are based on linkage between single HRM practice and employee attitudes (e.g., effect of compensation or performance appraisal practices on job satisfaction and organizational commitment or employee turnover). There is very little evidence relating to the linkage between HRM practices, attitudinal outcomes (organizational commitment, employee satisfaction) and turnover intent. One likely reason may be the lack of firm level authentic data for validation. The second might be the lack of a systemic theory behind the linkage mechanism.

The objective of this study is to test empirically the association between HRM practices and attitudinal/behavioral outcomes: Employee satisfaction, Affective organizational commitment, and Turnover intent in the context of recently deregulated oil industry in India with a focus on Exploration and Production (E&P) sector.

## REVIEW OF LITERATURE

There has been a lot of research on HRM practices and their impact on organizational performance during the recent past (Arthur, 1994; Huselid, 1995; Mac Duffie, 1995; and Ulrich *et al.*, 2001).

However, very less research has been conducted to understand and explore the black box, i.e., the process through which HRM practices impact organizational performance. Moreover, the recent studies on HRM and organizational effectiveness lack sound theoretical grounding (Pare and Tremblay, 2007) and there is no agreement on the set of HRM practices to be used for the study. Various models such as universal best practices, strategic fit, configurational and Ability, Motivation and Opportunities to participate (AMO) have been presented by different schools of thought. However, only AMO framework has gained a level of acceptance among researchers (Paauwe and Boselie, 2005). According to AMO framework, HRM practices influence attitudinal and organizational outcomes through improving ability and skills of employees, motivating them; and creating opportunities for involvement and participation. Purcell *et al.* (2003) carried out a major study in 12 organizations based in UK to assess the impact of people management policies and practices on organizational performance. They measured the impact of 11 elements of HR practices using AMO framework and found strong correlation between HR practices, HR outcomes (organizational citizenship behavior, organizational commitment and employee satisfaction) and firm performance. They presented their study in the form of a model called Bath People and Performance Model.

Pare and Tremblay (2007) in their study on information technology professionals in Canada found that non-monetary recognition; competency

development, fair rewards and information-sharing practices are negatively and directly related to turnover intentions. The authors also observed that procedural justice, affective and continuance commitment, and citizenship behavior partially mediate the effects of high-involvement HR practices on turnover intentions of highly skilled professionals. Similarly, Guthrie (2001) examined the impact of HR practices on turnover and firm productivity among a sample of firms in New Zealand. He noted that HR practices had an impact on turnover and that the relationship between retention and productivity was positive when firms implemented high involvement HR practices but negative when they did not. Guest (1997) took this area of research one step further in proposing a model that can be tested. His model suggests that HRM practices influence attitudinal outcomes (organizational commitment, employee satisfaction), which in turn influence behavioral outcomes (employee turnover), organizational outcomes (productivity, shrinkage, etc.), and finally, financial outcomes (profit, return on capital employed, etc.).

Bowen and Ostroff (2004) contributed significantly in theory building in HRM practices and their impact on attitudinal outcomes. They argued that organizational climate is an important mediating variable in HRM-firm performance relationship. According to their framework 'strong climate' can be viewed as 'strong situation' in which employees share a common interpretation of what is important and what behaviors

are expected and rewarded. Building on this premise, Bowen and Ostroff (2004) argued that strength of HRM policies impacts organizational climate and shared perceptions, which in turn create strong situations and desired outcomes like high commitment and low turnover intent. Benkhoff (1997) conducted a study to explore the link between HRM characteristics, employee satisfaction, intention to stay and organizational performance. Using Social Identity Theory and Group Processes, he carried out a survey among bank employees and found that commitment emerged as the central variable and it was closely related to work satisfaction and intention to stay. His study also indicated significant impact of commitment on organizational performance. In Indian context, Paul and Anantharaman (2003) conducted a study on software professionals in India and found that HRM practices such as employee-friendly work environment, career development, development-oriented appraisal, and comprehensive training indicated a significant positive relationship with organizational commitment.

In the subsequent sections, we intend to discuss the organizational commitment, employee satisfaction, and turnover intent.

## ORGANIZATIONAL COMMITMENT

Many researchers have defined commitment but there is no agreement on any particular definition. Porter *et al.* (1974) defined organizational commitment as strong belief in and acceptance of the organizational goals and

values, willingness to exert considerable effort on behalf of the organization and a definite desire to maintain organizational membership. This definition highlights three distinct dimensions: A strong belief and acceptance of the organization's goals and values, a willingness to exert considerable effort on behalf of the organization and a strong desire to maintain membership in the organization. Meyer and Allen (1991) reviewed the organizational commitment theory and research and proposed a three-component model of commitment that they referred to as affective, continuance and normative commitment. Affective commitment refers to employee's emotional attachment to, identification with, and involvement in the organization. Employees with strong affective commitment continue employment with the organization because they want to do so. According to Manion (2004) affective commitment is based on the strength of positive feelings that increase the emotional bond. The second component, continuance commitment is based on the awareness of the costs associated with leaving the organization. Employees with continuance commitment remain with the organization because they need to do so. The third component, normative commitment reflects a feeling of obligation on part of the employee to continue employment. Normative commitment derives from feelings of obligation to stay brought about by events before or after joining the organization. Earlier studies indicate positive relationship between HRM practices and organizational commitment (Guest, 1997; Sharma and Joshi, 2001; Purcell *et al.*,

2003; and Paul and Anantharaman, 2003). Organizations rely upon commitment as a key ingredient of successful initiatives, including quality management. High commitment seems to be a critical success factor where intellectual contributions to the organizations are needed (Swales, 2002). The antecedents of organizational commitment such as job challenge; role clarity, goal clarity, personal importance and equity as identified by Meyer and Allen (1991) are influenced by HRM practices. Zornitsky (1995) studied the relationship between HR practices and attitudinal and behavioral outcomes and indicated that HR practices contributed to the economic success of an organization through enhanced employee commitment and satisfaction. Previous research (Iverson and Buttigieg, 1999) indicates that out of three commitment constructs only affective commitment is the most beneficial in organizational performance context.

#### EMPLOYEE SATISFACTION

Employee satisfaction is a very critical issue in management and has become one of the most important drivers of quality, customer satisfaction and productivity (Matzler *et al.*, 2004). Jacob and Mikkil (2000) defined employee satisfaction as gratification or prosperity that the employees get from their job/organization. This definition incorporates all aspects that are related to the influence of the job and the organization on employee or employee perception. Satisfied employees will have low tendency for attrition that in turn will save the investment on hiring and training new employees. Previous

studies (Jacob and Mikkell, 2000; Matzler and Renzl, 2006 and 2007; Hooi, 2007; and Yee *et al.*, 2008) have indicated enough evidence in support of positive relationship between HRM practices, commitment and employee satisfaction. Matzler *et al.* (2004) carried out a study on HRM practices and employee satisfaction in pharmaceutical industry. They mentioned that there are three factors which cause satisfaction/dissatisfaction among employees. First, the basic factors are similar to Herzberg's hygiene factors and cause dissatisfaction if not fulfilled but do not lead to satisfaction if fulfilled or exceeded. The fulfilment of basic requirements is a necessity but not a sufficient condition for satisfaction. Basic factors are entirely expected. Negative performance on these attributes has a greater impact on overall satisfaction than positive performance. Second called excitement factors are similar to Herzberg's motivating factors that increase level of satisfaction if delivered but do not cause dissatisfaction if they are not delivered. In other words, presence of these attributes has positive impact on employee satisfaction whereas their absence does not have any impact on satisfaction level. The third called performance factors lead to satisfaction if the presence of attributes falling under this category is high and vice versa. Matzler *et al.* (2004) studied nine areas of HRM in their research on employee satisfaction. These areas were top management, superiors, colleagues, job conditions, remuneration, job content, recognition, responsibility and personal development. Items like superior offers adequate chances of promotion, job makes

sense, fair remuneration, opportunity to take on work responsibility and firm characteristics like achievement and strategy-oriented firm were found to be the basic factors. Further, job training and adequate powers for decision-making were found to be the excitement factors and items with characteristics of the superior and job characteristics like job content is multifaceted were found to be the performance factors.

#### TURNOVER INTENT

Cotton and Tuttle (1986) defined turnover intent as an individual's perceived probability of staying or leaving the organization. There is enough research evidence indicating that voluntary turnover can be explained by employee's intention to leave the organization (Hemdi and Nasuridin, 2006). Theoretical frameworks suggest that retention can influence organizational effectiveness because more experienced employees would have greater knowledge of organizational goals. Low turnover will reduce the hiring and training costs that in turn will enhance financial performance. Empirical evidence also indicates that employee turnover does have negative correlation with HRM practices and organizational effectiveness (Arthur, 1994; Huselid, 1995; Guthrie, 2001; Koys, 2001; and Agarwala, 2003). Studies on turnover intent point that employee satisfaction and commitment have significant negative influence on withdrawal intentions (Koys, 2001; and Anat, 2005). Allen *et al.* (2003) in their study suggested that perceptions of supportive HR practices contribute to the development of perceived organizational

support, which mediates the relationship between those practices, organizational commitment and job satisfaction. They found that supportive HR practices influence perceived organizational support, which in turn influenced job satisfaction and organizational commitment, which in turn influenced turnover intentions, leading to turnover. Similarly, Steers and Mowday (1981) suggested a model of employee turnover and proposed that job expectations influence individual's affective responses, which then influence individual intentions, which in turn lead to turnover decision. According to Peterson's (2004) organizational model of employee persistence the employee turnover intentions, employee commitment, job satisfaction and goals are influenced by the employee-organizational relationships such as employee-supervisor relationship, person-job fit, person-organization fit, interaction with peers and organizational support.

## INDIAN OIL AND GAS E&P INDUSTRY

Petroleum is an important source of energy and accounts for 39% of India's total energy requirements. Indian oil and gas sector accounts for more than 30% of India's import bill. India is currently the fourth largest oil consumer in Asia-Pacific region and with GDP growth rate of 6 to 8% the consumption of petroleum and natural gas is projected to increase at a CAGR of between 4.5- 6.0 and 6.9- 9.1% respectively for the period between 2004 and 2030 (Ministry of Petroleum and Natural Gas, India). Like other industries

oil and gas sector is also facing shortage of talented workforce (Fundamentals of the Global Oil and Gas Industry, 2007). Studies conducted within India and other countries identified low industry attractiveness among youth as one of the main reasons behind demand and supply gap of talented workforce. Surveys (Oil & Gas Investor, 2005; and Petroleum Federation of India Report, 2006) reported that young generation does not find any future in such industry that depends on declining oil production wells and depleting reservoirs. There has been a steady decline in admissions in Petroleum Technology related courses in colleges and universities in India and abroad. Low industry awareness among youth has been reported as another reason behind this trend. Korn/Ferry International's global energy practice surveyed HR executives within 150 major diversified and independent energy companies on attraction and retention issues (Oil & Gas Investor, 2007). According to the survey results, 94% of the HR executives in oil and gas industry report that acquiring top talent is more difficult now than 10 years ago. Companies are developing creative solutions to meet individual needs to retain talent. Aggressive compensation plans, direct access to top leadership, flexible working arrangements, job rotation and opportunities to learn are the most popular retention tools. Also cited as effective strategies are leadership development programs, coaching and mentoring programs and employee feedback and counselling mechanisms.

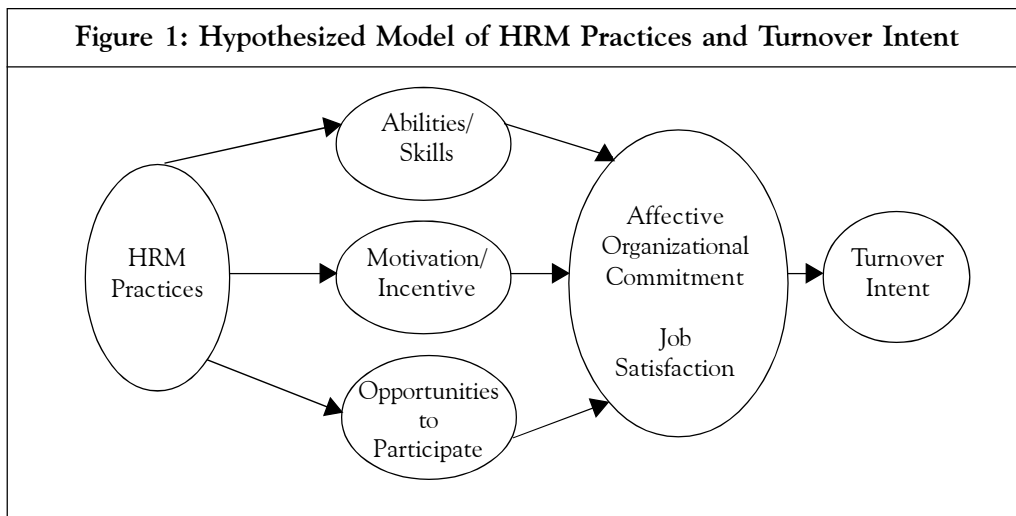
Despite the fact that oil and gas companies are putting their best efforts

towards attracting and retaining the talented workforce, HR professionals in the industry are still grappling with the problem of attracting the youth. Empirical evidence (Oil & Gas Investor, 2005) indicates that between the next 5 years and 10 years, many new employees need to be added to the ranks of upstream technical personnel. Without an influx of new people, E&P projects could encounter major delays that with developed and developing economies aiming for ever-higher volumes of petroleum-based fuels and products, could turn the world energy supply picture upside-down (Oil & Gas Investor, 2005). The above challenges cannot be addressed by oil and gas industry alone and need initiatives at different levels such as government level to establish more institutes in petroleum sector and at industry level to have better interface with academia. However, the fact remains that the oil and gas E&P companies cannot attract and retain the top talent without identifying and implementing such HRM practices that

have positive impact on employee motivation, commitment, satisfaction and that result into low turnover intent. In order to understand the high performance HRM practices, which have positive impact on employee attitudinal outcomes a deeper investigation needs to be carried out in this industry in different contexts. A study in Indian context will therefore, create a better understanding about HRM practices and their impact on employee commitment, satisfaction and turnover intent in oil and gas industry.

Drawing from literature review, the resource-based view, AMO framework, Bath People and Performance Model; and the Guest's model (1997), we propose a model depicted in Figure 1 for Indian oil E&P industry.

According to this model, HRM practices enhance employee abilities skills, increase their motivation level and create opportunities to participate. When employees have the required abilities and skills, motivation to work and opportunities





for involvement in decision-making they will be more satisfied and will reciprocate with higher organizational commitment resulting in low turnover intent. Organizational performance in E&P sector depends on many external factors other than HRM practices. Therefore, our model does not incorporate organizational and financial outcomes as has been suggested in other models linking HRM with organizational performance. Based on the above discussion and literature review, we propose the following hypotheses:

**Hypothesis 1**

There is a positive relationship between HRM practices, affective organizational commitment and employee satisfaction.

**Hypothesis 2**

Turnover intent has a negative relationship with HRM practices, affective organizational commitment and employee satisfaction.

**Hypothesis 3**

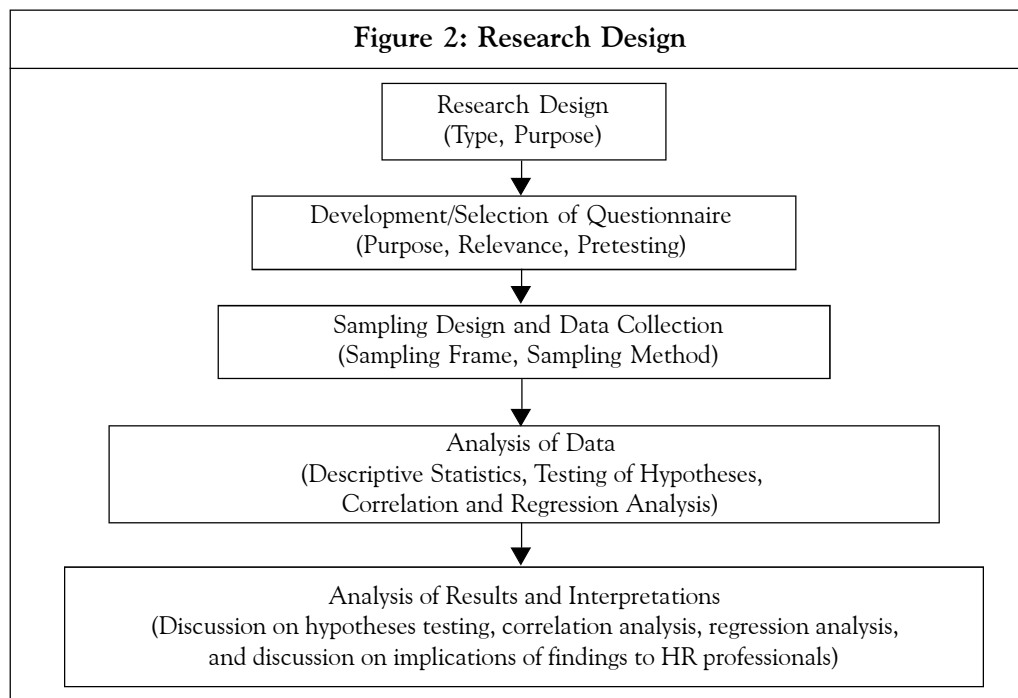
Affective organizational commitment and employee satisfaction mediate the relationship between HRM practices and turnover intent.

**RESEARCH DESIGN**

The flow chart of the research design is used for this study is depicted in Figure 2.

**TYPE AND PURPOSE**

The present research pertains to the study of HRM practices and attitudinal variables affective commitment, employee satisfaction and turnover intent. Survey methodology was used to collect the primary data. Geoffrey *et al.* (2005) have described the utility of survey-based research and have mentioned that a survey could examine the relationship between gender and people’s attitudes about some social issues. When surveys



are conducted to determine relationships, they are referred to as correlation studies. Accordingly, the present study has adopted survey method to collect relevant data from employees of oil and gas E&P companies to establish the relationship between HRM practices, affective commitment, employee satisfaction and turnover intent.

#### DEVELOPMENT/SELECTION OF QUESTIONNAIRE

The questionnaire for the survey was based on literature review and discussions with the company employees. The instrument was divided into three sections: first attitudinal outcomes (organizational commitment, employee satisfaction) and turnover intent, second HR practices and third section pertaining to personal information such as sex, age, level, qualification, department/discipline, experience. Pilot testing of the questionnaire was done by collecting responses from 25 employees from different disciplines of the companies under study. Feedback regarding difficulty faced in understanding the questions was taken from respondents. None of the respondents faced any problem in understanding the questions. Accordingly the final questionnaire was prepared and there were 15 items on HR outcomes and 56 on HRM practices.

#### SAMPLE DESIGN AND DATA COLLECTION

##### *Sampling Design*

The present study uses convenient sampling method for primary data collection. The sampling frame included

regular employees of three leading oil and gas E&P companies in India. These companies were selected based on their past performance in E&P business. More than 90% of oil and gas production in India comes from these companies. Employees from all levels, having more than one-year service in the organization and working at different locations in India were selected for study. The employees posted out of India were not considered for feedback as the survey results could have been influenced by certain external factors like lucrative perquisites, international exposure, etc. Also, the employees having less than one-year service in the companies were not considered for feedback as attitudinal outcomes such as commitment and satisfaction develop in an employee over a period of time.

##### *Questionnaire Administration*

After pilot testing, questionnaires were distributed among employees of oil and gas exploration and production companies in India in the month of April 2008. Most of the questionnaires were distributed personally, however, for outstation respondents, questionnaires were given through middle or senior level executives of respective organizations, and they were briefed in advance about the meaning and purpose of each question. Personal requests and regular telephone reminders followed distribution to the respondents. Out of total sample of 1,230, only 450 questionnaires were returned, representing a response rate of 36.6%, which is quite good as per the accepted standards (Datta *et al.*, 2005). Out of the total, 450 responses, only 418 were found

usable for the study. The remaining 32 responses were incomplete, as majority of the items in these questionnaires were not answered. Responses were obtained from employees from all levels starting from unionized category to the level of General Manager/Vice-President.

## MEASURES

### *Dependent Variables*

**Affective Commitment:** In the present research, only affective commitment was considered for study because this is the most relevant and beneficial HR outcome that has intrinsic effect on employees and their performance (Meyer and Allen, 1991). Affective commitment was measured using 5-item instrument proposed by Meyer *et al.* (2001). Responses were obtained on seven-point Likert scale starting from strongly disagree to strongly agree, a higher score reflected greater commitment. Three items were reverse coded. Using Cronbach alpha, the reliability coefficient for this measure was found to be 0.75 ( $\alpha = 0.75$ ).

**Employee Satisfaction:** To find out overall employee satisfaction the scale was adopted from Geringer *et al.* (2002). Employees were asked to rate their satisfaction with job, supervisor, organization, pay, promotion, job security, benefits, training and working environment. Certain parameters such as satisfaction with working environment, training and benefits were added to the questionnaire based on the preliminary discussions with company employees as many of them had strong opinion about these aspects of HRM practices. Response was obtained on five-point Likert scale

(ranging from not at all satisfied to satisfied to a great extent), a higher score reflected greater satisfaction. The Cronbach's alpha in this case was 0.86 ( $\alpha = 0.86$ ).

**Turnover Intent:** Turnover intent was measured using single item 'I plan to look outside my organization for a new job within the next year' which was earlier used by Benson (2006) in his study on "Employee development, commitment and intention to turnover: a test of 'employability' practices in action". Response was obtained on five-point Likert scale (from not at all to most likely), a higher score reflected higher intention to quit.

### *Independent Variables*

The independent variables in the present study were based on AMO (abilities, motivation and opportunities to participate) model. HRM practices that influence employee abilities, motivation and opportunities to participate were selected after extensive review of literature (Appelbaum *et al.*, 2000; Purcell *et al.*, 2003; and Gardner *et al.*, 2007) and discussions with HR executives and employees of the concerned organizations. There were total 15 HR practices that were selected for the present study. Selection, training, performance appraisal, job content and placement practices pertain to ability, skill and knowledge development of employees; practices like resources, home life and work balance, compensation, rewards and recognition and career planning are aimed at employee motivation; whereas team work, communication, grievance management,

empowerment and workplace relationship emphasize on opportunities to participate.

#### **Ability/Skill Practices**

**Selection:** There were total five items to measure practices on employee selection. The items were adopted from Truss (2001), Patterson *et al.* (1997) and Singh (2004). Responses in this case were obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better selection process. The internal consistency measure Cronbach's alpha in this case was 0.86 ( $\alpha = 0.86$ ).

**Training:** All four items to measure training were taken from Singh (2004). The items were rated on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better training opportunities. The Cronbach's alpha in this case was 0.83 ( $\alpha = 0.83$ ).

**Performance Appraisal:** There were five items on this measure and all items were taken from Singh (2004). Response in this case was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better performance appraisal. The internal consistency measure Cronbach's alpha in this case was 0.89 ( $\alpha = 0.89$ ).

**Job Content:** There were five items in this measure. All the items were designed on the basis of extensive literature review (Gelade and Ivery, 2003; Ramlall, 2004; and Sun *et al.*, 2007). Response in this case was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflecting better job content. The Cronbach's alpha in this case was 0.86 ( $\alpha = 0.86$ ).

**Placement:** Only two items were used to measure placement practices. Both the items were taken from Chang (2005). Rating was based on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better placement practices. The Cronbach's alpha in this case was 0.87 ( $\alpha = 0.87$ ).

#### **Employee Motivation Practices**

**Resources:** Three items were used to measure the resource adequacy to perform the assigned job. The items were designed on the basis of theoretical models of work design theory, employee motivation and satisfaction (Matzler *et al.*, 2004; and Ramlall, 2004). Response was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better resource availability. The Cronbach's alpha in this case was 0.82 ( $\alpha = 0.82$ ).

**Home Life and Work Balance:** Four items were used to measure home life and work balance. All items were based on extensive literature survey (Sharma and Joshi, 2001; Guest, 2002; and Sun *et al.*, 2007). Response in this case was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better home life and work balance. The Cronbach's alpha in this case was 0.75 ( $\alpha = 0.75$ ).

**Compensation:** Total four items were used for this measure and the items were based on extensive literature study (Truss, 2001; Guest, 2002; Gelade and Ivery, 2003; Matzler *et al.*, 2004; and Ramlall, 2004). Response in this case was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score

reflected better compensation. The internal consistency measure Cronbach's alpha in this case was 0.72 ( $\alpha = 0.72$ ).

**Rewards and Recognition:** There were total four items on this measure. The items were either adopted or designed on the basis of literature review (Truss, 2001; Matzler *et al.*, 2004; and Ramlall, 2004). Response in this case was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected greater rewards and recognition. The internal consistency measure Cronbach's alpha in this case was 0.83 ( $\alpha = 0.83$ ).

**Career Planning:** There were five items on this measure which were taken from previous studies (Delery and Doty, 1996; Patterson *et al.*, 1997; Matzler *et al.*, 2004; Ramlall, 2004; Singh, 2004; and Sun *et al.*, 2007). The rating was based on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better career planning. The Cronbach's alpha in this case was 0.89 ( $\alpha = 0.89$ ).

#### ***Opportunities to Participate Practices***

**Team Work:** Questionnaire items for team work were taken from earlier studies conducted by Bartel (2004) and Guest (2002). There were four items in this measure which were rated on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected greater team work. The Cronbach's alpha in this case was 0.75 ( $\alpha = 0.75$ ).

**Communication:** There were total three items on communication which were based on extensive literature survey (Sharma and Joshi, 2001; Guest, 2002;

and Wright *et al.*, 2005). Response was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better communication. The Cronbach's alpha in this case was 0.80 ( $\alpha = 0.80$ ).

**Grievance Management:** There were three items on grievance management. Items were taken from earlier studies (Bartel, 2004; and Wright *et al.*, 2005) on HRM performance linkage. Response was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected effective grievance management. The Cronbach's alpha in this case was 0.75 ( $\alpha = 0.75$ ).

**Empowerment:** Three items were used to measure empowerment. Items were taken from previous studies (Sharma and Joshi, 2001; Matzler, 2004; and Tsai, 2006). Response was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected greater empowerment. The Cronbach's alpha in this case was 0.73 ( $\alpha = 0.73$ ).

**Workplace Relationship:** There were two items in this measure. Both the items were based on literature survey of earlier studies on employee motivation and satisfaction (Ramlall, 2004; and Matzler *et al.*, 2004). Response was obtained on five-point Likert scale (from strongly disagree to strongly agree), a higher score reflected better workplace relationship. The Cronbach's alpha in this case was 0.72 ( $\alpha = 0.72$ ).

#### ***Demographic Variables***

The demographic measures used for the study were: gender (sex), level in the

organization (starting from unionized category, junior management to top management), age group (in categories like < 25 years, between 26-35 years, 36-45 years and 46 years and above), qualification (starting from High School/ITI to Ph.D.), experience in the present organization (in categories like < 5 years, between 6-12 years, 11-20 years, 21-30 years and above 30 years), and finally employee department/discipline (starting from HR, other non technical, support technical and field technical discipline).

In order to further establish the construct validity and reduce the number of variables, principal component analysis was conducted on all 56 items pertaining to HRM practices (Table 1). Results of the analysis with varimax rotation indicated 8 factors having eigenvalue more than one. The first factor, rewards and recognition contained 11 items pertaining to the measures on rewards, performance appraisal and placement. One item 'the rewards I receive are fair in comparison to my contribution' which was loaded on third factor was also considered for study in the first factor as it improved the overall reliability of the construct 'rewards and recognition'. The second factor, employee involvement consisted of total 15 items all pertaining to the measures like communication, empowerment and workplace relationship. The third factor, compensation contained 3 items from the original measure on compensation. Fourth factor, selection and career growth contained 10 items and all the items were from the initial measures on selection and career planning. Some of the items were

also loaded on first factor however; due to their theoretical background, they were included in the fourth factor. Two items, i.e., 'individuals in this organization have clear career paths' and 'promotion policy of the company is based strictly on performance and abilities of the employee' were loaded on first factor but they were included in the fourth factor. Fifth factor, job content contained 4 items and all the items were from the initial measure on this construct. However, one item, i.e., 'the duties of every job are clearly defined in my organization' was not considered for study, as this item was not loaded on any factor. The sixth factor, team work contained 3 items and all these items pertained to the initial measure team work. Seventh factor, training contained all 4 items pertaining to the initial measure on training. The eighth factor, worklife balance contained 4 items all pertaining to the initial measure on this construct. Using Cronbach's alpha, the reliability coefficient measures for all the factors were above 0.80 ( $\alpha > 0.80$ ) except for worklife balance, which was 0.75 ( $\alpha = 0.75$ ).

## ANALYSIS AND RESULTS

The mean, standard deviation and correlation analysis of all the study variables are presented in Table 2. Results of correlation analysis validate the earlier research on HRM Performance linkage (Huselid, 1995, Mac Duffie, 1995, and Wright *et al.*, 2003). All independent variables (HRM practices) indicated strong significant association with affective organizational commitment, employee satisfaction and turnover intent. In line with previous research, there was

HRM PRACTICES, ATTITUDINAL OUTCOMES AND TURNOVER INTENT: AN EMPIRICAL STUDY IN INDIAN OIL AND GAS EXPLORATION AND PRODUCTION SECTOR

**Table 1: Principal Components Factor Structure of HRM Practices**

Questionnaire Items	1	2	3	4	5	6	7	8
<i>Team Work</i>								
Employees in my section/group are cooperative						0.810		
Employees in my section/group share information						0.813		
Employees in my section/group are likeable						0.828		
Some organizations are trying to get employees more involved in workplace decisions using things like self-directed work teams, total quality management, quality circles or involvement programs. You were also involved in such activities in your organization during the past 12 months		0.563						
<i>Communication</i>								
My company has proper two way communication system that enables me to interact with top management and get regular information from management regarding what's going on in the company		0.628						
Sufficient effort is made to get the opinion and thinking of people before taking any decision		0.602						
Employees in my organization are involved in formal participation processes such as quality improvement group, problem solving group, roundtable discussions or suggestion systems		0.658						
<i>Grievance Management</i>								
My company provides me with reasonable opportunities to express grievances and raise personal concerns		0.581						
My senior officers are easy to see when I have a problem		0.678						
My company has proper grievance management system		0.524						
<i>Empowerment</i>								
I am given adequate freedom and flexibility in deciding how to do my job		0.595						
My company encourages employees to be creative, innovative and do new things		0.631						
Employees holding supervisory positions are allowed to take independent decisions on		0.543						

Table 1 (Cont.)

Questionnaire Items	1	2	3	4	5	6	7	8
matters relating to their subordinates such as allocation and supervision of work, transfer, promotion, grant of leave and disciplinary action								
<i>Workplace Relationship</i>								
The relationship between superiors, subordinates and peers is ethical and open		0.603						
We have a culture of sharing, loving and trusting relationship at workplace		0.479				0.448		
<i>Workplace environment and available resources</i>								
Workplace organization at my job is adequate to be as productive as I could be		0.532						
Work environment in my office is pleasant		0.462						
I am provided adequate resources to perform my job effectively		0.503						
<i>Worklife Balance</i>								
My company helps employees in achieving a balance between home life and work								0.449
Job security is almost guaranteed to employees in this organization								0.660
My company provides me enough opportunities to develop relationships and build a positive community								0.483
There is provision for adequate welfare facilities and amenities to employees and their families, both at Workplace and outside								0.415
<i>Job Content</i>								
My job is useful and makes sense to me					0.617			
My job is quite challenging as per my capabilities					0.773			
My job requires variety of different activities and involves the use of multiple skills and abilities					0.740			
My job makes good use of my skills and abilities					0.785			
The duties of every job are clearly defined in my organization								
<i>Compensation</i>								
I am happy with my pay compared with the pay of other people that work here			0.735					



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Table 1 (Cont.)

Questionnaire Items	1	2	3	4	5	6	7	8
My pay is fair compared with others doing a similar job in other organizations			0.749					
Pay raises for employees in this organization are based on job performance								-0.547
My company provides me adequate benefits and facilities for a good living			0.653					
<i>Rewards</i>								
The rewards I receive are fair in comparison to my contribution			0.612					
The rewards in our company are directly related to performance at work	0.486							
My services are acknowledged in the company	0.430							
Company recognizes and appreciates the contribution of sincere and hardworking employees	0.451							
<i>Career Planning</i>								
Individuals in this organization have clear career paths	0.529							
Individual and organization growth needs are matched in this organization	0.443			0.447				
Our organization plans for career development of employees	0.435			0.426				
Qualified employees have the opportunity to be promoted to positions of greater pay and responsibility within the company	0.442			0.418				
Promotion policy of the company is based strictly on performance and abilities of the employee	0.476							
<i>Employee Selection</i>								
The selection systems followed in our organization are highly scientific and rigorous				0.719				
Company tries to ensure proper alignment between person's values and company's values at the time of selection				0.677				
The hiring practices help our company to have high-performing employees				0.704				
Our organization selects those having the desired knowledge, skills and attitudes				0.630				

Table 1 (Cont.)

Questionnaire Items	1	2	3	4	5	6	7	8
Line manager's opinion about person's suitability for the job is sought at the time of selection	0.423			0.514				
<i>Training</i>								
Our organization conducts extensive training programs for its employees to bring quality in all aspects							0.685	
Employees in each job normally go through training programs every year							0.693	
Training needs are identified through a formal performance appraisal mechanism	0.533						0.566	
Training needs identified are realistic, useful and based on business strategy of the organization	0.558						0.493	
<i>Performance Appraisal</i>								
Performance of the employees is measured on the basis of objective quantifiable results	0.657							
Appraisal system in our organization is development and growth-oriented	0.677							
Employees are provided performance-based feedback and counselling	0.651							
Employees have faith in the performance appraisal system	0.678							
The appraisal data is used for making decisions like job rotation, promotion, training and compensation	0.761							
<i>Employee Transfer and Placement</i>								
Company effectively places personnel to appropriate positions as per their competence	0.776							
The company effectively reflects the situational changes by rearranging personnel to appropriate positions	0.754							

significant positive association between HRM practices, affective organizational commitment and employee satisfaction. The results thus supported *Hypothesis 1*. Further, turnover intent indicated significant negative association with affective organizational commitment,

employee satisfaction and HRM practices. This lends support to *Hypothesis 2*.

We used Baron and Kenny's (1986) procedure for testing mediation hypothesis in Ordinary Least Squares (OLS) regression framework. According to this procedure, mediation effect is established

**Table 2: Descriptive Analysis and Correlation Between HRM Practices, Affective Commitment, Employee Satisfaction and Turnover Intent**

Variables	Mean	Std. Deviation	1	2	3	4	5	6	7	8
Sex	1.1	0.3460								
Level	2.8	1.0000	-0.205**							
Age	3.2	0.8900	-0.045	0.476**						
Qualification	3.6	1.0400	-0.171**	0.363**	-0.282**					
Experience	3.1	1.1900	-0.081	0.449**	0.811**	-0.319**				
Department	2.9	1.0400	-0.333**	0.163**	-0.191**	0.298**	-0.179**			
Teamwork	3.9	0.7862	0.076	0.109(*)	0.087	0.001	0.066	-0.182**		
Involvement	3.3	0.7587	0.050	0.080	0.083	-0.012	0.070	-0.133**	0.544**	
Worklife	3.8	0.7454	0.068	0.044	0.158**	-0.063	0.140**	-0.140**	0.475**	0.633**
Job Content	3.6	0.8717	0.007	0.182**	0.131**	-0.015	0.130**	-0.024	0.452**	0.658**
Compensation	3.1	0.9965	0.084	-0.077	0.166**	-0.174**	0.150**	-0.265**	0.261**	0.528**
Appraisal	2.8	0.8463	0.025	-0.058	0.009	-0.108(*)	-0.025	-0.059	0.349**	0.731**
Selection	2.9	0.8110	0.030	-0.087	-0.009	-0.101(*)	-0.063	-0.090	0.302**	0.693**
Training	2.9	0.8969	0.044	0.016	0.093	-0.102(*)	0.076	-0.045	0.229**	0.579**
Commitment	4.2	0.9036	0.055	0.120(*)	0.200**	-0.006	0.154**	-0.132**	0.324**	0.361**
Satisfaction	3.4	0.7428	0.073	0.020	0.140**	-0.130**	0.141**	-0.235**	0.380**	0.562**
Turnover Intent	2.4	1.1800	-0.149**	0.019	-0.123(*)	0.137**	-0.136**	0.173**	-0.216**	-0.316**

Table 2 (Cont.)

Variables	Mean	Std. Deviation	9	10	11	12	13	14	15	16
Job Content	3.6	0.8717	0.460**							
Compensation	3.1	0.9965	0.502**	0.385**						
Appraisal	2.8	0.8463	0.457**	0.544**	0.587**					
Selection	2.9	0.8110	0.451**	0.475**	0.551**	0.850**				
Training	2.9	0.8969	0.441**	0.402**	0.467**	0.684**	0.663**			
Commitment	4.2	0.9036	0.430**	0.338**	0.270**	0.268**	0.243**	0.206**		
Satisfaction	3.4	0.7428	0.416**	0.422**	0.570**	0.510**	0.464**	0.372**	0.296**	
Turnover Intent	2.4	1.1800	-0.298**	-0.306**	-0.402**	-0.316**	-0.290**	-0.191**	-0.365**	-0.372**

**Note:** \*\* Correlation is significant at the 0.01 level (2-tailed).  
 (\*) Correlation is significant at the 0.05 level (2-tailed).

when four conditions are met. First independent variable should be correlated with the outcome variable; second independent variable should be correlated with mediating variable; third mediation variable should be correlated with outcome variable; and fourth for complete mediation the effect of the independent variable over the outcome variable while controlling for mediator variable should become zero. There is partial support in favor of *Hypothesis 3*. Table 3 indicates significant correlation between HRM practices, affective commitment, employee satisfaction and turnover intent. According to regression analysis (Model 4 in Table 3) job content, compensation and training ( $\beta$  for job content =  $-0.132$ ,  $p < 0.05$  for compensation =  $-0.250$ ,  $p < 0.001$  and for training =  $0.127$ ,  $p < 0.05$ ) are significant predictors of turnover intent. Regression analysis indicated (Model 3 in Table 3) worklife balance and job content as significant predictors of affective commitment ( $\beta$  for worklife balance =  $0.288$ ,  $p < 0.001$  and for job content =  $0.120$ ,  $p < 0.05$ ). Similarly, team work, employee involvement and compensation ( $\beta$  coefficient for team work =  $0.102$ ,  $p < 0.05$ ; for employee involvement =  $0.251$ ,  $p < 0.001$  and for compensation =  $0.337$ ,  $p < 0.001$ ) were significant predictors of employee satisfaction. According to Model 2 of regression Table 3 affective commitment and employee satisfaction were the significant predictors of turnover intent (Coefficient  $\beta$  for

commitment =  $-0.350$ ,  $p < 0.05$  and for employee satisfaction  $\beta = -0.334$ ,  $p < 0.001$ ). The above results satisfy first, second and third condition of mediation procedure. Further, out of eight HRM practices, only job content indicated significant effect on both mediator (affective commitment) and outcome (turnover intent) variables. Similarly, the mediation analysis indicated that compensation was the only significant predictor of both employee satisfaction and turnover intent. These results slightly weaken the mediation model which assumed that attitudinal outcomes mediate the relationship between all HRM practices and turnover intent.

While analyzing the fourth step of mediation effect, results of regression analysis (Table 3) indicated that HRM practices explained additional 18.7% ( $p < 0.001$ ); 37% ( $p < 0.001$ ) and 16% ( $p < 0.001$ ) variance in case of affective commitment, employee satisfaction and turnover intent respectively. After controlling for variables such as sex, age, qualification, etc., affective commitment and employee satisfaction (Model 2 in Table 3) explained an additional 11.5% ( $p < 0.001$ ) and 10.4% ( $p < 0.001$ ) of turnover intent variance respectively. When both demographic and HRM practices variables were controlled (Model 4 in Table 3) affective commitment explained additional 4.6% ( $p < 0.001$ ) and employee satisfaction explained additional 1.2% ( $p < 0.05$ ) of turnover intent variance. When affective commitment was added it diminished the effect of job content and training and also reduced  $\beta$  value in case of compensation

Table 3: Results of OLS Regression Analysis

Variables	Model 1			Model 2		Model 3	
	Turnover Intent	Affective Commitment	Satisfaction	Turnover on Commitment	Turnover on Satisfaction	Commitment on HR Practices	Satisfaction on HR Practices
Sex	-0.114*	0.045	0.007	-0.098*	-0.112*	0.028	0.001
Level	0.035	0.032	0.039	0.046	0.048	0.001	0.034
Age	-0.049	0.211*	0.046	0.025	-0.034	0.166*	-0.022
Qualification	-0.027	0.072	-0.054	0.052	0.009	0.074	-0.042
Experience	-0.101	-0.012	0.037	-0.105	-0.088	-0.011	0.046

Table 3 (Cont.)

Variables	Model 1			Model 2		Model 3	
	Turnover Intent	Affective Commitment	Satisfaction	Turnover on Commitment	Turnover on Satisfaction	Commitment on HR Practices	Satisfaction on HR Practices
Department	0.102	-0.113*	-0.212***	0.063	0.031	-0.052	0.081
Team Work						0.097	0.102*
Emp. Involvement						0.001	0.251***
Worklife						0.288***	-0.023
Job Content						0.120*	0.037
Compensation						0.023	0.337***
Reward						0.087	0.105
Career Growth						-0.010	-0.008
Training						-0.076	-0.036
Commitment				-0.350*			
Satisfaction					-0.334***		
R <sup>2</sup>	0.060	0.064	0.071	0.175	0.164	0.252	0.441
$\Delta R^2$				0.115***	0.104***	0.187***	0.370***
Adj. R <sup>2</sup>	0.046	0.051	0.057	0.160	0.150	0.225	0.421
F	4.315*	4.638*	5.108*	12.191*	11.304*	9.513*	22.278*

Note: \*\*\* Significant at 0.001 level; \*\* Significant at 0.01 level; \* Significant at 0.05 level.

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Table 3 (Cont.)

Variables	Model 4 Testing the Mediation Model		
	Turnover on Demographic and HR Practices	Turnover on Demographic, HR Practices and Commitment	Turnover on Demographic, HR Practices and Satisfaction
Sex	-0.115*	-0.107*	-0.114*
Level	0.027	0.027	0.032
Age	0.004	0.045	0.001
Qualification	0.015	0.033	0.008
Experience	-0.107	-0.110	-0.101
Department	0.026	0.014	0.014
Team Work	-0.029	-0.005	-0.014
Emp. Involvement	0.011	0.012	0.048
Worklife	-0.065	0.007	-0.068
Job Content	-0.132*	-0.102	-0.127*
Compensation	-0.250***	-0.245***	-0.201**
Reward	-0.100	-0.079	-0.085
Career Growth	-0.049	-0.052	-0.050
Training	0.127*	0.108	0.122
Commitment		-0.248***	
Satisfaction			-0.147*
R <sup>2</sup>	0.221	0.267	0.233
ΔR <sup>2</sup>	0.160***	0.046***	0.012*
Adj. R <sup>2</sup>	0.193	0.239	0.204
F	8.004*	9.571*	7.985*
<b>Note:</b> *** Significant at 0.001 level; ** Significant at 0.01 level; * Significant at 0.05 level.			

from 0.250 ( $p < 0.001$ ) to  $-0.245$  ( $p < 0.001$ ). Also, addition of employee satisfaction to the regression equation diminished the effect of training and reduced the  $\beta$  value of job content to  $-0.127$  ( $p < 0.05$ ) and compensation to  $-0.201$  ( $p < 0.01$ ). These results partially support the *Hypothesis 3* that affective organizational commitment and employee satisfaction mediate the relationship between HRM practices and turnover intent.

Model 1 (Table 3) indicated that female employees have low tendency for turnover as compared to male employees ( $\beta$  in case of demographic variable sex =  $-0.114$ ,  $p < 0.05$ ). Employees in higher age groups have been found to be more committed ( $\beta$  for age =  $0.211$ ,  $p < 0.05$ ). Whereas employees with higher specialized skills and expertise were less committed ( $\beta$  in case of qualification =  $-0.113$ ,  $p < 0.05$ ). Similarly, employee satisfaction among technical employees was found to be low as compared to non-technical employees ( $\beta$  for discipline/department =  $-0.212$ ,  $p < 0.001$ ).

## DISCUSSION

One of the main goals of this study has been to discuss the HRM challenges facing oil and gas E&P companies in India. This study presented the linkage between HRM practices, attitudinal outcomes and turnover intent of three major oil and gas E&P companies in India. The results demonstrated a strong link between HRM practices and HR outcomes and brought out that high performance HRM practices in oil and gas exploration and production industry in

India have significant positive relationship with affective organizational commitment, employee satisfaction and turnover intent. As such, our findings align to a large degree with other studies on effectiveness of HRM practices.

The present study indicated significant negative impact of employee satisfaction and affective organizational commitment on intention to quit. However, only two HR practices, i.e., compensation and job content had significant direct negative impact on turnover intent. This suggests the importance of compensation and job design practices in reducing attrition in oil and gas industry in India. However, training practices were positively associated with turnover intent. This is in line with earlier studies (March and Simon, 1958; Trevor, 2001; Benson, 2006; and Gardner *et al.*, 2007), where training was found to be positively associated with turnover intent. The employee skills, abilities and knowledge; through better training practices, enhance the market value of employees and this in turn strengthens turnover intentions. This is true in case of E&P companies where the skilled manpower is scarce and high employability leads to attrition. The study reported low turnover intentions among female employees. Though these results cannot be generalized, as certain cultural values prevalent in Indian society may be the reason behind female employees' preference for job stability, however, Indian companies can take note of this aspect while recruiting their workforce.

The results of regression analysis suggest that particular practices like worklife balance and proper job design can



bring considerable improvement in affective organizational commitment of employees in oil and gas E&P companies. The E&P companies operate in remote locations based at offshore and onshore sites. The field jobs are quite hard and employees have to work on 14 or 28 days on/off pattern. They remain away from their families for long durations and those working at offshore platform or rig cannot attend many personal and family emergencies during duty period. This kind of duty pattern necessitates proper worklife balance for employees in E&P sector.

After liberalization, the monopoly of public sector in Indian oil and gas exploration and production was broken by the entry of various private players as New Exploration Licencing Policy (NELP) was introduced in 1999 (Director General of Hydrocarbons India, Report, 2007-08). The increasing number of players in oil market created vast scope of opportunities for experts working in this industry. As has been indicated in literature review, trained manpower in oil sector is scarce and thus expansion in E&P operations in the country changed the employee expectations. Factors such as employee satisfaction and retention became more important. HR practices like teamwork, better compensation and, employee involvement practices such as effective communication, empowerment and transparency became vital in improving the level of employee satisfaction in these companies.

The job in oil and gas companies is of highly specialized nature. There are very few institutions in India that provide education in this field and therefore,

there is significant gap between demand and supply of talented workforce. Moreover, oil industry being a technology intensive industry; experience plays a vital role in developing fine geoscientists and petroleum engineers. The market value of employees shoots up after they gain certain level of experience in the industry. There is very high turnover at middle levels in Indian oil and gas E&P companies. Employees from highly skilled disciplines such as drilling, reservoir and logging are in great demand within India and in Gulf countries. The oil companies are offering them huge salaries and benefits. This is aggravating the problem of employee turnover in these companies in India. The results of the present study indicated that technical and skilled workforce has significant negative correlation with employee satisfaction and commitment.

The linkage between HRM practices and attitudinal outcomes will enable the HR practitioners to design policies that will bring forth higher organizational commitment and employee satisfaction to attain higher organizational performance. HR managers and researchers should focus on proximal outcomes of HRM practices such as organizational commitment, employee satisfaction, motivation and organizational citizenship behavior that result into low turnover intent, thus leading to higher organizational performance. The study indicates that HR practices that do not have direct impact on turnover intentions cannot be ignored as these practices have significant relationship with organizational commitment, employee

satisfaction and turnover intent. Regarding Indian oil and gas E&P industry, study emphasized the need to design HR practices with special focus on employee compensation and worklife balance. The results of the present study emphasized the need for designing separate HR practices like compensation, effective performance appraisal and more empowerment for technical employees in core disciplines such as drilling, geology and reservoir.

## CONCLUSION

This paper establishes the relationship between HRM practices and HR outcomes in Indian oil and gas E&P sector and highlights importance of certain HR practices such as compensation, employee involvement, worklife balance and proper job design. The present study tried to bridge various gaps existing in the field of research on the linkage between HRM practices, attitudinal outcomes and behavioral outcomes. However, there are many drawbacks in this study which need to be mentioned. The present research being a cross-sectional study has its own limitations. This can be overcome in future through conducting a longitudinal research. While examining the impact of HRM practices, the present study did not consider parameters like productivity, motivation and financial outcomes for investigation of causal order. Future research can consider these parameters also for developing better understanding about HRM performance linkage. Another drawback of the present study is that it considered only affective commitment as part of research on HRM practices and turnover intent. Future

studies should also consider other parts such as normative and continuance commitment for their mediation effect on the relationship between HRM practices and turnover intent. HR outcomes such as organizational citizenship behavior, perceived organizational support and motivation can also be considered for research in future studies on HRM practices and turnover intent. Other factors that influence employee satisfaction and turnover intent, such as, outside job opportunities for oil sector experts and high demand-supply gap in case of qualified workforce can also be taken up for study in future research. One of the main drawbacks of present research is the small number of organizations considered for study from oil and gas E&P industry. Major problem in conducting research in this sector, especially in developing nations, arises because government owned enterprises control majority of the operations in E&P industry. Most of the private companies in this industry are very small in size and majority of employees in these companies have shifted from public sector enterprises. The present study has been conducted in private as well as public sector enterprises and there is great amount of variation in HRM practices in both the sectors. Another problem in research in this sector is that none of the private enterprises is fully integrated. The private companies are outsourcing most of the functions pertaining to drilling, production, and exploration activities. Only the public sector organizations are fully integrated and have regular manpower for all E&P operations. In view of this, the future research should conduct separate studies on private and public sector enterprises

in oil and gas E&P industry in developing nations. For generalization of results, more case studies or industry-based studies in Indian context should be carried out to further strengthen the empirical evidence in support of present study.

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# Pricing of Options in Indian Derivatives Market: A Survey of Trading Member Organizations

Alok Dixit\*, Surendra S Yadav\*\* and P K Jain\*\*\*

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*This study examines the opinion of trading member organizations/brokerage firms on the state of options pricing in Indian securities market. The brokerage firms based at Delhi and Mumbai which are active in Futures & Options (F&O) segment constituted population for the study. The data has been collected by administering a survey questionnaire. Also, personal visits were made to select firms based in Delhi. The questionnaire included questions on the select aspects relating to options pricing and betterment of the options market in India. The major findings of the survey are: (1) Investors predominantly use futures market and options market is a less attractive destination; (2) The use of options pricing models (e.g., Black-Scholes) has been confined to nearly one third of the respondents; (3) Nearly three-fifth of the respondents were not aware of Put-Call Parity relationship; (4) Majority of the respondents agreed to the existence of arbitrage opportunities and designated them difficult to exploit due to dearth of liquidity and (5) A significant majority of respondents felt that existing measures on derivatives education are inadequate and recommended a separate educational body with Public-Private Partnership kind of ownership structure.*

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## INTRODUCTION

Financial Derivatives, amongst their other functions, provide variety of tools for managing/tailoring risk for all types of investors in a financial market. It is empirically observed that most of the equity funds are created based on the practice called 'indexing' (either in its passive or active form). Indexing is an investing style wherein an equity portfolio is benchmarked to the leading index of

the economy. And, therefore, the portfolio is expected to be in strong association with the benchmarked index. The observed high correlation in the portfolio returns with those of the benchmarked index makes index derivatives (based on the same benchmarked index) a natural choice for tailoring risk of equity portfolios.

Amongst index derivatives, namely, the index options play an important role in the economy as they provide a better

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\* Assistant Professor, Indian Institute of Management (IIM), Prabandh Nagar, Off Sitapur Road, Lucknow 226013; and is the corresponding author. E-mail: alokdixit@iiml.ac.in

\*\* Head and Professor of Finance, Department of Management Studies, Indian Institute of Technology Delhi (IIT DELHI), Hauz Khas, New Delhi 16, India. E-mail: ssyadav@dms.iitd.ac.in

\*\*\* Professor of Finance, Department of Management Studies, Indian Institute of Technology Delhi (IIT Delhi), Hauz Khas, New Delhi 16, India. E-mail: pkjain@dms.iitd.ac.in

hedging mechanism to the investors compared to index futures. The perceived superiority of index options is generally observed in the times of global uncertainty when the markets experience periods of high volatility. The options contracts, unlike futures, allow fund managers to take advantage of favorable movements in the market along with the protection against the unfavorable movements. Besides, these contracts extend an opportunity to the Portfolio Management Services (PMS) to provide structured financial products tailored as per the risk appetite of their clients. In sum, these financial instruments help financial institutions to provide stable earnings tailored to the risk appetite of their clients and, therefore, facilitate in mobilization of funds from the domestic as well as foreign investors.

In view of the perceived relationship of the advantages of such financial innovations with the state of market efficiency (Ackert and Tian, 2000), a number of studies have been attempted to assess efficiency of the options market across the globe. Nearly all such studies have built upon the secondary data and, hardly, there has been any study to gauge the opinion of market participants on the subject. However, there have been a number of studies which attempted to cover usage of different derivatives contracts, for example, usage of forward contracts, futures contracts, options contracts and swaps. Moreover, amongst such studies majority of the studies covered the usage of derivatives in the domain of international financial management,

commodities and fixed income securities; only a few attempted to cover equity options as well. Some of the studies which covered equity derivatives include Philips (1995), Bodnar *et al.* (1996) and Srivastava *et al.* (2008), etc.

Given the nascent stage of derivatives market in India, it is desired that a comprehensive survey should be carried out to gauge the opinion of the market participants on the state of options market in India. In response to this and lack of adequate literature on the subject in the context of Indian options market, the present study attempts to assess the efficiency of the S&P CNX Nifty index options, the options which are traded on the leading index of the National Stock Exchange (NSE).

This survey attempts to gauge viewpoint of trading member organizations/brokers on the state of options pricing efficiency in Indian derivatives market. For the purpose, a survey was conducted amongst the branch managers of brokerage firms based at Delhi and Mumbai. The survey amongst trading member organizations is expected to provide a useful insight primarily for two reasons, viz., (1) The brokerage firms/trading member organizations play a central role in mobilization/creation of capital in an economy as they facilitate trading of a variety of investment vehicles (including derivatives securities); and (2) Given their role and importance of derivatives market, the understanding of the derivatives amongst such intermediaries needs to be assessed due to the nascent stage of derivatives market in India.

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The present study has built on the five major objectives in order to gauge viewpoint of the respondents. These five objectives/dimensions of the survey are, namely; (1) Level of participation and usage of the options market; (2) Understanding of put-call parity relationship; (3) Awareness and use of models for options valuation; (4) Correctness of options pricing, its impact, existence and exploitability of arbitrage opportunities; and (5) Need of regulations and select educational initiatives for betterment of the market.

The rest of the paper has been organized in five sections. The second section enumerates survey methodology. Profile of respondents has been summarized in Section 3. Section 4 contains analysis and empirical results. Limitations and scope for future research has been delineated in Section 5. The paper ends with concluding observations in Section 6.

## 2. METHODOLOGY

The objectives mentioned in Section 1 have been zeroed down in the following testable null hypotheses.

$H_{01}$ : *The market participants do not prefer trading in Futures vis-a-vis Options market.*

$H_{02}$ : *The market participants are fully aware of Put-Call Parity (PCP) relationship.*

$H_{03}$ : *The market participants are aware of select options pricing models and use them to value options.*

$H_{04}$ : *The options are correctly priced and there are no arbitrage opportunities.*

$H_{05}$ : *The options market in India is functioning very well and there is no need to introduce other regulatory measures.*

$H_{06}$ : *No educational body is needed to further disseminate the awareness about the derivatives instruments, their trading and profit strategies amongst Indian investors.*

In order to test the above-mentioned null hypotheses, a questionnaire has been developed and administered amongst the trading member organizations, based at NCR and Mumbai. The development of the questionnaire had been discussed in the following subsection.

### (A) QUESTIONNAIRE DEVELOPMENT, SCALES USED IN THE QUESTIONNAIRE AND IDENTIFICATION OF THE TARGET POPULATION

In the survey, questionnaire has primarily been used as a major tool to collect the required information from the respondents. The questionnaire was developed based on the experts' opinion and an earlier survey on derivatives in Indian securities market by Srivastava *et al.* (2008). The expert opinion was sought from five eminent academician (including the head of the Committee on Development of Derivatives Market in India) and five branch managers of different trading member organizations actively dealing with the derivatives segment. All the branch managers were from trading member organizations located in Delhi. The questionnaire is based on

two measurement scales, namely, nominal and interval scales for the measurement of the responses.

Since the purpose of the survey has been to gauge the perception of the market participants on the pricing of options, the questionnaire has been administered amongst the trading member organizations. The trading member organizations play a crucial role in the financial markets as they not only facilitate trading in the market but also participate actively in the trading. The understanding of derivatives market is crucial amongst such organizations as they facilitate trading for retail (including high net worth individuals) and institutional investors (through proprietary trading). Moreover, the investors seek the advice of such organizations regarding their investment decisions from time to time. Therefore, based on the active participation and crucial advisory role, we have selected trading member organizations as the target population for the purpose of the survey, i.e., to gauge the market perception on the pricing of options contract in Indian derivatives market. For the purpose, a list of total number of trading member organizations active in derivatives market as on September 2007 was retrieved from the website of Securities and Exchange Board of India (SEBI).

#### (B) PRE-TESTING OF QUESTIONNAIRE (RELIABILITY AND VALIDITY)

The questionnaire was firmed up after incorporating suggestions and improvements from various practitioners and academics, and the validity and

reliability of the instrument have been tested. For the purpose, it has been pre-tested on a five branch managers from different trading member organizations based at Delhi and five eminent academics. Reliability and validity refer to the ability of the instrument to measure consistently what it proposes to measure. The face and/or content validity of the questionnaire have been ensured by discussing the responses with the experts on the subject. In addition to this, the reliability of the instrument was tested for the related questions which have been measured on interval scale. The reliability of the related questions which constitute a construct has been tested using Cronbach's alpha. The coefficient, i.e., the Chronbach's alpha has turned out to be more than 0.66 for all related question. A reasonably good value of Cronbach's alpha for all related questions confirms reliability of the questionnaire.

#### (C) SAMPLE SIZE DETERMINATION

Moreover, based on the responses from the pilot survey, an attempt has been made to statistically determine the sample size. The statistical approach that has been adopted to determine the sample size is based on traditional statistical inference as mentioned in Malhotra (2005). In this approach the desired *precision level* is specified in advance. The approach is based on creating confidence intervals around the mean.

The sample size determination under this approach requires five steps as mentioned in Malhotra (2005). These steps are, namely, (1) specifying the level of precision, it represents the maximum

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permissible difference between the sample and population mean of the characteristics of interest. The level of precision can be specified in absolute terms as well as in relative terms (in %). In the study, it has been set at the commonly used level of 5%; (2) Specifying the level of confidence. The level of confidence in the present study has been set at 95%; (3) Determining the  $z$ -value associated with the specified level of confidence; (4) Estimation of the sample mean and standard deviation of the characteristics of interest, in case the population mean and standard deviation are unknown and; (5) Determining the sample size using the formula given in Equation (1).

$$n = \frac{C^2 z^2}{R^2} \quad \dots(1)$$

where  $C$  is the coefficient of variation,  $(\sigma/\mu)$ ,  $z$  is the value of the standardized normal variate at 95% level of confidence and  $R$  represents the precision level/maximum permissible difference in percentage terms.

Based on the 10 responses from the pilot survey, the mean and standard deviation for all the characteristics of interest was estimated and an average of mean of all the characteristics of interest along with the average variance was determined. The aggregate mean and standard deviation for the pilot data have been 3.62 and 0.7575 respectively. Finally, we arrived at the sample size of 67 for the 95% confidence level and 5% level of precision based on the aggregate mean

and standard deviation determined from the data.

(D) SAMPLE SELECTION/SAMPLING TECHNIQUE USED

We have used a two stage-Cluster sampling technique as we are required to gauge the perception of market participants/trading member organizations based at Delhi and Mumbai. The geographical cluster/area sampling has been applied in view of the fact that the population to be surveyed fits the requirement for such a sampling technique, i.e., externally homogenous and internally heterogeneous groups/clusters. The respondents of the survey form externally homogeneous geographical clusters in terms of the cities they are located at, and are internally heterogeneous based on their different trading volumes within a given city.

The two stages of the sampling technique are, namely, (1) choosing clusters of the populations to be surveyed and (2) choosing sampling units from within the selected clusters. Amongst all the clusters of the target population, we have chosen to study the two selected clusters (Delhi and Mumbai). The survey has been focused on the trading member organization situated at Delhi and Mumbai only as the majority of trading member organizations are located at these two places. In addition, an earlier survey on derivatives by Srivastava *et al.* (2008) revealed that majority of responses, i.e., 78% of the total responses were from these two cities. This then constitutes the

rationale of limiting the survey to the trading member organizations of Delhi and Mumbai only.

Further, Simple Random Sampling has been used at the second stage of sampling in order to select the sampling units from within each cluster. This has been done in view of the fact that it was not feasible to survey the whole population of select clusters owing to the budgetary constraints. For the purpose, we have generated 100 random numbers within the range of 1 to 172 for Delhi. Likewise, 250 random numbers have been generated within the range of 1 to 345 for the selection of trading member organizations in Mumbai. Based on these numbers, a total number of 350 respondents have been surveyed; 100 from Delhi and 250 from Mumbai.

#### (E) QUESTIONNAIRE ADMINISTRATION AND DATA COLLECTION

The pilot tested questionnaire was sent to a total number of 100 and 250 trading organizations out of the total population of 172 and 345 trading member organizations based at Delhi and Mumbai respectively. Subsequently, a reminder was sent through e-mail after the one week of the date the questionnaire was mailed though postal mail. In sum, 350 questionnaires were mailed to the randomly selected trading member organizations based at Delhi and Mumbai out of the total population of 517 organizations. Moreover, a total number of 480 (159 for Delhi and 321 for Mumbai) trading member organization active in

derivatives segment for which a valid e-mail id was available in the database were sent a questionnaire through e-mail.

The initial response was very poor as only 10 trading members responded. The two reminders were sent to the remaining respondents through e-mail mode with the interval of one month and two months respectively from the date of the first reminder. In addition, a total number of 20 trading member organizations were surveyed by personally visiting to the offices of organizations based at Delhi. For the purpose, the researcher sought appointments through e-mail and phone calls. As a result, in the time span of approximately five months from March 2008 to August 2008, a total number of 64 responses were received. The responses include 31 responses from Delhi and 33 from Mumbai. Out of all the 31 responses from Delhi, 19 were collected through personal visits and rest of the responses were received though postal mail (9) and e-mail (3). Similarly, all the 33 responses from Mumbai were received through postal mail (26) and e-mail (7). This amounts to 12.38% of the total population of trading members active in derivatives segments. Though the response rate is less than one-fifth (18.29%, i.e., 64 out of 350), it should not be considered as low/poor response in view of the busy schedule of executives of trading member organizations. Another reason for such a response rate is that business organizations normally consider information related to financial matters very sensitive and

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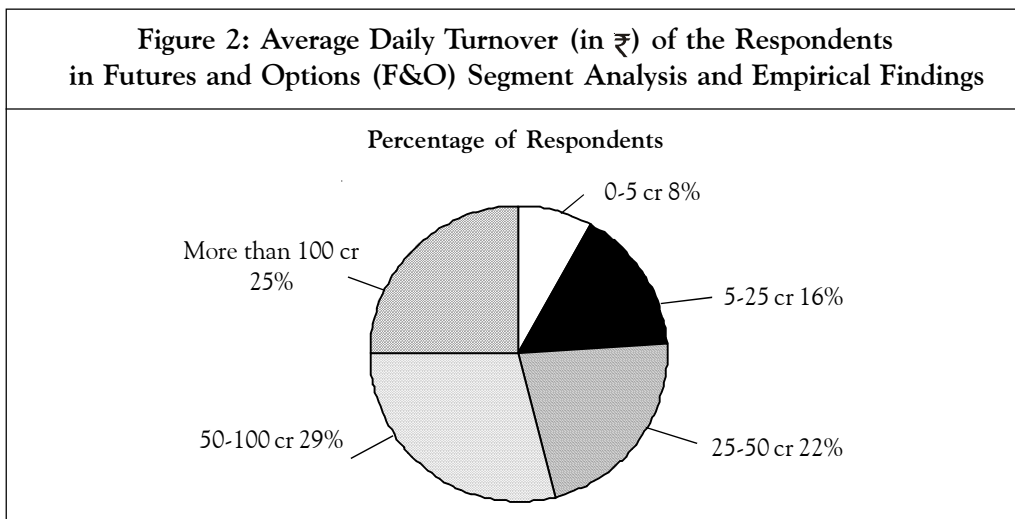
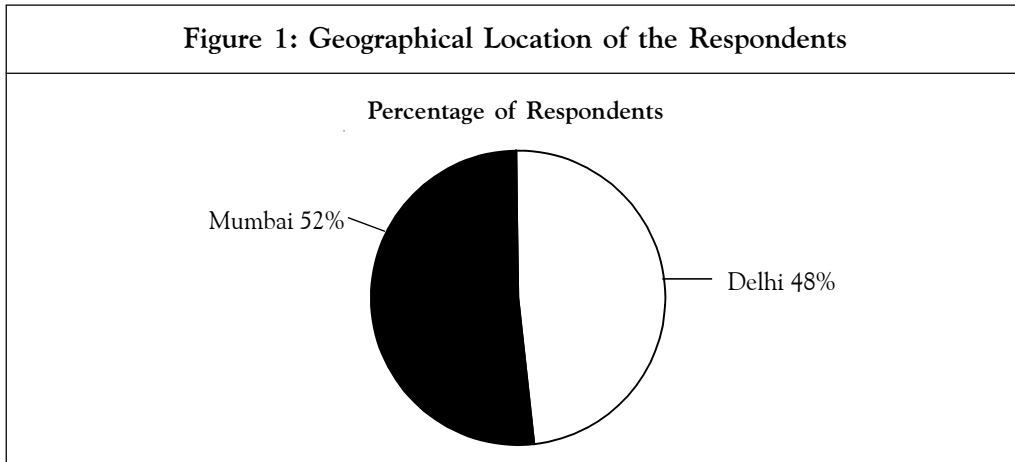
confidential. However, the response level should be borne in mind while interpreting the results/findings of the survey.

**3. PROFILE OF RESPONDENTS IN TERMS OF THEIR BACKGROUND AND TRADING VOLUME**

As mentioned earlier in the methodology section, the respondents of the survey belong to the two major clusters/two major hubs of trading for derivatives securities, namely, Delhi and Mumbai. The number of respondents from Delhi and Mumbai

were 31 and 33, which account for 48 and 52% of the total number of respondents respectively. Almost equal percentages of respondents from the two clusters represent a balanced sample which assigns equal importance to the opinion of the respondents from both Delhi and Mumbai. The geographical background of the respondents has been presented in Figure 1.

In addition, profile of the respondents based on their trading volume (based on the notional value of contracts) in derivatives (F&O) segment has been depicted in Figure 2. The results



enumerate that majority of the traders, i.e., 51% of total respondents had average daily turnover (notional value) between the range of Rs. 25 to 100 cr; one-fourth of the respondents had daily trading volume of more than Rs. 100 cr; nearly one-fourth (24%) of the respondents belongs to the category having a daily turnover of less than Rs. 25 cr.

#### 4. ANALYSIS AND EMPIRICAL RESULTS

The analysis of the responses has been classified into five subsections relating to the viewpoint of trading member organizations on pricing of options contracts in Indian derivatives market and need of regulation and educational initiatives for the betterment of the market. These subsections represent the five dimensions proposed to be measured by the survey. The select dimensions of the study have been responded to by using

a variety of statistical techniques which range from the descriptive statistics (mean, standard deviation, median etc.) to testing of hypothesis. The results of the survey (in terms of the acceptance/rejection of the null hypotheses) on the select five dimensions have been summarized in Table 1.

A detailed discussion on each hypothesis has been taken up in subsequent subsections.

##### (A) PARTICIPATION IN OPTIONS MARKET AND ITS USAGE

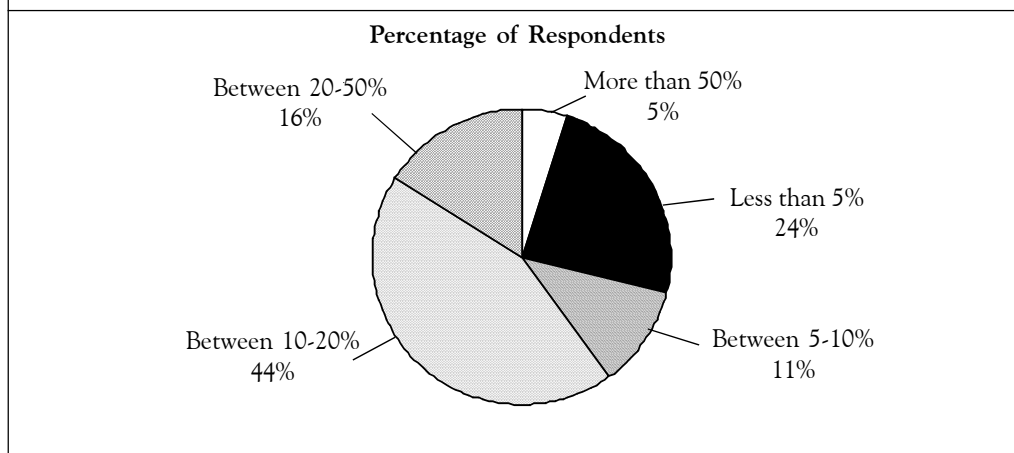
In order to examine the popularity of options vis-à-vis other derivative products in Indian securities market, the respondents were asked on the share of options in their total trading volume relating to derivatives. The results in this regard have been depicted in Figure 3. The results of the survey reveal that the vast majority of participants (79%) have

**Table 1: Summary of Results on 'Hypothesis Testing' Addressing to the Select Objectives of the Survey**

Hypotheses	Result
$H_{01}$ : The market participants do not prefer trading in Futures vis-a-vis Options market	Rejected
$H_{02}$ : The market participants are fully aware of Put-Call Parity (PCP) relationship	Rejected
$H_{03}$ : The market participants are aware of select options pricing models and use them to value options	Rejected
$H_{04}$ : The options are correctly priced and there are no arbitrage opportunities	Rejected
$H_{05}$ : The options market in India is functioning very well and there is no need to introduce other regulatory measures	Rejected
$H_{06}$ : No educational body is needed to further disseminate the awareness about the derivatives instruments, their trading and profit strategies amongst Indian investors	Rejected



**Figure 3: Proportion of Options Trading  
in the Total Trading Volume Relating to Derivatives**



been found to have a relatively meagre share (up to 20%) in the options compared to other derivative products in the portfolio.

The finding is corroborated by the fact that more than one-third (35%) of the respondents had less than 10% of their trading volume in options; majority of which were the respondents having less than 5% proportion in derivatives trading devoted to options. In addition, a major segment of respondents representing 44% of the participants have invested on an average 10 to 20% in options of their trading volume relating to derivatives segment. Only 16% of the respondents have included a reasonably good proportion of options in their trading volume from derivatives segment by assigning 20 to 50% weightage to the options contracts in their portfolio of derivatives securities; just 5% of total respondents have shown very high interest in options as they have more than 50% of their activity in derivatives market through options market.

Further, with intent to have more rigorous analysis, a region-wise and overall participation of respondents in the two exchange-traded equity derivatives in Indian capital market, namely, Options and Futures has been summarized in Table 2. The mean values clearly indicate that investors prefer to trade in Futures market compared to options market as more than 80% of their portfolio in exchange-traded equity derivatives, on an average, consists of futures. Further, a statistical test has been carried out to establish that the difference between the proportions of trading in options and futures, on an average, are significantly different from each other. Precisely, the proportion of trading in futures market has been substantially higher than that in the case of options market. In this regard, the results of the test (independent sample *t*-test) have been reported in Table 2. As initially revealed by striking difference between the mean values/proportions, the test further validates the difference statistically in the favor of futures market across both the regions as well as on overall basis.

**Table 2: Trading Profile of the Respondents in Futures & Options Segment of Indian Capital Market, 2007-08**

Respondents		Proportion of Options in Overall Trading in F&O Segment		Proportion of Futures Overall Trading in F&O Segment		Independent Sample <i>t</i> -Test			
						Options Versus Futures		NCR Versus Mumbai (Options)	
Regions	Numbers	Mean (%)	SD (%)	Mean (%)	SD (%)	<i>t</i> -Test	<i>P</i> -Values	<i>t</i> -Test	<i>P</i> -Values
NCR*	31	23.63	18.77	69.27	18.77	-11.06	0.000	2.186	0.033
	(27)	(20.83)	(11.29)						
Mumbai	33	13.85	15.96	86.15	15.96	-18.66	0.000		
	(27)	(14.26)	(10.80)						
<b>Overall</b>	<b>64</b>	<b>18.73</b>	<b>17.97</b>	<b>81.27</b>	<b>17.97</b>	<b>-19.69</b>	<b>0.000</b>		

**Note:** \* National Capital Region; and Figures in parentheses have been arrived at by removing outliers.

In addition, another attempt has been made to ascertain the difference between the trading patterns (in terms of trading in options) in the two regions under consideration, namely, NCR and Mumbai. This has been done by comparing mean proportion of trading in options vis-a-vis that in the case of futures. For the purpose, the independent sample *t*-test has been applied. The results are reported in Table 2. Since, the mean proportion could be misleading in the presence of outliers, as revealed by a higher value of a standard deviation in comparison with the mean value; it is desirable to calculate trimmed mean and standard derivation by removing the outliers from the sample. Further, the observations after removing outliers have been used to carry out the independent Sample *t*-test for ascertaining the difference in the mean proportions statistically.

Empirically, the results indicate that the participation in options market has

been more encouraging in NCR compared to that in Mumbai; it is borne out by the fact that the options contributed nearly more than one fifth in total trading in derivatives for the trading member organizations based at NCR compared to nearly one seventh in the case of those based at Mumbai. Moreover, the difference in trading pattern (in terms of the proportion of options in total trading in exchange traded derivatives) has been found to be statistically significant. In other words, the brokerage firms based in NCR trade more in options compared to those based at Mumbai; notably, the difference is not just by chance as it has been found significant at 5% level of significance (Table 2).

In sum, it would be reasonable to infer from the above findings that the respondents of the survey have accorded relatively less weightage to options; their major interest seems to be in futures

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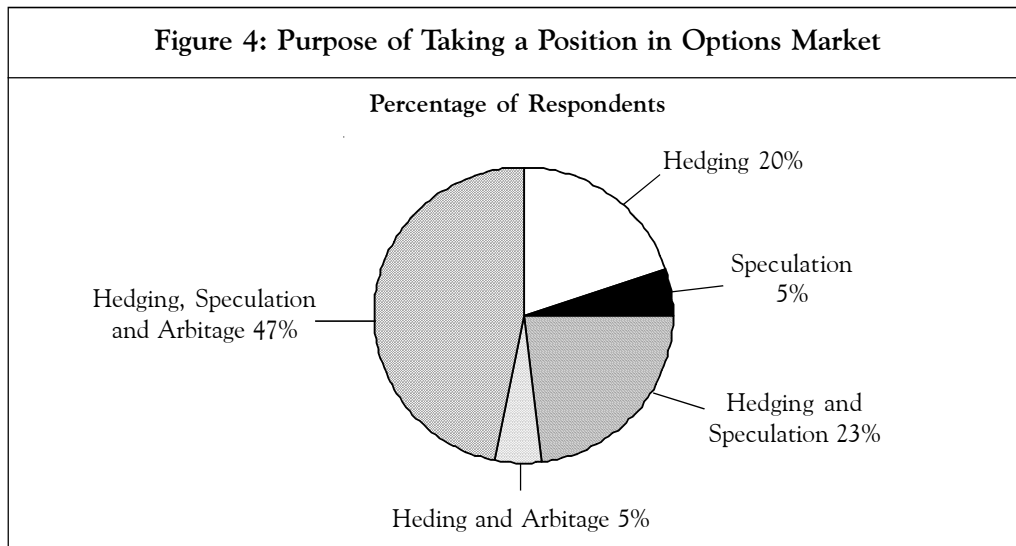
contracts. The finding for marked preference to the futures is in conformity with an earlier survey in the Indian derivatives market by Srivastava *et al.* (2008). The finding that futures are predominantly preferred over options in Indian capital market is in sharp contrast with other international studies. For example, Bodnar *et al.* (1996), a survey on derivatives and risk management practices by Non-Financial Firms in United States, reported that nearly 40% of the participants have been using exchange-traded options whereas a relatively small number of participants (nearly 10%) revealed their choice in terms of Futures. Another survey on the subject, Phillips (1995) revealed that nearly the same percentage of participants have been using futures and exchange traded options; 17% of the participants reported that they have been using futures whereas 14% of the participants have been trading in options.

In view of the above the results have been reported in Figure 4, it becomes natural to ascertain the purpose of taking a position in options market. An overwhelming majority (95%) of the respondents have been using this market primarily for hedging, in conjunction with, other objectives, e.g., speculation and arbitrage. Speculation (75% of respondents) along with other purposes has been the second most preferred objective; however, arbitrage emerged as the least preferred objective for entering the market.

The findings of survey, to a marked extent, are in line with the report of the L C Gupta Committee (1998) on derivatives market. The Committee reported that majority of the respondents (70%) aspired to have a derivatives market to get a proper hedging mechanism for the equity portfolios.

(B UNDERSTANDING OF PUT-CALL PARITY RELATIONSHIP

This section addresses the issue relating to the level of understanding of Put-Call



Parity (PCP) relationship amongst the respondents of the survey. The PCP condition denotes relationship between the price of a call and a corresponding put option with the same contract specification. The understanding of PCP relationship is important in view of the fact that it helps to identify the arbitrage opportunities (mispricing signals) which exist on account of the violation of this relationship. In other words, it helps to spot the arbitrage opportunities in terms of underpricing/overpricing of a call (put) option relative to a put (call) option with same contract specifications.

For the purpose, the questionnaire included three questions on the understanding of PCP relationship. The first is a straight question asking the participants whether they are aware of PCP; the next two questions have been asked to confirm whether they know the concept well.

The responses to the first question on PCP relationship are depicted in Figure 8. The results indicate that nearly two-third of the respondents are aware of the PCP relationship. It, *per-se*, is a matter of concern that nearly one-third of the respondents have shown lack of understanding of PCP relationship. However, there is a possibility that the participants might have good understanding of the concept; they might not be aware of the terminology, i.e., PCP relationship. In order to gauge the true level of awareness of the PCP relationship amongst the participants, we need to analyze these results in light of the responses to the other two questions on the parity relationship.

The responses on the two questions have first been analyzed using 'one-sample *t*-test' in order to identify if the mean responses indicate a statistically significant agreement, disagreement or neutral opinion of the respondents on the PCP relationship. For the purpose, the null hypotheses tested are that the mean score ( $\mu$ ) = 0 against the alternative  $\mu > 3$  and  $\mu < 3$  in the first and second question respectively. The results are summarized in Table 3.

The results indicate that the null hypothesis is rejected at 5% level of significance in the case of first question; the associated empirical value of *t*-statistics is 3.347, which indicates that the agreement on the statement has been found to be statistically significant. In contrast, the null hypothesis could not be rejected at 5% level of significance in the case of second question. It indicates that the respondents had a mixed opinion on the second question where a disagreement was expected, if they knew the concept well. The results of the second question are in contradiction with those in the case of the first question. Thus, it is apparent that there is lack of proper understanding of the PCP relationship amongst the participants of the survey.

Since the first direct question has revealed that nearly one-third (34%) of the participants are not aware of the PCP relationship and the next two questions have shown contradictory results on the PCP relationship, it would be reasonable to conclude that a significant proportion

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**Table3: One Sample t-Test for the Responses on the PCP Relationship**

Statement	Test Value = 03								
	Number	$\bar{X}$	$\sigma$	t	df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Price of a European call (put) can be calculated from put (call) option with same contract specifications	64	3.50	1.195	3.347	63	0.001	0.500	0.20	0.80
There is a need to calculate price of a European call and put (with same contract specifications) separately	64	3.25	1.195	1.673	63	0.099	0.250	-0.05	0.55

Note: In the table,  $\bar{X}$ ,  $\sigma$  and df denote mean, standard deviation and degree of freedom respectively.

of the total respondents lack correct understanding of the concept.

This issue has further been examined by using cross tabulation of responses to all the three questions on PCP relationship. The results are summarized in Table 4. It is pertinent to note that nearly one-third (32%) of the participants who responded negatively to the very first question (of understanding PCP relationship) have answered correctly to the next two questions. The finding is revealing and indicates that such respondents actually knew the parity relationship; perhaps, they responded to the first question negatively as they were not aware of the terminology (PCP) used for the relationship.

In addition, an equally revealing finding of the survey is that only 45% (inclusive of 2.4% of participants responded correctly to the first question

and had no opinion on the second question) of the participants who responded positively to the very first question on PCP relationship could respond consistently to the next two questions relating to the parity relationship. However, a major segment of such respondents (i.e., 55%) has been inconsistent in responding to the other two questions. In short, nearly one-third (55%\*66%= 36%) of such respondents don't have a correct understanding of the relationship.

The finding is notable as it seems that a major chunk of respondents did not understand the concept well. This finding has serious implications for the pricing efficiency of options in India as the PCP relationship helps to identify the pricing anomalies/arbitrage opportunities relating to the relative price of call and put options and, in turn, helps to restore equilibrium in the market.

**Table 4: Cross Tabulation of the Responses on all the Three Questions Asked on PCP Relationship**

Question/ Statement No. 1 Awareness of put call Parity	Question/Statement No. 2		Question/Statement No. 3 There is a Need to Calculate Price of Call and Put (With Same Contract Specifications) Separately					Total		
			0#	Count	1	2	3		4	5
					% of Total	% of Total	% of Total		% of Total	% of Total
No	Price of a call(put) can be calculated from put(call) option with same contract specifications	2	Count	0	0	0	2	2	9.1%	
			% of Total	0.0%	0.0%	0.0%	9.1%		9.1%	
		3	Count	0	0	1	4	5	22.7%	
			% of Total	0.0%	0.0%	4.5%	18.2%		22.7%	
		4	Count	7	0	0	3	10	45.5%	
	% of Total	31.8%	0.0%	0.0%	13.6%		45.5%			
	<b>Total</b>	<b>Count</b>	<b>7</b>	<b>1</b>	<b>14</b>	<b>22</b>	<b>100.0%</b>			
		<b>% of Total</b>	<b>31.8%</b>	<b>4.5%</b>	<b>63.6%</b>					
Yes	Price of a call(put) can be calculated from put(call) option with same contract specifications	1	Count	0	0	0	2	2	4.8%	
			% of Total	0.0%	0.0%	0.0%	4.8%		4.8%	
		2	Count	0	0	0	1	3	9.5%	
			% of Total	0.0%	0.0%	0.0%	2.4%		9.5%	
		3	Count	0	0	1	4	5	11.9%	
	% of Total	0.0%	0.0%	2.4%	9.5%		11.9%			
	<b>Total</b>	<b>Count</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>3</b>	<b>21</b>	<b>50.0%</b>		
		<b>% of Total</b>	<b>0.0%</b>	<b>21.4%</b>	<b>0.0%</b>	<b>7.1%</b>	<b>19.0%</b>	<b>100.0%</b>		
		<b>Count</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>23.8%</b>		
		<b>% of Total</b>	<b>7.1%</b>	<b>14.3%</b>	<b>2.4%</b>	<b>0.0%</b>	<b>8</b>	<b>42</b>		
	<b>Total</b>	<b>Count</b>	<b>3</b>	<b>15</b>	<b>2</b>	<b>14</b>	<b>8</b>	<b>42</b>		
		<b>% of Total</b>	<b>7.1%</b>	<b>35.7%</b>	<b>4.8%</b>	<b>33.3%</b>	<b>19.0%</b>	<b>100.0%</b>		

Note: # represents those respondents who responded to the question/ statement Nos. 1 and 3 but did not respond to question/statement No. 2.

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(C) AWARENESS AND USE OF MODELS FOR OPTIONS VALUATION

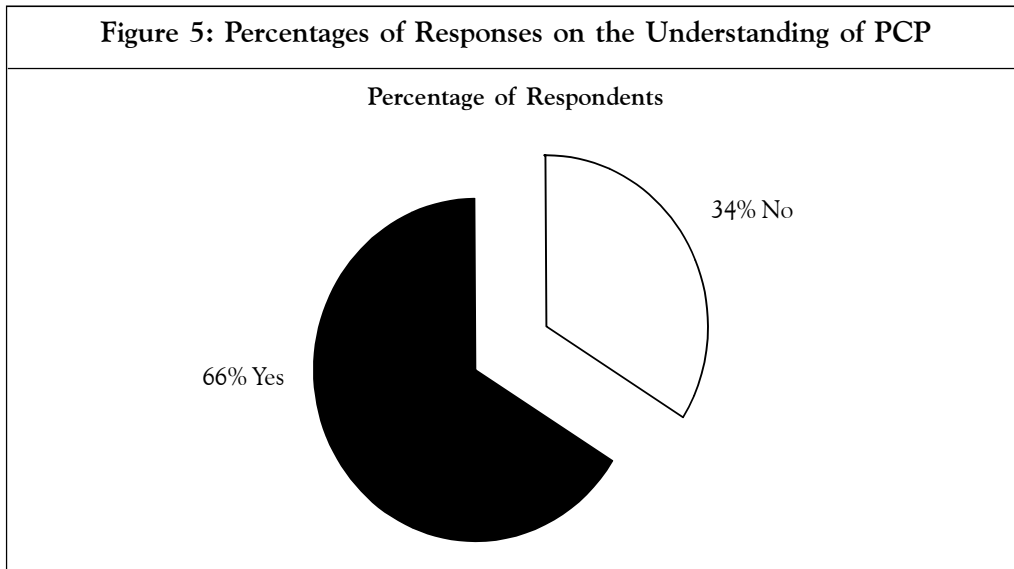
The survey, amongst other objectives, has attempted to gauge the level of understanding amongst respondents on the important aspects of options valuation. For the purpose, the respondents of the survey have been asked on difficulty in valuing options contracts, factors that need to be considered while valuing options and the valuation models. The results relating to the difficulty in valuation of options in terms of their comparison with futures, difficulty in estimating volatility for valuing options and use of implied volatility for valuing option have been summarized in Table 5. The results contained in Table 5 demonstrate that the respondents have shown their strong agreement on the difficulty in valuation of options compared to futures, difficulty in estimating the volatility and using volatility for valuing options. The results have been

found to be highly significant. The agreement on these aspect of options valuation, *prime-facie*, indicate that the respondents are familiar with the major difficulty in valuing an options contract.

Further, the study has attempted to assess the level of awareness amongst respondents on options valuations models and their propensity to use such models for the valuation of options. The results on awareness of valuation models are depicted in Figure 8.

The results on awareness of valuation models clearly indicate that the Black-Scholes (B-S) model has been found to be the most popular amongst the respondents compared to the other two models, namely, Binomial-Tree (BT) model and Hull and White (HW) model. It is corroborated by the fact that the two-third (67%) of the respondents have been found to be aware of the B-S model; the figure has been much lower for other models. For instance, while nearly one-tenth of the respondents were

Statement	Test Value = 03								
	Number	$\bar{X}$	$\sigma$	<i>t</i>	df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Valuation of options is more difficult than that of futures	64	4.19	0.687	13.83	63	0.000	1.188	1.02	1.36
Volatility is most difficult to be estimated	64	3.69	0.990	5.56	63	0.000	0.688	0.44	0.93
Implied volatility can be used to value the options	64	3.89	0.620	11.49	63	0.000	0.891	0.74	1.05

**Figure 5: Percentages of Responses on the Understanding of PCP**

aware of BT model, HW model was known to just 6% of the respondents.

It is pertinent and revealing to note that 30% of the respondents were not aware of any model. Equally notable finding is that nearly one-half of the total respondents have not been using any model despite the fact that 70% of the respondents are aware of the valuation models.

It was of interest to know from the respondents which model/nmodels of valuation (amongst the three mentioned earlier) have been used to value the options. The results on the use of specific model are summarized in Table 6; it is interesting to note that the B-S model is popular amongst the respondents as nearly half of the respondents (49%) have been found to be using the B-S model. In sharp contrast, just 3% of the respondents have been using BT model and no respondent used HW model for valuing options. In addition to this, the consistency of awareness and use of models has been examined using cross tabulation of

awareness and use of the specific models. The results are summarized in Table 6.

The results reveal that the 49% of the respondents who are aware of the B-S model are actually using it. At the same time, the 3% of the respondents who were aware of the only BT model have been valuing options using this model. However, 6% of the respondents were those who claimed to be aware of all the models but actually have not been using any model.

Figure 6 contains the factors considered by those respondents who have been using BS and BT models in valuing options. The results depicted in Figure 6 are revealing as the respondents who are using BS and BT models in pricing options have not considered all the factors reckoned by these models in valuing options. These models, in general, include six variables, namely, strike price, spot price, time to maturity, volatility of underlying asset, interest rate and dividend yield/absolute amount of

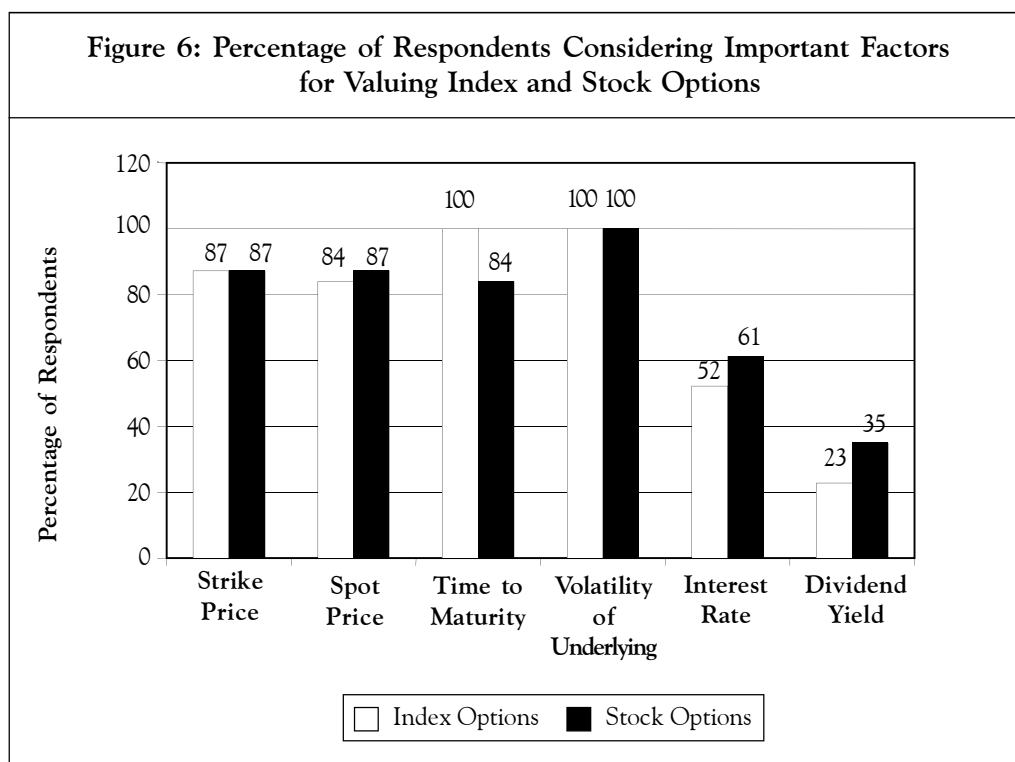


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**Table 6: Cross Tabulation of the Responses on Awareness and Use of Options Valuation Models**

			Which of the Model do You Use			Total	
			Black Scholes	Binomial Tree	None of the Above		
Awareness of the Valuation Models	Black Scholes Model	Counts	29	0	8	37	
		% of Total	45.3	0.0	12.5	57.8	
	Binomial Tree Model	Counts	0	2	0	2	
		% of Total	0.0	3.1	0.0	3.1	
	None of the Above	Counts	0	0	19	19	
		% of Total	0.0	0.0	29.7	29.7	
	BS, BT and HW	Counts	0	0	4	4	
		% of Total	0.0	0.0	6.3	6.3	
	BS and BT	Counts	2	0	0	2	
		% of Total	3.1	0.0	0.0	3.1	
	<b>Total</b>		<b>Counts</b>	<b>31</b>	<b>2</b>	<b>31</b>	<b>64</b>
			<b>% of Total</b>	<b>48.4</b>	<b>3.1</b>	<b>48.4</b>	<b>100.0</b>

**Figure 6: Percentage of Respondents Considering Important Factors for Valuing Index and Stock Options**



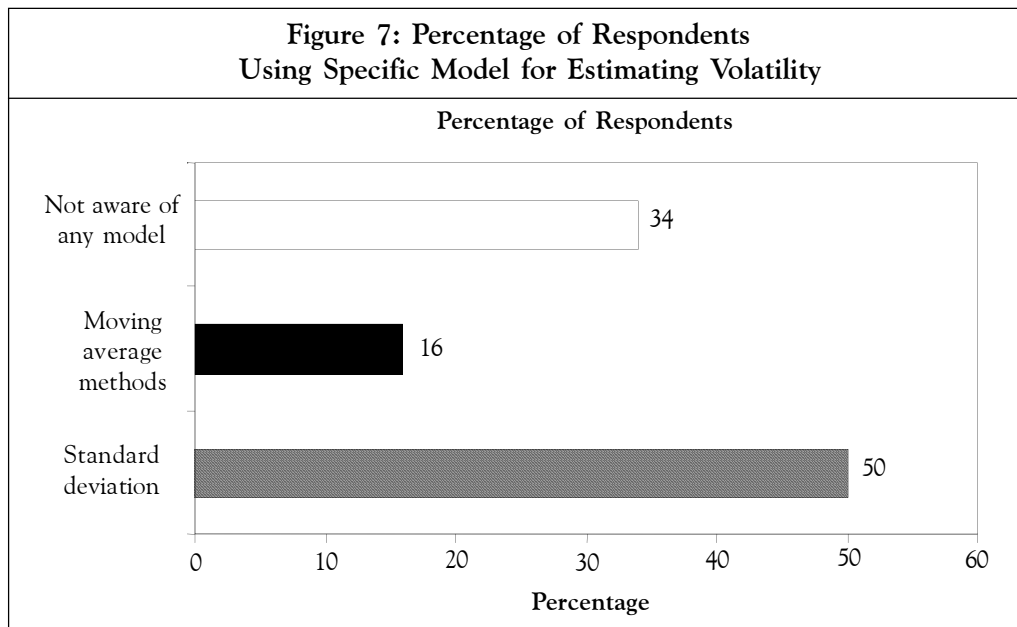
dividends to arrive at the correct price for the options.

The vast majority of respondents (80%) have considered the first four factors in valuing index or stock options; it is surprising to note that the last two factors, namely, interest rate and dividend yield have not been used widely in valuing the options. Amongst the four most considered factors, volatility of underlying asset has been indicated as the most important factor as all the respondents considered it in valuing the options. As far as interest rate is concerned, only 52 and 61% of the respondents have used it in valuing index and stock options respectively; the figure is much lower at 23 and 35% pertaining to the use of dividend yields for valuation purpose. The finding that interest rate is one of the two least considered factors for valuing options amongst respondent is in line with Srivastava *et al.* (2008). It may be noted that the consideration of dividend yield in valuation would not

affect the correct prices much; however, the valuation using these models is not possible without considering the interest rate as it is a necessary input required to determine options price.

In sum, it would be reasonable to conclude that the 'true' percentage of the respondents who are actually using the 'correct' valuation models is lower than that noted earlier (52%). The actual percent represents the respondents who reckoned interest rate also (along with other variables) as an important factor for valuing options. Based on such a correct measure, nearly one-fourth of the respondents are actually using valuation models (BS and BT) for valuing index options. Likewise, a marginally higher percentage of respondents have been found to be actually using valuation models for pricing options. As far as the method used for estimating volatility is concerned, half of the respondents have been found to be using standard deviation

**Figure 7: Percentage of Respondents Using Specific Model for Estimating Volatility**



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method (Figure 7). In contrast, only 16% of the respondents have been using moving average models; surprisingly, the remaining one-third (34%) of the respondents were not using any model to estimate the volatility.

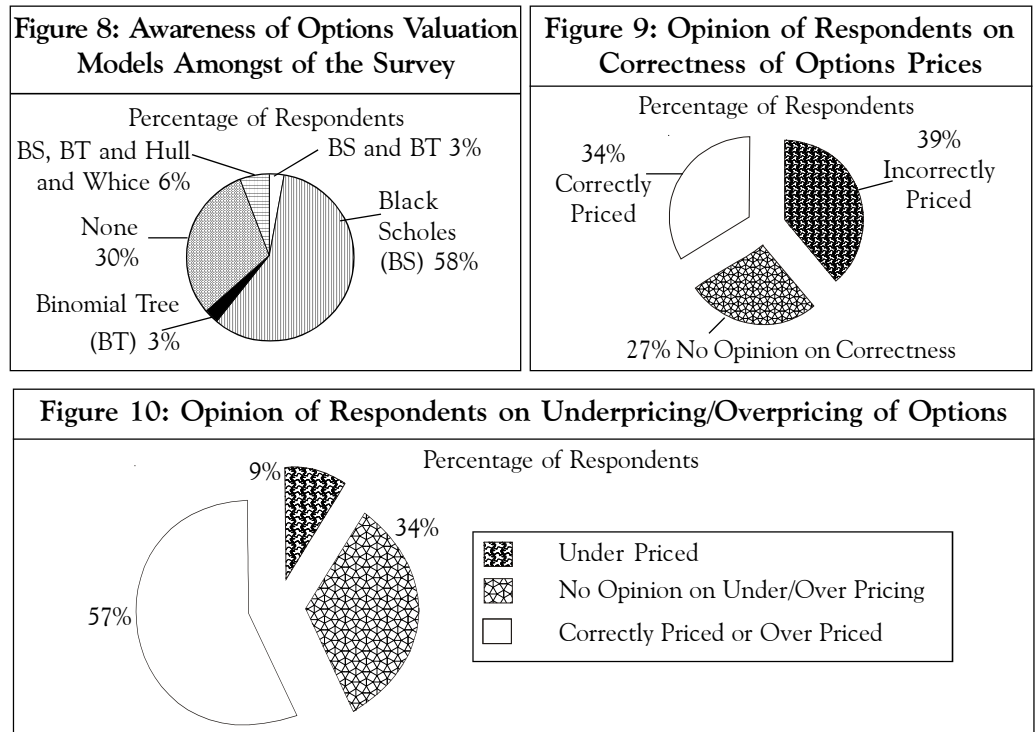
**(D) CORRECTNESS OF OPTIONS PRICING, ITS IMPACT AND EXISTENCE AND EXPLOITABILITY OF ARBITRAGE OPPORTUNITIES**

Another important objective of the survey has been to gauge the opinion of the respondents on correctness of options pricing, its possible impact on the core functions that the options market is expected to perform, and the existence and exploitability of arbitrage opportunities. The results regarding viewpoint of the respondents on the state of options pricing and its direction (i.e.,

underpricing or overpricing) have been depicted in Figures 9 and 10.

The results depicted in Figures 9 and 10 clearly demonstrate that nearly two-fifth (39%) of the respondents have felt that the options in Indian securities market are incorrectly priced whereas more than one-third (34%) of the respondents have believed that these are correctly priced. And, remaining one-fourth (27%) of the respondents showed their inability to judge the state of options pricing in the market.

On the direction of mispricing of options contracts, only 9% of the respondents opined that options in Indian securities market are underpriced when asked for the direction of mispricing. At the same time, a major segment, i.e., 34% of the respondents could not say anything



on the issue. And, majority of the respondents who represents 57% of the participants were of the opinion that options are not underpriced, i.e., these could either be correctly priced or overpriced. In order to deduce the percentage of respondents who have believed that options are overpriced, the responses on these two dimensions of options pricing (namely, viewpoint on the state of pricing and direction of mispricing, if any) have been cross tabulated. The results are demonstrated in Table 7 and Figure 11.

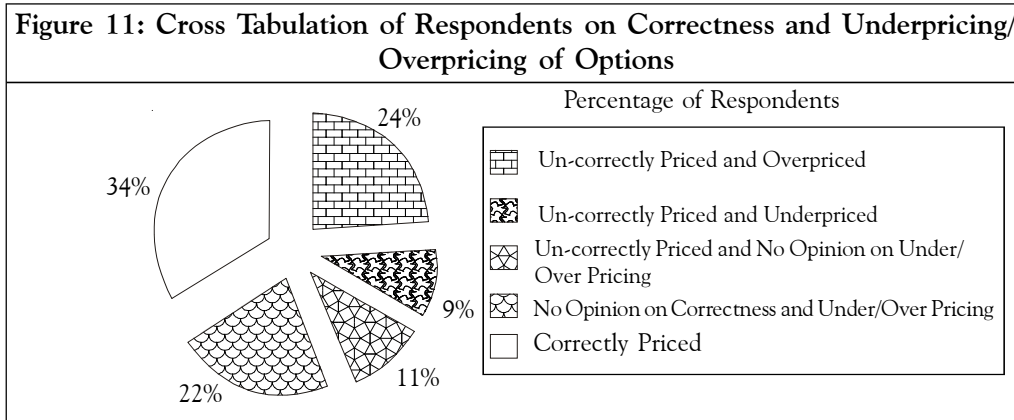
In addition to the findings mentioned earlier in this regard, it follows from the cross-tabulation that nearly one-fourth (24%) of the respondents have believed that options were overpriced. Notably, an important segment (33%) of the

respondents had no opinion on the state of pricing in the market. In sum, it can be inferred from the results that more than two-fifth (44%) of the respondents felt that options in Indian securities market are priced incorrectly and, therefore, indicates pricing inefficiency in Indian options market.

Also, the survey has attempted to gauge perception of the respondents regarding the impact of incorrect pricing on the core functions of the options market, namely, risk hedging and price discovery. For the purpose, the respondents have been asked on the probable impact of mispricing on price discovery in underlying's market and hedging efficiency. The majority of the respondents agreed on the likely impact of such pricing anomalies as a significant segment (78%)

**Table 7: Correctness of Options Pricing in Indian Derivatives Market: Trading Members' Perspective**

Category of Respondents	Percentage
Incorrectly priced and Overpriced	24
Incorrectly priced and Underpriced	9
Incorrectly priced and No opinion on under/overpricing	11
No Opinion on correctness and under/overpricing	22
Correctly Priced	34
<b>Total</b>	<b>100</b>



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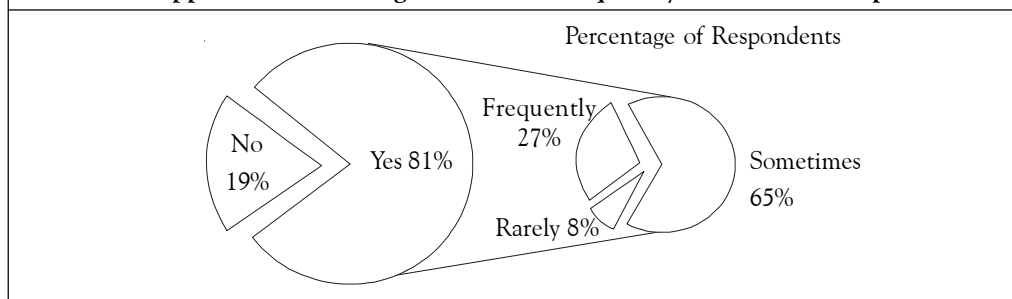
of the participants perceived that correct pricing leads to correct price discovery in underlyings market; an approximately equal percentage of respondents (80%) felt that incorrect options pricing lessens the hedging efficiency of such instruments.

The results of *t*-test corroborate the above findings as the opinion of respondents on the impact of mispricing on price discovery and risk hedging has been found to be highly significant (Table 8). The high level of significance along with the positive value of the *t*-test statistic confirm the agreement on these issues, viz., incorrect options pricing result in incorrect price discovery and decrease the hedging efficiency of options.

Further, we attempted to gauge the viewpoint of respondents on existence and exploitability of arbitrage opportunities in Indian options market. A whopping number of respondents (94%) agreed that the arbitrage opportunities do exist in Indian options market. As far as attempting to gain from the arbitrage opportunities is concerned, the results (summarized in Figure 12) indicate that more than 80% of the respondents had actually tried for the arbitrage in the options market. However, amongst these respondents, more than one-fourth (27%) of the respondents have attempted to gain from arbitrage quite frequently; majority of respondents (i.e., 65%) have not

<b>Table 8: One-Sample <i>t</i>-Test for the Statistical Validation of Agreement/Disagreement of Respondents on the Impact of Incorrect Pricing of Options on Price Discovery and Hedging Efficiency</b>									
Statement	Test Value = 03								
	Number	$\bar{X}$	$\sigma$	<i>t</i>	df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Correct options ensures pricing discovery	64	3.69	1.082	5.083	63	0.000	0.688	0.42	0.96
In correct pricing lessens hedging efficiency	64	4.05	.881	9.510	63	0.000	1.047	0.83	1.27

**Figure 12: Percentage of Respondents who Attempted to Gain from Arbitrage Opportunities Along with their Frequency of Such Attempts**



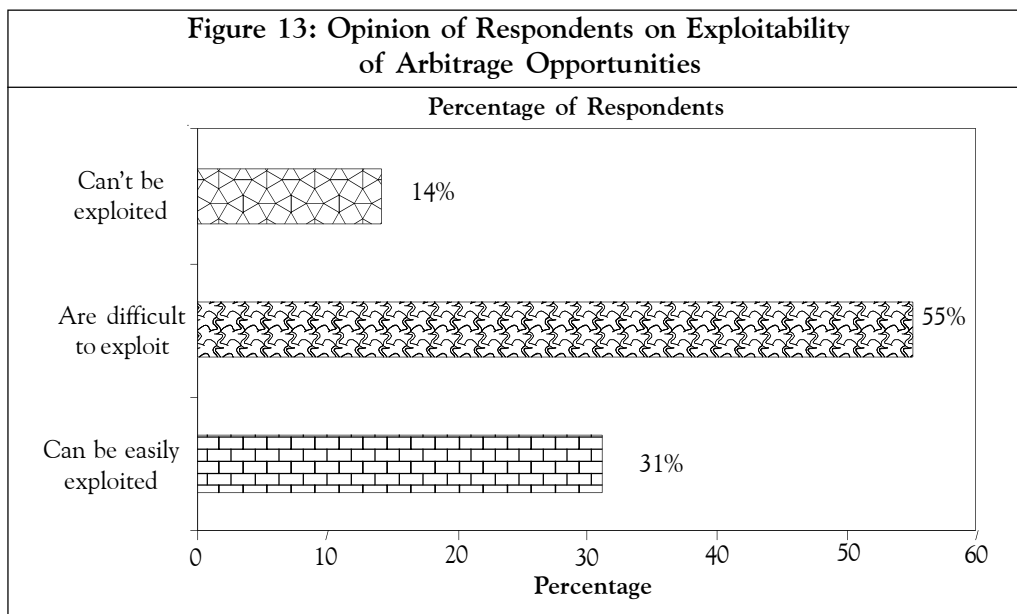
attempted frequently; a meager 8% of such respondents rarely tried such strategies.

In an equally important finding, responding to the ease of exploiting arbitrage opportunities in Indian options market, less than one-third (31%) of the respondents feel that the opportunities can be easily exploited as summarized in Figure 13. In sharp contrast to this, a major segment of the respondents opine that such opportunities are either difficult to exploit or cannot be exploited at all.

Further, the responses on ease to exploit arbitrage opportunities have been examined in terms of the frequency of attempts that the respondents make to exploit such profit opportunities. The results are summarized in Table 9. The findings reveal that approximately 5% of the respondents who never attempted to gain from such opportunities have opined that the opportunities can easily be exploited. This may be attributed to the fact that such respondents, perhaps,

do not understand the arbitrage mechanism very well. At the same time, in a natural response, nearly one-sixth (14%) of the respondents who never attempted to gain from such opportunities assigned difficulty in exploiting it as the major reason. Similarly, more than two-fifth (41%) of the total respondents who have attempted to gain from such arbitrage opportunities feel that these have been difficult to exploit; 6% of such respondents believed that such opportunities have been unexploitable.

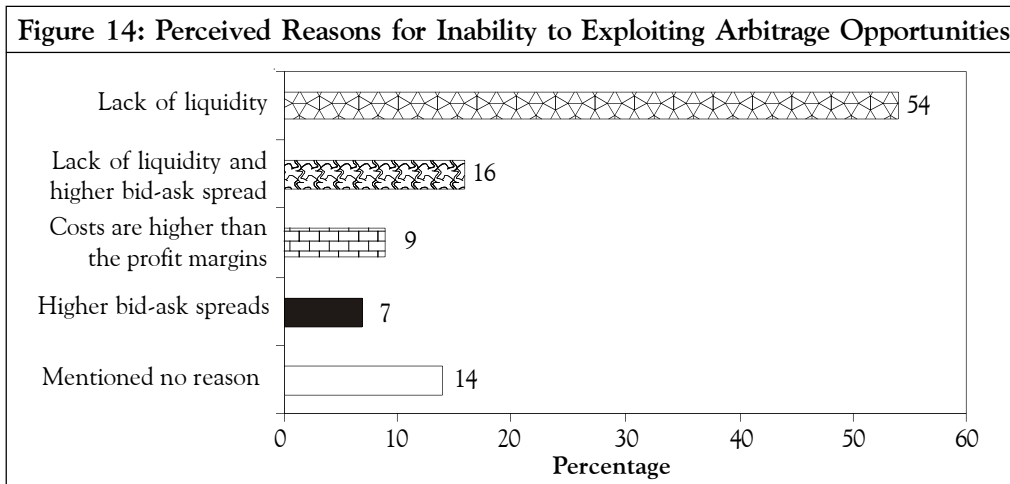
A vast majority of the respondents (64%) who felt that the arbitrage opportunities had been difficult to exploit or not exploitable at all were of the opinion that dearth of liquidity in the options market was the major reason for their inability to exploiting such opportunities. Higher bid-ask spread had been cited as the second major reason for this; The results on perceived reasons have been submitted in Figure 14. Notably, higher



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**Table 9: Cross Tabulation of Frequency of Exploiting Arbitrage and Opinion on Exploitability of Such Opportunities**

			Ease of Exploiting Arbitrage Opportunities			Total	
			Can be Easily Exploited	Are Difficult to Exploit	Can't be Exploited		
If yes, How frequently	0	Count	3	9	0	12	
		% of Total	4.7%	14.1%	0.0%	18.8%	
	Frequently	Count	4	7	3	14	
		% of Total	6.3%	10.9%	4.7%	21.9%	
	Sometimes	Count	12	17	5	34	
		% of Total	18.8%	26.6%	7.8%	53.1%	
	Rarely	Count	1	2	1	4	
		% of Total	1.6%	3.1%	1.6%	6.3%	
	Total		Count	20	35	9	64
			% of Total	31.3%	54.7%	14.1%	100.0%



bid-ask spreads essentially can be traced to the dearth of liquidity. In operational terms, the investors who feel this as the reason for inability to exploiting arbitrage indirectly signal liquidity as the main reason.

In sum, therefore, it would be appropriate to conclude that the vast majority (79%) of such respondents perceived dearth of liquidity as the major reason for inability to exploiting arbitrage

opportunities. This apart, nearly one-tenth (9%) of such respondents felt that cost associated with such opportunities had been higher than the profit margins expected from such opportunities.

In this regard, it is surprising to note that none of the respondents mentioned any of the market frictions, e.g., short-selling constraint in the market as a reason for their inability to exploiting from arbitrage opportunities. The finding

suggests that respondents are either using futures market to overcome the short-selling constraint or they are not using the arbitrage strategies which require use of short-sell. However, the latter seems to be more probable reason as in the absence of short-selling mechanism, the futures market cannot be expected to be correctly priced and, therefore, would not be able to identify the arbitrage in all the cases even if the options market is inefficient. In sum, it would be reasonable to conclude that the respondents do not seem to be aware of arbitrage opportunities which require short-selling mechanism in place.

#### (E) NEED OF REGULATIONS AND EDUCATIONAL INITIATIVES FOR THE BETTERMENT OF THE OPTIONS MARKET

It was also of interest to gauge the opinion of the respondents on aspects related to regulations and educational initiatives needed for the betterment of the options market in India. While a sizable majority (70%) of the respondents felt that a self regulatory mechanism would be preferable

to the imposed regulations, one-fourth of the respondents supported need of regulations to restore equilibrium in the options market. Another notable finding of the survey is that the proposal to introduce a price band in order to ensure the correct pricing of options has been rejected by the majority (53%) of the respondents. One-sample *t*-test has been used to statistically validate the agreement or disagreement on the proposed regulations for the betterment of the market. The results are summarized in Table 10.

The results of the test regarding the regulations as an initiative for the betterment of the market has been rejected at 5% level of significance. This validates disagreement of the respondents on the possibility of further regulations for the development of the market. However, it is surprising to note that the hypothesis on the proposal of a price band could not be rejected at 5% level of significance. In other words, while a majority of respondents rejected the proposal of launching a pricing band for regulating

Statement	Test Value = 03								
	Number	$\bar{X}$	$\sigma$	<i>t</i>	df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Options prices need to be regulated	64	2.61	1.399	-2.234	63	0.029	-0.391	-0.74	-0.04
A price band should be put in place	64	3.03	1.321	0.189	63	0.851	0.031	-0.30	0.36



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options prices in the market, the statistical validation of disagreement could not be achieved. In sum, it would be reasonable to infer that the respondents have a negative view on regulations for the betterment of the market.

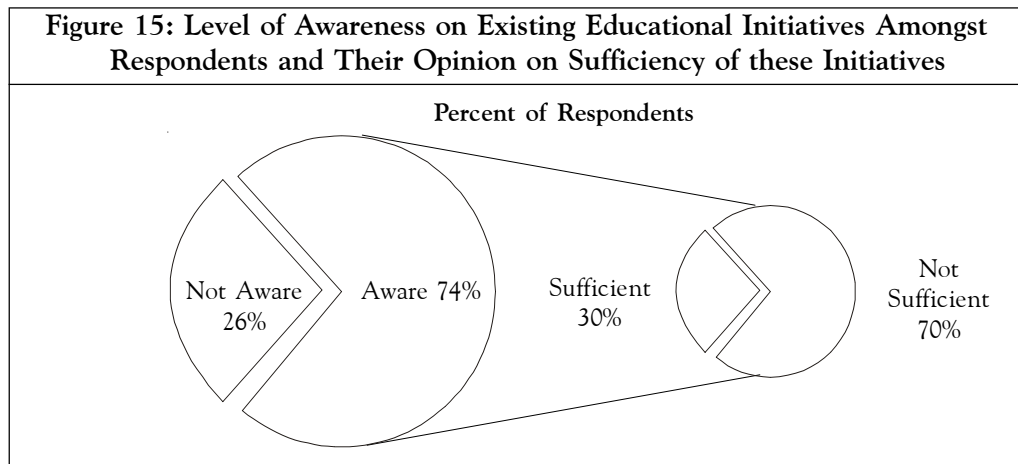
Besides, the opinion of respondents was also sought on the need of educational initiatives for the development of the market. For the purpose, the survey has attempted to gauge the awareness and sufficiency of educational initiatives from SEBI, NSE and BSE. Further, the respondents were asked on need of more education on derivatives to the investors, creating a separate body for the same and the ownership pattern for such an organization.

The results on level of awareness amongst respondents on existing educational initiatives of SEBI, NSE and BSE along with their opinion on the adequacy of such measures have been depicted in Figure 15. The results demonstrate that a significant segment (74%) of the respondents have been found to be aware of such initiative; however, one-fourth (26%) of respondents revealed

their ignorance on such educational initiatives. A notable finding of the survey is that amongst those who were aware of educational initiatives, a majority (70 percent) of such respondents felt that the existing initiatives are not sufficient. In short, the survey indicates that the existing educational initiatives are not adequate; some more educational initiatives are needed for increasing participation of investors in the options market.

On the educational initiatives for the investors, the respondents were asked on three aspects, namely, (1) the need of educating investors more on the derivatives, (2) opinion on creating a separate body for the purpose and (3) the acceptable ownership pattern for the proposed educational body. The results regarding the first two aspects have been summarized in Table 11; the responses to the third aspect have been depicted in Figure 16.

In an overwhelming response to the need of more educational initiatives, a vast majority (94%) of the respondents felt that enhanced educational initiatives for investors' education need to be put in



place. As a solution to the warranted increase in educational initiatives, more than four-fifth (84%) of the respondents agreed that a separate nonprofit organization should be created to carry out this task. The so observed agreement on these two proposals has been supported statistically as well (Table 11). With regard to the ownership of the proposed educational organization, a major segment of the respondents have given first priority to the Public Private Partnership (PPP).

In short, the respondents of the survey showed a clear agreement on enhanced investors' education on derivatives and strongly felt a need for a separate

educational body with the PPP ownership pattern.

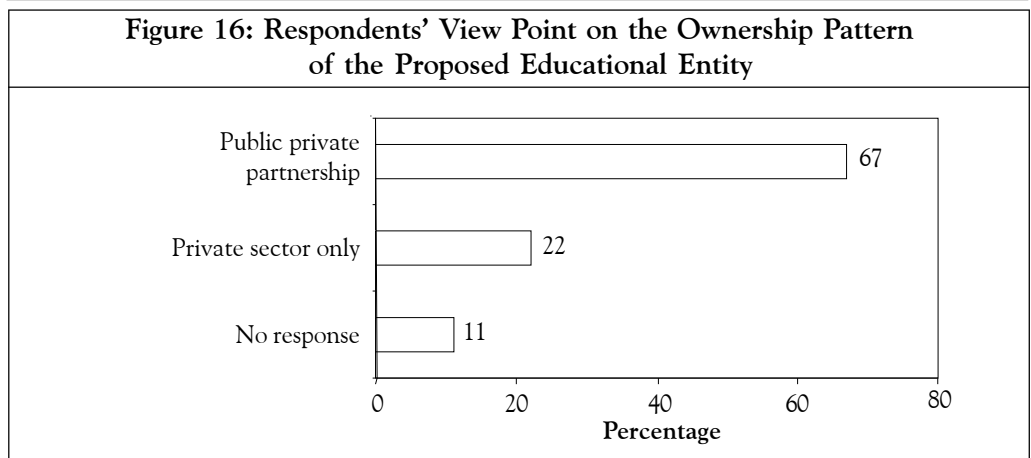
### 5. LIMITATION AND SCOPE FOR FUTURE RESEARCH

The study included only trading member organizations for gauging the opinion of market participants on the state of pricing of options in Indian derivatives market. A survey amongst the other institutional investors, e.g., mutual fund organizations and High Networth Individuals (HNIs) can also be performed.

In view of this, a survey amongst the mutual funds organizations operating in India can be attempted to have their

**Table 11: One-Sample *t*-Test for the Statistical Validation of Agreement/Disagreement of Respondents on the Enhanced Educational Initiatives**

Statement	Test Value = 03								
	Number	$\bar{X}$	$\sigma$	<i>t</i>	df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Need of more education on derivatives	64	4.55	0.75	16.40	63	0.000	1.547	1.36	1.74
Need of a separate body for educating investors on derivatives	64	3.89	0.86	8.31	63	0.000	0.891	0.68	1.10



PRICING OF OPTIONS IN INDIAN DERIVATIVES MARKET:  
A SURVEY OF TRADING MEMBER ORGANIZATIONS

standpoint on the state of options market in India. The mutual fund organizations could be a potential source of information on the state of options market as the fund managers/asset managers at such organizations are deeply involved in derivatives markets especially for hedging their market exposures.

## 6. CONCLUDING OBSERVATIONS

This study attempts to gauge the opinion of trading member organizations on the state of options pricing in Indian derivatives market. For the purpose, a survey has been carried out amongst the trading member organizations based at Delhi and Mumbai. The survey has dealt with five major aspects, namely, (1) Level of participation and usage of the options market, (2) Awareness and use of models for options valuation, (3) Understanding of Put-Call Parity (PCP) relationship, (4) Correctness of options pricing, its impact, and existence and exploitability of arbitrage opportunities, and (5) Need of regulations and educational initiatives for the betterment of the market.

With regard to the participation and usage of options market, a vast majority of participants has been found to be involved in trading in futures market as nearly 80% of the respondents had less than 20 percent of their trading volume relating to derivatives from the options market. The finding clearly demonstrates that futures are preferred by respondents of the survey; options carry lower weight in their derivatives portfolio.

It is satisfying to note that the usage of derivatives market in terms of risk hedging, speculation and arbitrage has been, to a greater extent, in line with the findings of the L C Gupta Committee (1998).

Moreover, the survey attempted to gauge the level of awareness and use of valuation models for valuing options. In this regard, it is surprising to note that approximately one-fourth (27%) of the respondents have been found to be actually using the valuation models for the purpose valuing index options; nearly one-third (32%) of the respondents have been using such models in the case of option on individual stock. Another notable finding of the survey is that a major segment of respondents did not understand the concept of PCP relationship well. It is eloquently corroborated by the fact that nearly three-fifth (59%) of the respondents were not aware of the relationship. This might have serious implications for the pricing efficiency of options in India as the PCP relationship helps to identify the pricing anomalies/arbitrage opportunities relating to the relative price of call and put options and, in turn, helps to restore equilibrium in the market. These findings indicate that the level of understanding relating to valuation concepts amongst the market participant has been considerably low.

Besides, majority of the respondents perceived that options in Indian securities market are not correctly priced causing arbitrage opportunities to exist in the market. However, it is pertinent to note that the dearth of liquidity has been the major constraint to arbitraguers to gain from such opportunities. An equally revealing finding of the survey is that no respondent felt that the short-selling has been one of the major constraints to exploiting arbitrage in the market.

As far as the response for the educational initiatives for the betterment of the market are concerned, the vast majority of respondents strongly feel the

need of enhanced investors' education on derivatives and recommend for a separate educational body with the Public Private Partnership kind of ownership pattern.

In view of the above findings, it would be reasonable to suggest that a separate educational body should be put in place for educating investors more on derivatives. Such an organization, in Indian context, could be proposed in line with its developed counterpart, USA where a fully independent organization, known as Options Industry Council (OIC) is devoted to enhancing investors' knowledge on options contracts. Such an organization may be financially supported by the stock exchanges facilitating derivatives trading in India, e.g., NSE, BSE and MCX along with the market regulator SEBI and Clearing corporations in India.

The survey results clearly reveal the need of an educational body dedicated to disseminate derivatives education in India. In this regard, it is important to note that nearly all the respondents supported a Public-Private Partnership (PPP) structure for such an educational body. The implication of this finding is that the stock exchanges along with the market regulator, SEBI might like to venture into

this educational endeavor given its need and acceptability amongst market participants. Such an organization makes sense for both these entities (stock exchanges and market regulator) in view of their existing participation in disseminating education amongst investors and, more importantly, the inadequacy of the existing initiatives as revealed by the survey.

In addition, such an organization should not only be disseminating education amongst investors; all the employees of the trading member organization who are actively managing the derivatives segment should be trained regularly on the derivatives (especially options) as the lack of adequate understanding of the options market amongst participants could not be ruled out in the survey. Such an organization would, to a marked extent, enhance participation in derivatives market and, therefore, is expected to help the market to operate closer to the equilibrium as the liquidity has been biggest constraint to the arbitraguers. An efficient derivatives market, in turn, would facilitate in capital creation in the economy even in the periods when market experiences high volatility.

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# Case Study

## Marketability of Universal Design (UD) Products in India: The Case of Panasonic and a UD Proposal for Washing Machines

Nisha Prajapati\* and Tatsuo Asai\*\*

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*Universal Design (UD) products make people's life easier, but UD does not seem to be in practice widely in developing countries like India. The purposes of this study are: (1) To explore opportunities for UD products in the Indian market and (2) To ascertain whether UD products are necessarily more expensive or not. This paper first presents a case study of Panasonic and its incorporation of UD. Based on Panasonic's case, a new 'step-by-step' approach is proposed to expand the market of UD products to the aged and the disabled. Similarly, another approach named "Start with small changes" is proposed based on the results of a quick survey conducted in India and the study of UD. It has been found that both of these approaches help to expand the market for UD products and that there are huge business opportunities for UD products in India.*

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### INTRODUCTION

Universal Design (UD) has been defined as the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design (Mace, 1988). UD is an initiative that can be incorporated in products or services such as those from the grip of a pen to the non-step bus service. UD is necessary to empower people with diverse capabilities.

This research focuses on India because the concept of UD does not seem to be in practice widely in such developing countries. Few studies have been publicized about the incorporation of UD in durable goods in India. UD is necessary in India for the following reasons:

- The trend towards rapid aging of the population,
- Illiterate people get confused when using multi-functional products.

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\* Dr. Eng., Graduate School of Information Science and Control Engineering, Nagaoka University of Technology, 1603-1 Kamitomioka-machi, Nagaoka, Niigata, Japan 940-2188. E-mail: s077038@ics.nagaokaut.ac.jp, nisha.prajapati@gmail.com

\*\* Professor, Dr. Eng., Management and Information Systems Science, Nagaoka University of Technology, 1603-1 Kamitomioka-machi, Nagaoka, Niigata, Japan 940-2188. E-mail: asai@kjs.nagaokaut.ac.jp

India is an important case study for the development of UD because, first, many foreign companies are interested in doing business in India, largely because economic reforms have transformed India into the second fastest growing economy in the world. Second, India is the second most favored nation for investment because of its economic liberalization. Finally, India is the second most populous country in the world (Dhar, 2005).

This paper focuses primarily on producers. Since, they are the origin of products and their numbers are fewer than consumers. It is easy to motivate producers to take an interest in UD rather than the entire population. Furthermore, this paper focuses on durable home appliances like washing machines because people (especially women) spend most of their time doing housekeeping chores.

The purposes of this research are:

- To explore opportunities for UD products in the Indian market.
- To ascertain whether UD products are necessarily more expensive or not.

Nowadays, organizations adopt UD approaches not only to increase revenue or profit but also to fulfill their social responsibility. This research first studied the fundamental principles of UD and methodologies aimed at improving society as a whole. The case of Panasonic, a leading corporation in the adoption of UD, is taken to motivate companies in India to introduce UD. In addition, the way in which Panasonic has incorporated UD into its products is also studied.

The following subsections will give a brief review of literature on UD, the macro environment of India, foreign investment in UD products and a quick survey of UD products.

#### LITERATURE ABOUT UD

Throughout academia, we can find reference to the fact that the use of existing ordinary products seems to be difficult for people with permanent and temporary disabilities. Well-known approaches like the 'User's Pyramid' (Benktzon, 1993), the 'Inclusive Design Cube' (Keates *et al.*, 2000) and the 'Bottom-Up' (Goldsmith, 2001) have suggested the incorporation of UD in products based on ergonomics and human-centered technology. These approaches create certain trade-offs for mainstream users. This moreover, can be costly because it requires more advanced technology to generate solutions for those with functional limitations. Overall, the use of a product and its environment appear to be restricted to the differences in user specifications across different groups. One of our interests is to explore how the UD process may be incorporated in existing products. Furthermore, some researchers discuss a trend towards UD for overall performance of a company (Asai and Konta, 2006; and Hasegawa and Asai, 2007).

UD has been attracting attention in many parts of the world. However, it does not seem to have been widely adopted in developing countries. Nowadays, the concept of UD is emerging slowly in India. Singanapalli (2001) says that it is better to incorporate UD all over India, as its

MARKETABILITY OF UNIVERSAL DESIGN (UD) PRODUCTS IN INDIA: THE CASE OF PANASONIC AND A UD PROPOSAL FOR WASHING MACHINES

benefits are evident in developed countries. According to Raheja (2007), the Indian government has passed legislation for equality of opportunity and full participation for the disabled. Prajapati and Asai (2009) state that Indians have started to be aware of UD and they have already incorporated it in infrastructure and education. Thus, despite the popularity of UD in developing countries, it seems that UD is still in the initial phase in India, and currently, only a few sectors have adopted UD.

### INDIAN MACRO ENVIRONMENT

The environment of developing countries is different from that of developed countries. Therefore, before UD is incorporated in products or services in India, the overall macro environment should be analyzed in order to recognize threats and opportunities. The macro environment consists of the variables which cannot be controlled by any company. These variables are (1) Societal and Cultural, (2) Technological, (3) Behavioral, (4) Economic, and (5) Demographic. The present conditions of these variables are explained below.

#### *Societal and Cultural*

Indian society is changing. It can be shown that 70% of households live in rural areas (Singh and Panday, 2005) and these people are slowly moving to urban areas. Indian nuclear families as well as working women are increasing in number.

#### *Technological*

India has improved its technological capabilities. It uses both indigenous and imported technologies. There are many

innovative products, which offer a great variety of choices. One of the reasons for the 12% increase in demand for durable goods during recent years is innovation (FICCI, 2005). Furthermore, according to Sharma (2008) new technology is positively associated with sales growth in export markets. Thus, technology is one of the important factors for business performance; it should be integrated in the entire business process.

#### *Behavioral*

Indians do not accept new products easily (Singanapalli, 2001). For example, they prefer to have their clothes washed by washerwomen for an average of 75 ₹/day (US\$1 = 48.04 ₹, 100 yen = 38.98 ₹, October 2002). Indians still believe that the cost of using a washing machine is higher than the amount paid to a washerwoman. They also believe that a washing machine will tear their clothes and will increase their electricity bill. Young people, however, like to try new products. They also like to enjoy their life and work. They believe housekeeping without modern equipment is a difficult task.

#### *Economic*

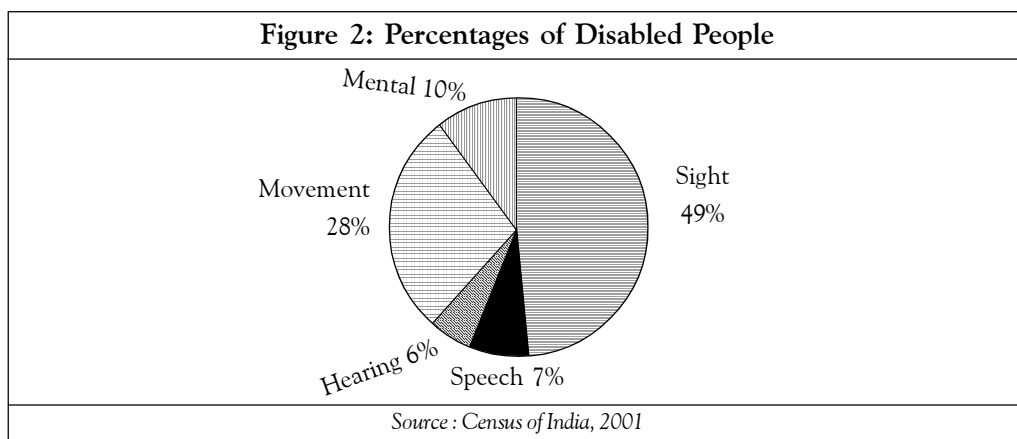
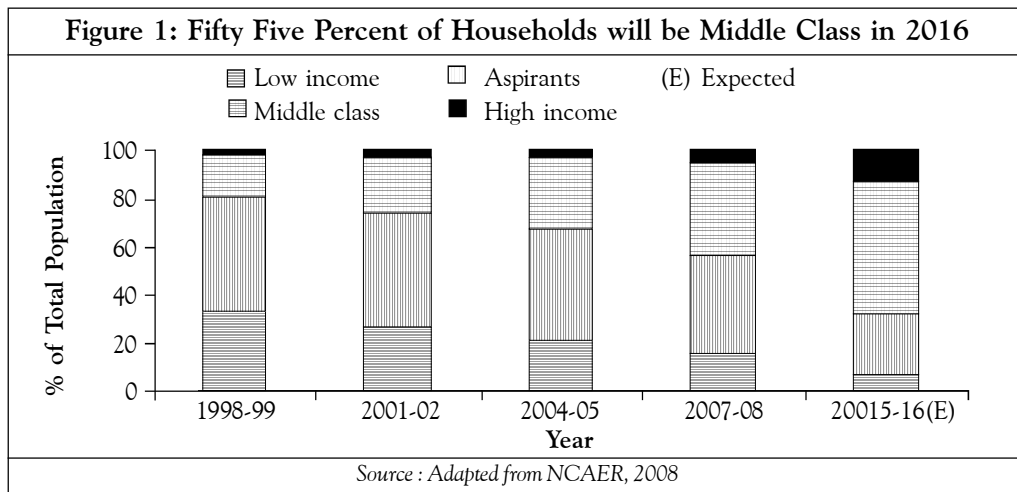
In 2004, India's per capita GDP was US\$ 599 and increased to US\$ 1,033 in 2009 (IMF, 2009). Per capita GDP is increasing and it is said that the trend will continue. This means that the living standard of Indians may be improving. Indians can be categorized into four classes based on their income. These classes are 'low income', 'aspirants', 'middle class' and 'high income'. According to the National Council of Applied Economic Research's

(NCAER) 2008, 20 main cities of India that account for 10% of its total population show that middle class households will account for about 55% of the total population by 2016 (See Figure 1). In other words, the middle class will represent the largest proportion of the total population. The purchasing power of the middle class is between US\$5,000 to 25,000 and their income is rising. Tondon (2008) says that consumers have started to be conscious of quality, demand high quality products with the latest technology and do not want to compromise quality for the sake of price.

**Demographic**

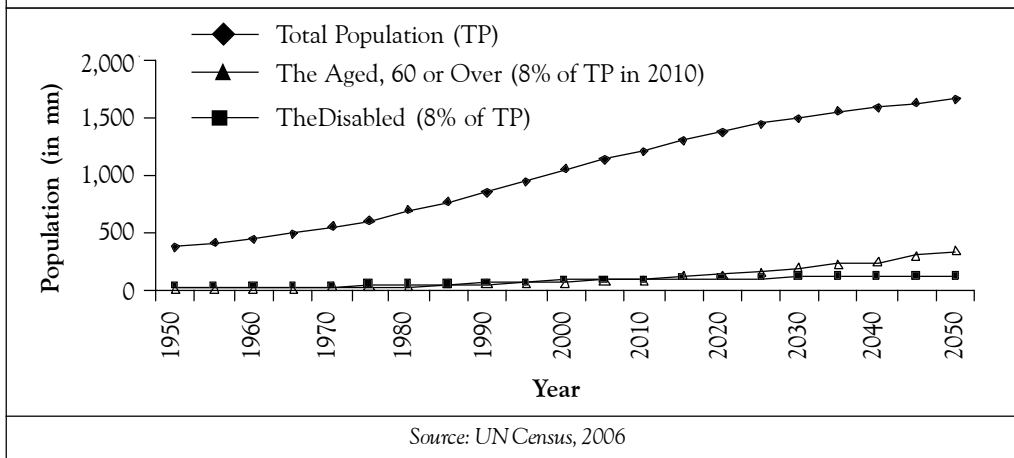
The census of India 2001 has reported that 2.13% of India’s total population is disabled. Figure 2 shows that the disabled are classified into several groups. In 2008, the World Bank (2008) reported that the disabled ratio varied from the official figure of 2% with estimates of 4% to 8%—partly due to the diversity of definitions of disability in India. The disabled ratio increases with aging. This research assumes that the ratio of the disabled is 8% of the total population.

People who are 60+ years are called ‘the aged’. Figure 3 shows three trend lines





**Figure 3: Trends of the Total Population, the Aged and the Disabled in India (1950-2050)**



for the total population, the aged and the disabled in India. It is projected that the aged will reach 8% of the country's total population in 2010 and it will be 11% in 2025 and 20% in 2050 (UN Census, 2006). It is also estimated to increase by 1.2% yearly. The disabled is 8% as mentioned before.

The study of Indian macro environment shows that conditions for the introduction of UD in the Indian market may be favorable.

#### FOREIGN INVESTMENT IN UD

The market for consumer products in India is growing and is expected to reach US\$400 bn a year by 2010 (Kumar, 2007). Foreign companies are expanding their business in India. One of their challenges is how to sell their products to Indian consumers. Indians are generally curious about stylish products and durable goods.

LG, Whirlpool and Samsung are some of the main companies in the business of washing machines in India. They are all foreign companies. In 2006, these major

foreign companies controlled 85% of the market, although in 2007 their market share was reduced to 70% (NaukriHub.com, 2008). Although the market share of these foreign companies is decreasing, their share is still high. The market is very competitive for both local companies and foreign companies. Both are working hard on technology and exterior design of washing machines. At this time, if UD is introduced as an innovation, it may be a good strategy to capture large portions of the market. Foreign companies, however, can easily adopt UD since their technologies and financial conditions are better than those of local companies. As a result, they may maintain their present market share.

#### QUICK SURVEY

A survey was carried out on site at the South Asian Management Forum 2009, and through personal e-mail contacts in April 2009. The purposes of the survey were, (i) To identify problems faced by consumers using ordinary products and (2) To measure their willingness to pay

extra for UD products. Twenty-one respondents were collected from India.

The characteristics of the respondents are presented in Table 1. This table shows that the majority of respondents are in their 40's and 50's, which account for 52.4% of the total respondents. There is a high percentage of couples with a child/children and of male respondents.

**FACING PROBLEMS**

In the survey, one of the questions was, "Have you or your family experienced any problem in using durable goods?" The results, as shown in Figure 4, show that 24% of respondents said yes, 66% said no, and 10% said not sure. This 24% would

represent a huge number of people in the total Indian population, which is 1.3 billion. This suggests that UD could have a large market impact as consumer awareness of UD, its benefits increases and they begin to buy more UD products.

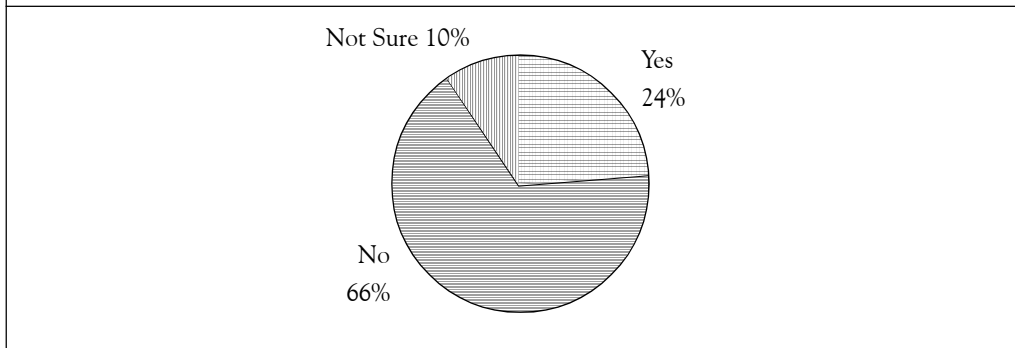
**WILLINGNESS TO PAY EXTRA**

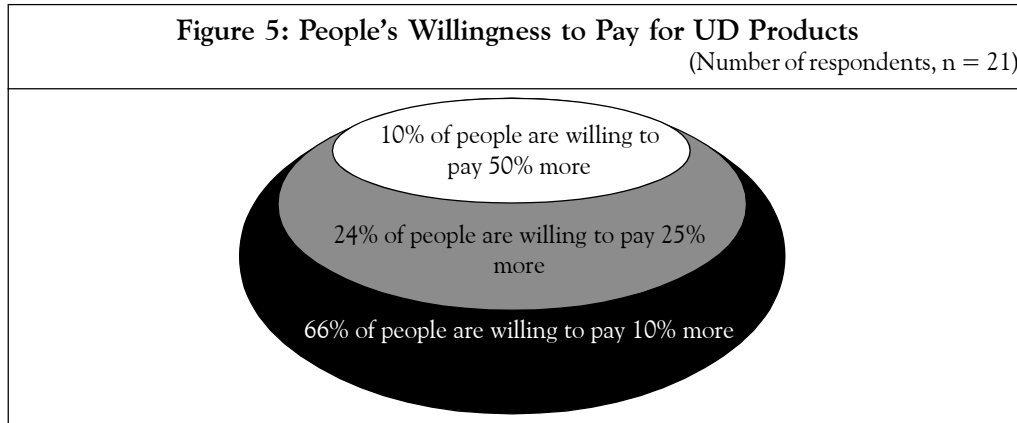
Respondents were asked how much extra they were willing to pay for UD products. Five options were given: 10%, 25%, 50%, 75% and 100%. Figure 5 shows that all 21 respondents are willing to pay 10% extra for UD products; however, 66% of respondents are willing to pay only 10% extra for UD products whereas only 24% and 10% of respondents are willing to pay

**Table 1: Characteristics of Respondents**  
(Number of respondents, n = 21)

Age	%	N	Sex	%	N	Family	%	N	Education	%	N
20-39	19	4	Male	86	18	A single person	5	1	Illiterates	-	-
40-59	52	11	Female	14	3	A couple with no children	-	-	Higher Secondary	-	-
60 or Over	29	6		-	-	A couple with a child/children	86	18	Under Graduate	-	-
						Have a family member with disabilities	-	-	Graduates	100	21
						Joint family	10	2			

**Figure 4: Percentages of People Facing Problems While Using Durable Products**  
(Number of respondents, n = 21)





25% and 50% extra for UD products, respectively.

Thus, the quick survey results show that in India, 24% of consumers are facing problems in using durable goods. 66% of respondents are willing to pay 10% extra but no more for UD products and 24% and 10% of respondents are willing to pay 25% and 50% extra for UD products, respectively. Therefore, it is suggested that consumers who faced problems may buy UD products. Moreover, if the price of UD products is not more than 25% higher than that of ordinary products, the results suggest that Indians will buy UD products. In other words, UD has business potential in India.

The following sections of this paper have been structured as follows: first, a case study of Panasonic is presented to motivate Indian companies to apply a similar UD model in their business; second, a new 'step-by-step' approach is proposed to create UD awareness. Finally, the present state of washing machine market in India is studied based on the result of the quick survey. In addition to the 'step-by-step' approach, an approach named 'start with small changes' is proposed.

### A CASE STUDY OF PANASONIC

Panasonic, a well-known Japanese global company, was selected for the case study because (1) Research conducted by Yoshida and Asai (2009) shows that there is a strong positive correlation between the company's level of commitment to UD and its corporate values, (2) Based on sales records it is one of the largest corporations in home appliances in the world and (3) Panasonic was the first corporation to produce washing machines in collaboration with an Indian company, Videocon, in 1988 (Bhan, 2007).

Panasonic was ranked the 79<sup>th</sup> largest company in the world in 2009 (CNN, 2009). It offers a wide variety of UD products. Panasonic has incorporated UD in Japan since 1990. It has its own design policy for UD. In 2003, Panasonic examined changes occurring in the society such as increase of the aged, increasing number of the functions in a product and the sophistication of technology. In 2004, Panasonic reviewed its users' manuals, packaging, and catalogs, and incorporated UD features in all of them. As a result, Panasonic had 894 UD products by 2003.

Panasonic started to incorporate UD into its other products in order to “make operation easily understandable” (Panasonic, 2006).

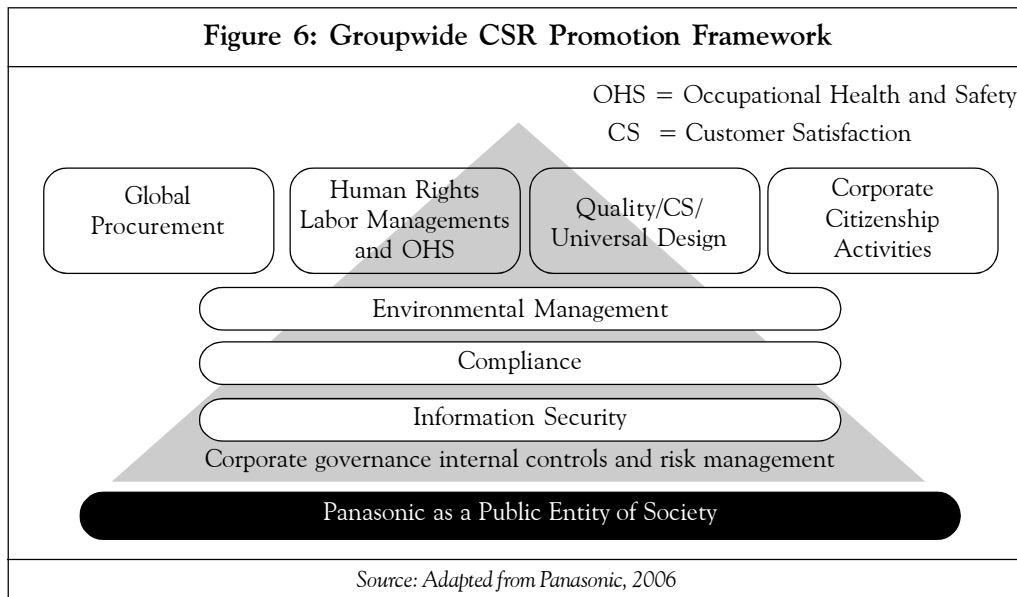
**CORPORATE SOCIAL RESPONSIBILITY (CSR)**

Panasonic’s management philosophy is that a company is a public entity of society and this forms the principles of its contribution to society through its business activities.

Panasonic is carrying out CSR according to a new framework introduced in 2008 (see Figure 6). The basic management philosophy of “a company as a public entity of society” is unchanged, but the method of incorporating this philosophy has changed to reflect the changes in society and the environment. UD is one of the key areas relating to the implementation of CSR. Panasonic is continuing its work to provide solutions to society and propose new lifestyles through manufacturing that makes lives richer.

**BASIC APPROACH TO UD**

Throughout the history of Panasonic in order to enrich people’s lives, it always changed with the times in order to serve consumers and society better. It creates unique designs to match the present day such as environmental considerations and UD. In order to incorporate UD, Panasonic believes that two types of research are essential. First is ‘human research’ which studies people’s characteristics and behavior. Second is “lifestyle research”, which studies needs involving our daily activities, which need to be improved, based on environmental concerns (Panasonic, 2006). Panasonic has surveyed all kinds of consumers like visually impaired, hearing impaired, physically impaired and the aged about their opinions of usability and accessibility of products. In other words, Panasonic responds to consumers needs, formulating their company-wide proposal and incorporating it, finally evaluating the results.



## MARKETABILITY OF UNIVERSAL DESIGN (UD) PRODUCTS IN INDIA: THE CASE OF PANASONIC AND A UD PROPOSAL FOR WASHING MACHINES

Panasonic is one of the outstanding corporations which has incorporated UD in its corporate strategy. Panasonic has researched on various aspects of life. Panasonic has put emphasis on the following factors (Panasonic, 2005):

- Ease-of use factors,
- Timer-setting procedure,
- Daily life of elderly people,
- Daily life of visually impaired people,
- Braille and embossed signs,
- The posture and movement of elderly people,
- Daily life of people who need care.

### UD POLICY AND SIX BASIC ELEMENTS

Panasonic will use products and services to express its dedication to meeting the needs of everyone with the aim of making our lives more enjoyable and comfortable (Panasonic, 2003).

UD has no prescribed design. UD principles are flexible and can be adopted in any product, anytime. Panasonic's philosophy is to design products for comfortable, intuitive use by everybody. Therefore, at the beginning of UD, Panasonic created its own five basic elements and added one later (Panasonic, 2003). The six basic elements of UD are as follows:

- Easy-to-understand operation,
- Uncomplicated displays and indicators,

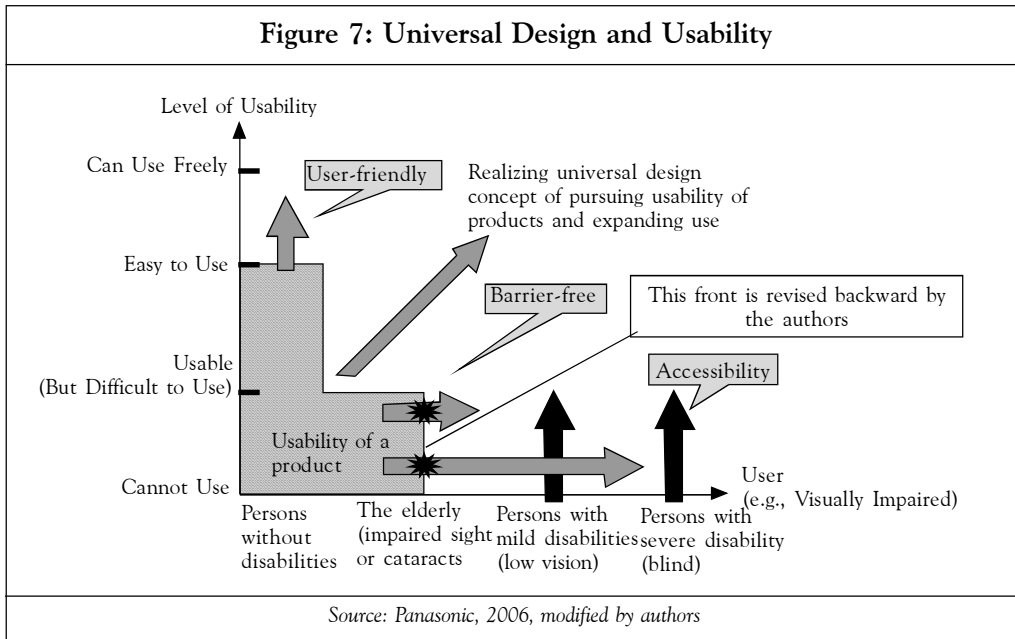
- Natural posture and ease of movement,
- Space to support easy access,
- Peace of mind and security,
- Consideration of how the product is used and maintained.

Panasonic holds UD seminars for all of its employees to reinforce their knowledge about user-friendly products in manufacturing. Panasonic's ideas behind the pursuit of usability, which are shown in Figure 7, consider three aspects. They are (1) User-friendly, (2) Barrier-free and (3) Accessibility. Panasonic works to improve the usability of products from a customer's perspective such as ease of operation, efficiency and comfort (Panasonic, 2006). The figure shows that as UD features are incorporated in a product, its level of usability is raised, and the range of consumers increases.

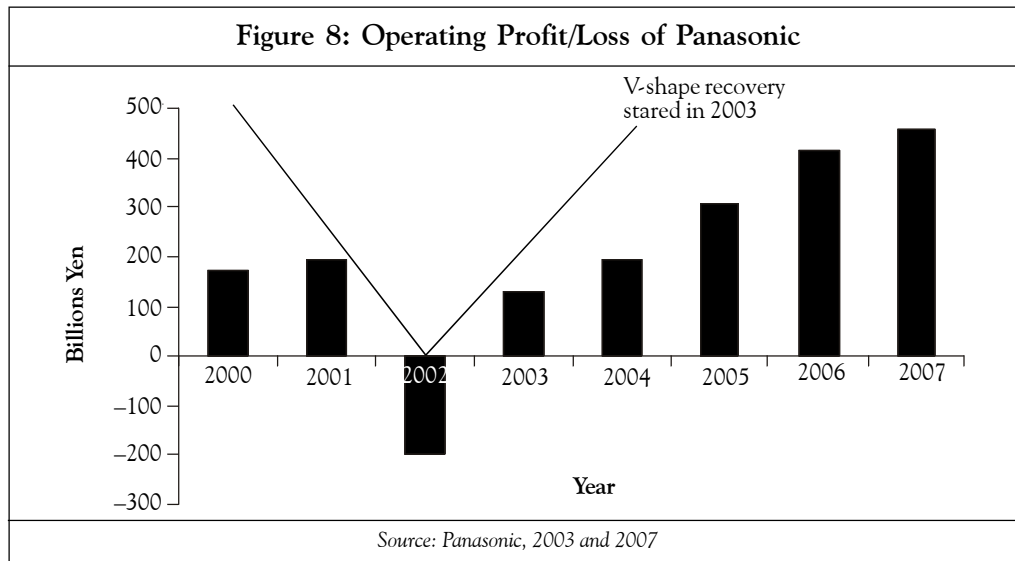
### ECONOMIC ANALYSIS OF PANASONIC

Panasonic faced an operating loss in 2002 for the first time in its history (Figure 8). In the next year, however, Panasonic achieved and actually exceeded the years target for net sales growth by 5%. To recover from the economic crisis, since 2002 Panasonic has adopted three management strategies, which are (1) Reconstructing the business, (2) Incorporating black-box technologies which are difficult to be copied by other companies, and (3) Focusing on their best selling products which Panasonic

**Figure 7: Universal Design and Usability**



**Figure 8: Operating Profit/Loss of Panasonic**



launched every year. These management strategies helped Panasonic to make a V shape recovery starting in 2003. The best selling products were called V products. They are a mixture of black-box technologies, environmentally friendly products, and products incorporating UD (Panasonic, 2003).

**PROOF OF PANASONIC'S IMPROVEMENT THROUGH UD**

In 2003, Panasonic introduced three tilted drum models of washing machines, which were (1) Na-V81, (2) Na-V61, and (3) Na-S81. These washing machines are easy for the aged and the disabled to use because of their tilted angle. The first model incorporated advanced UD

MARKETABILITY OF UNIVERSAL DESIGN (UD) PRODUCTS IN INDIA: THE CASE OF PANASONIC AND A UD PROPOSAL FOR WASHING MACHINES

**Table 2: Monthly Productions and the Assumed Profit Per Model**

Model	Na-V81	Na-V61	Na-S81
Monthly production 2003.11 - 2005.3	20,000	5,000	5,000
Assumed profit per month (in million yen)	100	25	25
<i>Source: Panasonic, 2004</i>			

concepts in its design such as 10% more roomy drum and the shortest dry cycle (190 minutes) in Panasonic history. Other models only incorporated simple concepts of UD in their designs. The first model incorporated innovative washing systems which are 12 times more effective than existing models. Tilted drum models sustained a continuous growth rate of more than 100% for three consecutive years. About 45% of Japanese households had either already purchased or were planning to purchase tilted drum washers (Panasonic, 2004). Table 2 shows that the monthly production of tilted drum washers, which incorporated advanced UD concepts, was higher than those of models which incorporated simple UD concepts.

According to the sales records of the three models of tilted drum washers, all models completely were sold out. Therefore, if we assume that Panasonic made 5,000 yen profit/unit, the profit from the advanced tilted drum washer would be 100 million yen and that from the other two would be 25 million yen every month. The total profit for the three models of UD washing machines is 150 million. This means that Panasonic's gain from the advanced tilted drum washer represented

approximately 67% of its total profit, while the gain from the simple models represented only 16% for each.

### PANASONIC'S MARKET EXPANSION

Panasonic has expanded its business in economically emerging countries like Brazil, Russia, India and China (BRICs) and Vietnam, Indonesia, South Asia, Turkey, and Argentina (VISTA). Similarly, Panasonic has expanded its market in Europe and America. Panasonic sees the whole world as its market. Its focus is primarily on the high-volume segment on a global level.

In 1990, Panasonic started doing business in India. It started with the local manufacturing of home appliances and established a sales network. At that time, Panasonic failed to meet its expectations, but during that challenging period, it continued to tackle with difficulties by establishing the structures required to increase its sales and to reach its revenue goals. In addition, Panasonic's monthly magazine called 'Pana' (2009) reports "Panasonic's product lineup and marketing strategy did not satisfy the market's needs". Similarly, it also states that one of the reasons for its business failure was the cultural difference between India and Japan. Therefore, Panasonic changed its attitude and

started to offer unique lifestyle ideas and a product lineup suitable for a wide range of customers by differentiating its products from its competitors'. Although in 2009 Panasonic's sales increased by 105% in India, there is still room to improve their market penetration and achieve larger sales. For this reason, Panasonic needs to develop new business structures and increase its publicity campaigns. Furthermore, according to Pana (2009) "once a company made a decision to change the strategy, it's important it move quickly, but a company needs to make sure that the diverse local opinion is swiftly reflected in the actions of hierarchical organization".

In summary, Panasonic continues to face business challenges since it targets the whole world for expansion of its business. In this process, it conducted the research to discover the consumers' needs. Panasonic has responded to them by formulating proposals that are quickly put into practice. It has also restructured its management strategies to cope with the times. Panasonic successfully recovered in 2003 by changing its strategic management (e.g., incorporating UD in its products is now one of its strategies). Panasonic's advanced UD model played a crucial role in its recovery from the economic crisis.

Based on this case study of Panasonic, a new 'step-by-step' approach is proposed to increase a company's sales by incorporating UD principles in products and by creating awareness of UD.

## STEP-BY-STEP APPROACH TO UD MARKET

Kotler and Armstrong (1997) state that it is difficult to target the whole population at the same time when talking about marketing. Figure 9 shows the composition of the Indian population in 2010 based on age. The inner circle indicates the disabled who are believed to account for 8% of the population in 2010 as explained previously in the subsection of macro environment. Figure 10 shows the first targeted UD market, which we are proposing. The targeted segment is marked in black. This segment represents the aged and the disabled part of the population, which account for approximately 16% of the total population. Figure 11 shows the UD market extended from the aged and the disabled to include the young. People aged 20 through 39 are classified as the young in this study. They account for 32% of the total population. In order to include the young, aggressive marketing strategies should be adopted to raise UD awareness in the population. There is a misconception that UD is only for the aged and the disabled. However, UD is necessary for all the people. They may be temporarily disabled for many reasons, such as cramps in ankles, pregnancy, being tired while walking and many others.

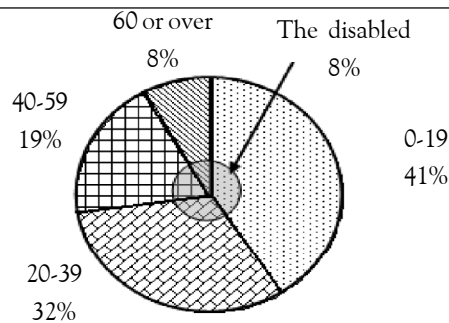
The reasons for targeting the young Indian population are:

- Career-wise: when young people migrate to study and/or their career, they buy durable goods.
- Family-wise: most Indians get married at the age of 20 to 39, and



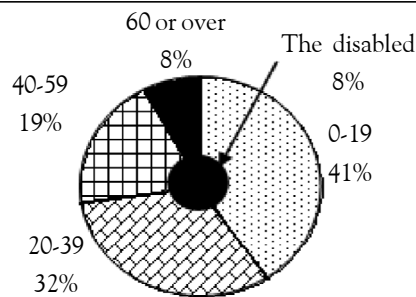
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**Figure 9: Composition of Indian Population (2010)**



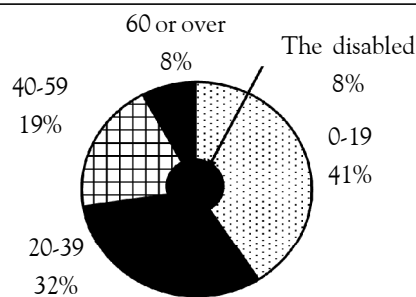
Source: UNCensus, 2006

**Figure 10: First Target of UD (2010)**



Source: UNCensus, 2006

**Figure 11: Second Target of UD (2010)**



Source: UNCensus, 2006

they have a ritual of dowry. Once they get married, they are more responsible for their children and their parents than before.

- Interest in new choices: young people are less conservative in trying new products.
- Women's independence: many young women are jobholders

and they are increasing in number.

For the previous reasons, it is natural to include the young as a target because they create such high demand for durable goods.

### STUDY OF WASHING MACHINES: AN EXAMPLE OF DURABLE GOODS

Washing machines are typical durable goods. Their average life span is 10 to 15 years. The technology of washing machines is developing at a high pace in India. Table 3 shows the trend in demand, which has risen every year from 2006 to 2008 (CEAMA, 2008). The authors of this paper forecasted the last two years' demand based on the trend of demand for washing machines. There are two types of washing machines available in the Indian market. These are the semiautomatic and the fully automatic. The semiautomatic machine is always top-loading, whereas the fully automatic machine is further categorized into two types: top-loading and front-loading. This is because people are conscious of energy consumption. The front-loading machine requires less energy than the top-loading machine. During the period 2007-2008,

the demand for semiautomatic machines and fully automatic machines grew in India at rates of 17% and 40%, respectively. Similarly, in 2007, the three major makers of washing machines (LG, Whirlpool and Samsung) accounted for 27%, 17% and 14%, of the demand, respectively (NaukriHub.com, 2008). Therefore, a washing machine is suitable object for this study.

Based on the study of Indians' ability to afford UD, assumptions are made concerning the modification of manufacturing processes and the cost of washing machines. These assumptions generate the proposal for a new approach called "Start with small changes", which will be studied in the following sub-sections.

### DESIGN BASED ON UD IN THE INDIAN CONTEXT

To incorporate UD principles in washing machines in India, it is better to focus on the visually impaired at the beginning. The reasons are as follows:

- The census of India 2001 showed that about 49% of the disabled have a vision problem,
- The number of the visually impaired is 12 million,

Year	Numbers in Millions	% Increase
2006	1.9	8.8
2007	2.1	13.5
2008	2.3	7.2
2009	2.5	11.1 Expected
2010	3.0	20.0 Expected
(Expected by the authors)		
<i>Source: CEAMA (2008)</i>		

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- Visually impaired people have a wide range of abilities as well as limitations.
- Use of different colors for different buttons.

The visually impaired may be able to read bigger fonts and may even move without any mobility equipment in most situations, or they may be able to perceive light or darkness and perhaps even color. Therefore, an approach named “Start with small changes” is proposed to offer products to the visually impaired.

“Start with small changes” is defined as the case where the additional cost is no more than 25% of variable costs and it does not influence fixed costs. To make changes in the production layout requires huge investment by producers; however, producers can implement “Start with small changes” and keep their current production layout. 25% is taken as the base because the results of the quick survey show that many consumers are willing to pay up to 25% extra for UD products. Also, a cost increase of 25% of variable costs will be less than a 25% increase in the price of the product (total costs + profits). Therefore, it is predicted that consumers who are willing to pay 25% extra will also be willing to buy products made with “Start with small changes”.

The targeting of visually impaired people also includes aged people as aging is one of the main factors that causes visual defects. A proposed list of “Start with small changes” is as follows:

- A talking function,
- Remote control,
- Bigger fonts,
- Bigger buttons,
- Good contrast of colors,

The same features are useful for the aged as well.

BASIC PROCESS TO INCORPORATE “START WITH SMALL CHANGES” IN WASHING MACHINES

To incorporate “Start with small changes” in washing machines, the first target should be to modify buttons, which lie on the top near the lid or at the front. Producers can make larger sized buttons and paint them using high contrast color combinations so that even those with poor vision may distinguish them. In addition, producers can print letters using bigger fonts. These changes require some additional costs, but the underlying technology remains the same. Similarly, to implement a talking function, a smattering of holes for a speaker, tiny Braille labels and a small volume knob named ‘Belie’ are needed. As a result, a talking function would raise the cost of a product by 500 to 1,500₹ (US\$1 = 48.04 ₹, 100 yen = 38.98 ₹, October 2002) in mass production (Goodman, 2004).

UD models of washing machines were 20% more expensive (Bic Camera, 2006), and their price increased by 50 to 100% in 2007 (Duncan, 2007). Recent studies show that UD models of washing machines are 100% to 200% more expensive. This is because producers adopt advanced technology in order to incorporate advanced concepts of UD and environmentally friendly strategies at the same time, which normally raise prices in comparison with the ordinary product.

Based on the points mentioned before, it is concluded that additional features require additional expense. Producers should make careful decisions about additional features. If they add features, their action raises the cost and if not, they may lose the market. Producers can make appropriate decisions through break-even analysis. Break-even analysis is a tool to study the relationship between fixed costs, variable costs and returns. The Break-Even Point (BEP) is the point which defines when producers generate profit and which also suggests ways to generate more profit. In the next section, we will explain costs first. Then we will identify the BEP in two cases—the point where a company starts to generate profit if it introduces UD.

#### COSTS AND PROFITS

Costs are one of the main factors to set prices. There are different types of costs. An explanation of the terms used in this section is provided in Table 4. These costs vary depending on runs/time. The short run is a period of time (usually one year) in which a company does not have enough time to alter its plant capacity but has time to change raw materials, electric power, and the cost

of maintaining inventory. We focus on the short run only because “Start with small changes” in features can be implemented quickly with current technology. A company can make big changes with UD in the long run. The long run is a period of time (longer than a year) in which the quantities of all inputs can be varied.

The assumed production data for washing machines of a company is given in Table 5. The assumptions are based on data for average washing machine companies in India. The cost structure in Table 5 can be applied not only to washing machines but also to other home appliances. Based on this table, we carry out break-even analysis to identify the BEP units that this company needs to produce in order to generate profit.

#### Case A: Number of units required to make profit for various variable costs (for fixed selling price)

Assumptions:

- Fixed costs remain the same.
- Variable costs increase by 0%, 12.5%, 25%, 37.5%, and 50%.

**Table 4: Descriptions of Terms Used**

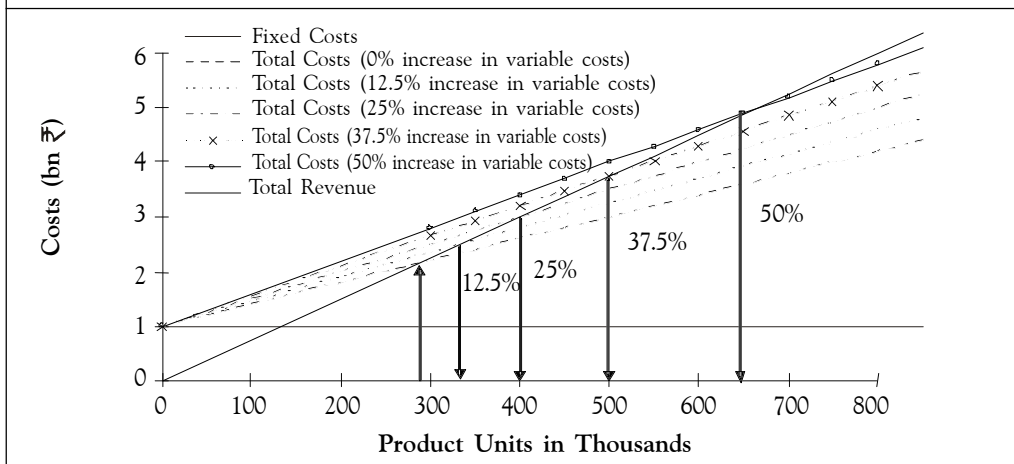
Costs	Descriptions
Fixed Costs	Costs that do not change with the volume of production, e.g., rent, executives salaries, interest.
Variable Costs	Costs that change with the volume of production, e.g., steel, plastic, wages, electric power to run machines.
Total Costs	Sum of fixed costs and variable costs.
Total Revenue	Income generated by sales of products.

**Table 5: Production Data Assumptions (Costs and Prices are in ₹)**

Fixed Costs	1,000 mn	Annual
Base Variable Costs	4,000	Per unit
Fixed Selling Price	7,500	Per unit
Base Production Units	300,000	Annual

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**Figure 12: Product Units Required to Make Profit for Various Variable Costs (Fixed Selling Price at ₹ 7,500/ unit)**



**Table 6: Percentage of the Aged and the Disabled Required as New Customers to Absorb Increased Production for Various Variable Costs**

	Variable Costs Increase by (%)	Base Production Units	Production Units for BEP (for Various Variable Costs)	Additional Production Units	Percentage of the Aged and the Disabled as New Customers to Absorb Increased Production (%)
The aged + the disabled in 2010 (207 million)	0.0	300,000	285,714	–	–
	12.5	300,000	333,333	33,333	0.02
	25.0	300,000	400,000	100,000	0.05
	37.5	300,000	500,000	200,000	0.10
	50.0	300,000	666,667	366,667	0.18

because of additional features (Figure 12).

- The selling price remains the same.

According to this set of assumptions, Figure 12 shows that when a unit of washing machine is sold at 7,500 ₹, producers have to produce 285,714 units for BEP. Similarly, with an increase in variable costs it should increase the number of production units to 333,333, 400,000, 500,000 and 666,667 units. In other words, relative to the initial BEP (300,000), this company needs to produce more units and it also needs more

consumers. Current products are designed for and targeted at fully capable people whose ages are from 20 to 59. Producers can, however, attract other consumers like the aged and the disabled by UD in their product design. In 2010, as explained previously, the projected total number of the aged and the disabled in India will be 16% of the total population.

Table 6 shows that if this company can make 0.02% of the aged and the disabled their consumers, then an additional cost of 12.5% in variable costs can be covered. Similarly, if 0.18% of these people buy UD

models of washing machines, then a 50% increase in variable costs can be covered.

**Case B: Number of units required to make profit for various variable costs (for increased selling price)**

Assumptions:

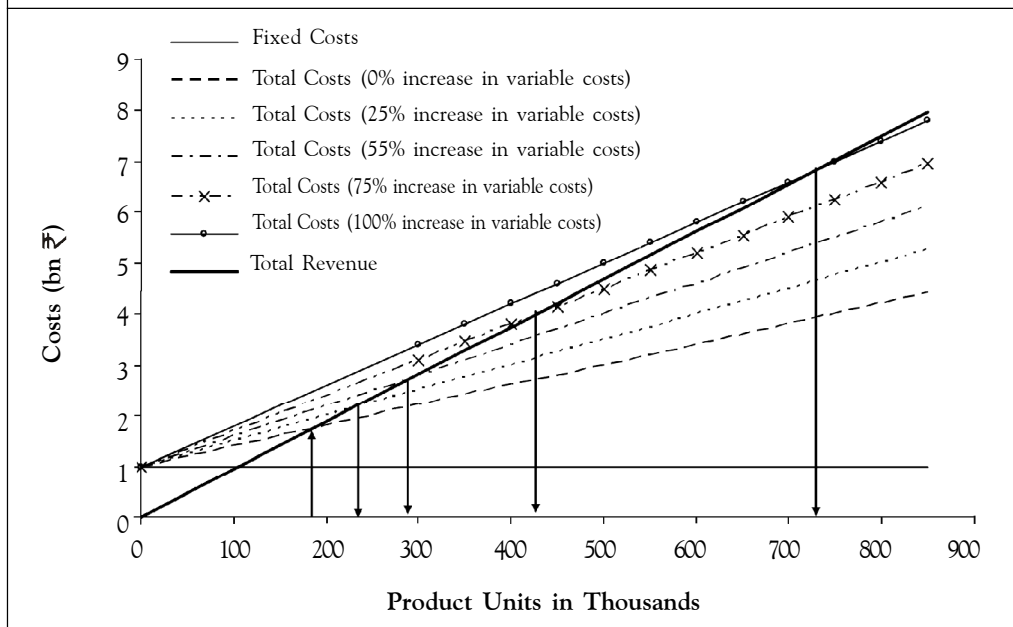
- Fixed costs remain the same.
- Variable costs increase by 0%, 25%, 50%, 75% and 100% (Figure 13).
- The selling price is increased by 25% of 7,500 (9,375 ₹).

According to this set of assumptions, if variable costs increase then the selling price needs to increase in order to cover the production cost. It is assumed that a unit of washing machine is sold at 9,375 ₹, which is about 25% higher than the selling price in case A (7,500 ₹). Figure 13 shows that the company starts to generate profit when it produces the

number of washing machines shown at the different break-even points (186,047, 228,571, 296,296, 421,053 and 727,273 units) for each increase in variable costs (25%, 50%, 75% and 100%, respectively). In comparison with Case A, it shows that the company produces a profit earlier with a smaller amount of production up to a 50% increase in variable costs. As the variable costs increase, a company needs to produce more units and requires new customers to cover the additional variable costs of 75% and 100%.

UD products have opportunities in India because Indians feel the need for easy and simple products. They are willing to pay up to 50% more. "Start with small changes" in product design will suffice in the Indian market if they are successful in attracting the aged and the disabled with good features and economical price.

**Figure 13: Required Product Units to Make Profit for Various Variable Costs (Increased Selling Price by 25%)**



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It seems that Cases A and B hold true for other durable goods, too.

MARKETABILITY: PROBLEMS AND SOLUTIONS

In terms of marketability of UD products, producers may face some problems in India. In general, lower socioeconomic class consumers are less likely to adopt new product technologies than higher socioeconomic class consumers because of different beliefs, attitudes and knowledge about products. According to Sridharan and Viswanathan (2008) a process of marketing activities is critical. Producers can, however, set up various ways to explore customers' needs, preferences and willingness to pay for products and services.

Sridharan and Viswanathan state that consumers are willing to pay higher prices for those products which deliver higher value to their life, whereas sometime consumers may be willing to pay less for product purchases to reduce family expenses. Hoffmann and Soyez (2010) state that consumers seek information in special interest about products and they tend to know new innovation. If a company succeeds in convincing these crucial consumers, its innovation will be successful. Therefore, if producers can convince this segment through aggressive advertising they can minimize the rate of failure of their UD products.

According to Iyer *et al.* (2006), continuous improvements of product features in existing products may be more appropriate than development of new alternatives in developing countries like India. If this holds true, the concept of

"Start with small changes" in washing machine has higher probability of success in the Indian market. At the same time, some unique features need to be visible on products so that consumers can make a difference from other products easily. Besides, the salesperson needs to demonstrate benefits of UD products properly. Thus, by creating awareness of benefits of UD product producers can increase the market in India even though they have to face some problems at the beginning.

CONCLUSION

Based on the previously mentioned findings, the following conclusions can be drawn as far as the Indian market is concerned:

- A macro environment study of India shows favorable conditions to incorporate UD.
- As foreign companies cover 70% of the market of washing machines in India, foreign companies have more advantages in the business of UD because of their advanced technology, experience, and innovation skills.
- From the case study of Panasonic it can be concluded that:
  - The number of consumers of a product is raised as the usability of that product increases.
  - Products should be designed according to the consumers' needs.
  - UD is one of the key areas related to the implementation of CSR.

- The incorporation of UD in products can improve the financial condition of a company.
- The proposed new ‘step-by-step’ approach helps to expand the market of products to the aged and the disabled. In addition, it helps to increase the awareness of UD among the young Indian population.
- It has been shown that if 0.02% and 0.18% of the aged and the disabled become new buyers of UD products, then an increase of 12.5% and 50%, respectively in variable costs can be covered. Thus, UD products made using the proposed approach are viable for producers.
- If the selling price is increased by 25%, the additional variable costs can be covered without an increment in the number of production units, on the condition that these costs do not increase by more than 50%.
- A new approach “Start with small changes” suggests that UD models of washing machines are affordable with only small increments in production volume.
- This approach will expand the market for UD products to the aged and the disabled people.
- As far as the marketability of UD products in India is concerned, publicity is especially important to have consumers recognize the benefits of UD products.

Thus, overall results show that there are huge business opportunities for UD products in India. A new marketing approach called ‘step-by-step’ helps create these opportunities by expanding the market for UD products and increasing awareness of UD. Similarly, another approach called “Start with small changes” can be used to increase business opportunities.

### LIMITATIONS AND FUTURE IMPLICATIONS

This study has several limitations. First, the respondents were all scholars, so their demographic characteristics are probably not representative of the entire population. Generalization of the results should therefore be limited to those who share a similar level of education. Second, this study did not include any disabled people or their family members, thus not allowing us to explore their real problems.

It is necessary to carry out a more comprehensive survey when we need a more detailed business plan. We are planning to explore ways to increase the level of awareness of UD. Thus, this paper provides directions for future empirical research on UD in India.

It may also be necessary to carry out an in-depth study of the disability reasons in India. Thus a company can incorporate new UD features in its products in a precise way.

In order to solve marketability issues, a more precise marketing study of UD



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products could be made to find suitable campaigns that would encourage people to acquire them.

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## Book Reviews

# India's Globalization: Evaluating the Economic Consequences

By *Sri Baldev Raj Nayar*

Vistaar Publications, New Delhi, 2007, Pages: 99; Price: Rs. 225

ISBN: 978-81-7829-758-3

The author presents a practical insight into the concept of globalization and its impact on Indian economy. It dispels the myths of globalization and presents a logical case on the positive impact on Indian economy in a lucid and easy-to-understand style. The literature review is current and up-to-date and the author has used empirical data to substantiate his case.

The book runs as a long discourse with strong linkages among the issues identified in the process of assessing the impact of globalization on Indian economy. However, for our analysis, the contents of the book can be organized into four major topics of discussion: Introduction, India's Reintegration with the World Economy, Assessing the Consequences of Globalization, and Conclusion.

The book starts with a brief introduction on economic globalization, the review of literature on economic globalization, hypotheses tested in this study, methodology adopted, the complexity in assessing the impact of globalization. The style of presentation is

unique, holds the attention of the reader and offers a lot of intellectual discussion. "The supporters of globalization regard it as a wholly benign process heralding the long awaited deliverance of humanity from economic backwardness, underdevelopment and misery. For them, allowing market forces to work largely unhindered by the state and its politics will make possible higher economic growth and therefore human welfare. There are critics who view globalization as a source of economic stagnation, deindustrialization, economic destabilization, impoverishment and growing inequality".

Against a backdrop of review of literature, the author casts his hypothesis for the study: "Increased integration of the national economy into the world economy under globalization will have significant negative outcomes for the former, such as the five broad elements, namely: (a) economic stagnation; (b) industrialization with the closure of domestic firms in the face of unhindered imports; (c) denationalization, with the takeover of domestic firms by

foreign multinationals; (d) economic destabilization, marked by a higher frequency of economic crises arising from the greater exposure of the nation to external shocks; and (e) increased impoverishment”.

The Case Study approach has been chosen for analyzing India’s experience with globalization and the selected process of economic liberalization. “India constitutes one fifth of the population of the developing world, containing more people than all of Africa or the Western hemisphere. India has been unique in terms of democratic framework for more than half-century. It is unrivalled in the developing world for its ethnic and linguistic diversity; the presence of large number of states within its ethnic federation—many of which themselves surpass the population of most developing countries”.

The study first examines the nature and extent of the reintegration of India’s economy with the world economy and then assesses the economic consequences of such reintegration for the economy in terms of hypothesis. In assessing the consequences of globalization for India’s economy, the study compares the experience of the period under globalization—with its different phases delineated with that under non-globalization, a step that is absolutely essential. The experience of India has not furnished the critics of globalization with much basis for argument.

The nature and extent of India’s integration into the world economy has been discussed along three dimensions-

flow of goods and services, capital flows and migration of people. “While India has made substantial strides, it still represents a case of limited integration compared to dynamic economies such as China, Korea, and Mexico. However, even this limited integration has had enormous consequences for India”.

The study delineates the past into three broad periods in India’s recent economic history:

- i. The period prior to liberalization (1956-57 through 1974-75), the dominant feature of which was the thrust for *autarky* and *command and control* economy. During this period, the focus was on inward-oriented heavy industry strategy.
- ii. The period of intermittent incremental liberalization (1975-76 through 1990-91). This period can be differentiated into two parts, the first—nascent liberalization from 1975-76 to 1983-84, largely under Indira Gandhi, and the second one—explicit but stalled promotion of liberalization from 1984-85 to 1990-91, largely under Rajiv Gandhi, and
- iii. 1991-92 to the present (up to 2006, when the book was published) the period after the paradigm shift to an outward-oriented economic policy to liberalization, although admitted in an half-hearted, halting and limited form.

The study demonstrates that India has been a significant beneficiary of the globalization process and repudiating the case of critics of globalization. Instead of

economic stagnation, India has seen acceleration in its average annual rate of economic growth. Instead of deindustrialization, there has been substantial industrial growth and indeed, acceleration in the industrial growth rate. Instead of denationalization, business in India is now more competitive and is venturing forth into the global market; increased imports and the entry of foreign multinationals have not swamped it; essentially, India is a master of its own destiny. Instead of economic destabilization, there has been, since the paradigm shift in the economic policy in 1991, a market absence of economic crisis in India. And, instead of impoverishment, India has welfare enhancement since it began its reintegration into the world economy in 1975; there has been a secular decline in poverty since then, while inequality has not increased much. The policy conclusion that flows from this experience is that India ought to be, in general, more open to globalization in economic growth and enhancing the welfare of its people. The author suggests that towards this end, the Government of India should push the reform agenda.

The stagnation of the non-globalization period is hardly preferable to the economic advances under globalization. Gross State Domestic Product (GSDP) growth rates, FDI and Exports of 18 states were well described. Globalization does not affect, as observed by the author, the states uniformly. The new competitive strength of Indian industry is evident in pharmaceuticals and automobile parts and also the author mentions it would be preposterous to

describe the outcome of the paradigm shift as deindustrialization. Industrial advance after 1993-94 has been quite broad based.

On page 15, the author explains how India was more globalized than US and Japan in the year 2002. The exports of IT and IT related services alone were \$17.2 bn in 2004-2005. China and India can indeed be regarded as two distinct growth models. FDI outflows and M&A purchases abroad by China, Hong Kong and India were well narrated.

The study concludes with some suggestions: for alleviation of poverty and wide gainful employment, it is not enough just to maintain higher growth rate achieved so far, but what is essential is to accelerate from 9 to 10%. There are certain prerequisites for achieving this: (a) major boost to investment in both agriculture and industry; (b) additional finance for investment via FDI and a market for the commodities produced and goods manufactured; (c) some more economic reforms for creating conducive environment and markets; (d) prudential macroeconomic management to bring down fiscal deficit and the public debt; (e) support to the poor; (f) privatization of non-strategic public sector enterprises (g) introduce flexibility in the currently rigid labor markets through reforming the antiquated labor laws; (h) at least selectively de-reserve industries that are presently reserved in the small-scale sector; (i) radically improve industrial infrastructure, particularly as regards to power, lower tariffs to enhance competitiveness, relaxation of restrictions on FDI, and higher investments in the social sectors.

BOOK REVIEWS

The book was originally published in 2006 by East-West Centre, Washington appeared as Policy Studies 22 in the East-West Centre Washington Policy Studies Series. For the last four years, what Government of India is doing is strictly on the same lines. This shows the providential capabilities of the author as to prescribe what governments should do for better governance, accelerated economic growth and economic development.

The study concludes with a firm note that reform agenda should be implemented with more energetic action and one should be imaginative to think of all possible strategies to overcome the constraints in doing so.

The book is an essential reading for those who study 'Indian Economy' or teach 'Business Environment' subjects for MBA or any other relevant course. Also this is a must for all those who are into teaching, business and industry and the insights provide in the book help every one and is a great base for argument for globalization. The book is a rich source for statistical inputs (as many as 21 tables and figures), endnotes and bibliography.

The policy studies in terms of list of reviewers (2005-06) and the previous publications as shown in the contents page on 98 and 99 are missing in the book.

The book contains 97 pages, thus it is short, impressive and full of insights.

**Dr. A R Aryasri**

*Director School of Management Studies,  
Jawaharlal Nehru Technological University*

*Hyderabad,*

*Hyderabad 500085*

*009193964 38347*

*009140 2305 7111*

*E-mail: [aryasri@yahoo.com](mailto:aryasri@yahoo.com)*

# India's Long-Term Growth Experience: Lessons and Prospects

By *Sadiq Ahmed*

SAGE Publications, New Delhi, 2007; Pages: 103; Price: Rs. 475

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As a result of the rapid growth taking place in India since 1980, the country has transformed itself from the world's 50<sup>th</sup> ranked economy in nominal US dollars to the 12<sup>th</sup> largest in 2003. However, on the one hand when income is measured with regard to purchasing power parity, the Indian economy occupies the 4<sup>th</sup> place but on the other hand there is also enough evidence which indicates that income inequality is on the rise and the disparity in average per capita income between the rich and poor states is growing. Election results at the national and state level suggest that unless the issue of growing income and standard of living inequality is tackled upfront, there is a risk that the economic reform momentum unleashed might slow down.

In this book, the author has primarily essayed two questions and proposed different ways to answer those questions. The first question is: What factors have allowed India to achieve rapid rates of growth so far? and the second question is: How can India sustain its growth momentum? The answers to these questions are based on the extensive blending of existing research in this area.

Author argues that India's growth experience mainly comprises of two

phases: phase I and phase II, phase I (1950-1980) was inward looking and relied mainly on a command and control type of environment whereas phase II (1980-2004) was outward oriented and mainly relied on market driven initiatives. It is during phase II when India witnessed high growth rates primarily due to a major shift in the development strategy and associated policies unleashed after 1980. The key reforms which were introduced included prudent macroeconomic management, exchange rate and trade liberalization, financial sector liberalization; and domestic investment deregulation which provided dramatic positive results as the economy became more open and competitive and private investment could expand.

During the period of 2004-06, India already achieved the 8% growth rate target and this growth rate might be sustained due to a number of favorable factors such as: a growing labor force, a falling dependency ratio, rising savings and investment rates, expanded FDI associated with an increased technology transfer and a dynamic private sector.

The book identifies ways in which investments can be improved to raise productivity and reduce the cost of doing



business in India thereby promoting domestic and foreign private investment. The author also looks at the growth and productivity challenges of the agriculture sector and suggests policies that will help raise farmers' productivity and incomes. In addition, it explains the reason for the low overall employment elasticity of the past growth periods and why there has been limited expansion of good jobs suggesting critical reform requirements for an increasing employment rate.

The chapter-wise summary of this book is presented below:

- Chapter 1 discusses the main theme and builds up the base with regard to the context of India's long-term growth experience, opportunities and challenges. It presents various world development indicators to support the author's claims.
- Chapter 2 examines the evolution and structure of India's long-term growth in relation to total and per capita GDP growth. It reviews the sectoral composition of growth rates for three broad sectors, namely agriculture, industry, and service sector, their employment issue and the state level context of each growth development.

The author prescribes that in order to take care of the challenges associated with development those ways have to be identified which can contribute towards the acceleration of growth in the lagging regions rather than to abandon the acceleration in

growth effort. Along with more rapid growth, India needs to pay more attention to improve equity by emphasizing more on reforms concerning education, vocational training and general labor market reforms.

- Chapter 3 mainly examines the determinants of growth the accounting framework. This analysis shows that growth per unit of labor mainly depends upon two elements namely: capital accumulation as well as factor productivity and an increase in either one of them can raise the growth rate. This chapter highlights that India's growth in phase II was mainly due to the increase in the rate of investment and productivity. As a result, the future growth of India would also depend on the outcome of these two factors.
- Chapter 4 reviews the policy framework that underpins the past growth developments in India especially focusing on: Implications of macroeconomic policies for growth, policies for improving incentives for private investments and reforms at the state level as well as major challenge is in terms of how to introduce better economic and political governance in the lagging regions to better implement successful policies.
- Chapter 5 provides a brief review of the emerging constraints and identifies the future priorities for reforms. In order to improve upon the investment rates/productivity

increases the present policy framework should take care of following constraints: Fiscal policy, infrastructure, labor market inflexibility, low investment in education, and public service delivery which otherwise hampers the investment rate, productivity and employment. The chapter concludes by suggesting important ways to overcome these constraints.

- The concluding section ends up by giving a brief summary of the book.

This book has been designed keeping in mind the interest of economists, social scientists, policy makers, scholars and general readers who want to have a better understanding concerning the economic growth developments of India in the past 25 years. It also discusses future roadblocks related to India's growth potential and various ways to eradicate

them for a further sustainable growth. There is a strong reliance on statistical facts and figures to substantiate the claims made in this book which help in providing a convincing perspective on India's past growth and future prospects. However, as with all books relying primarily on historical data in emerging markets there is an implicit understanding that what has worked in the past will also be relevant in the future. Emerging market such as India has already several times shown that this is not always true. The reader might just be careful to only rely on past data to evaluate the future growth potential and barriers in India. Also, author has stated a falling dependency ratio as one of the reason for sustainability of 8% growth rate but it is not clear about the factors responsible for it. Author has mentioned in the book that India's rapid growth pace started since 1980, but it actually started since 1990.

**Anupam Saxena**

Senior Research Fellow SMI  
Indian Institute of Management,  
Bangalore (IIMB), Block E, Room 006,  
Bannerghatta Road 560076, Bangalore  
Tel.: +9196204 09603  
E-mail: Anupam.saxena@iimb.ernet.in

**Prof. Dr. Roger Moser**

Faculty EADS-SMI Endowed Chair  
Indian Institute of Management,  
Bangalore (IIMB), Block E, Room 006  
Bannerghatta Road, 560076 Bangalore  
Tel.: +4179 452 74 11  
Tel.: +9199 02 76 09 38  
E-mail: moser@supplyinstitute.org  
E-mail: roger.moser@iimb.ernet.in

# The Men Within – A Cricketing Tale

By *Harimohan Paruvu*

Indialog Publications Pvt Ltd, New Delhi 2007, Pages: 272 Price: Rs. 225

ISBN No. 81-8443-009-4

This book is a read through story, based on Golconda Public School, Hyderabad. It brings a flavor from the life of the author, his passion for cricket and life which is apparently visible from this book. It exhibits love, career, success, friends, teamwork and well being of the society. The very first book by the author but written with good hands on experience. It's a journey through life, the people around, the situations we often are faced with. It is not about winning, but preserving your dreams from being lost. The lead character, a man lost on his destiny, finds the purpose of his life; he Dares to Dream and Achieves; as only achievers are embedded in history. Failure is often individual but success is always collective. It has a glint of corporate learning and evolution where different parties to the matter, effect the situation by doing their little bit towards contributing to the end result.

The heart of the story is the school's Cricket team, which currently comprises of only a handful non-performing candidates. The overall performance of the school is also not as good as its history pronounces it to be. The school is undergoing a rough phase, the number of students in the campus is dropping, it has lost its charm and it is on the verge of closure.

The story unwinds when the principal stands for the school's future. He is looking for a coach for his cricket team. The team has been losing matches since a decade now. The principal can think of only one man in the event of this crisis (Sampath Sharma), he was the shooting star that marked the lost cricket match a decade ago, he was the captain of the school's Cricket team then. His fortune has turned against him and under his leadership the team had lost the final match, and had brought the cloud of failure that is still upon the school.

Though not his fault, he hadn't forgotten the past, and, his name was written in black in the school's history. Sampath Sharma could never forgive himself for the lapse that destroyed his bright cricketing career. He had never again played cricket or any other sport after that day; it has impacted his entire life in ways not apparently visible. And now years later he is convinced by the principal to take over the responsibility of the present team and make it the best team, prove his worth to the world and that he was the victim and not the culprit. Sampath Sharma had a tough journey ahead of him he was partially prepared

and semi partially aware of what was coming on him, he had to fight the incomplete team to win its confidence, and make it a complete powerful and successful team; he had to disprove the world that condemned the team, create a dream for the team that they could chase, clear the hurdles that lay in their way. He brought the synergy into play. And proved that only if you want something, "hard enough" the whole world would come together to bring that thing to you. He involves the school staff, team's parents, on lookers and others even distantly associated with the school to gain interest in the cricket team of the school.

Deeper into the book it talks about the only name that races the pulses of the India masses, the only thing that binds India like nothing else does. Yes it talks more and more about Cricket and the team that goes through a roller coaster ride, the hardship and turmoil they face, the strength they develop together and the goal they set for the future, all practical aspects of the game, the teams composition, capability, their attitude and the team play are dealt with carefully. The team's success is important to a lot of people; a lot depends on their little shoulders now. It's the movement of the wheel being invented, where life would never be the same again. The critical aspect of balance between obsession and observations of the cricket matches played by the team before the final brought a lot of ups and downs, the practice matches which failed the team miserably caused disbelief and a lack of support from the surroundings. The misery of failure

had dampened the spirits of the team. Only a few who believed that success would come some day, keep their high and drove it through. A good leader is what drives this story.

And the plot is set by the board of governors who have sprung to action after long-long time, on the issue of the schools commercials; board has to do something to sustain the workability of their school. And so they are considering the option of occupying the play ground which is not adding any value to build a coaching center which would not only be more useful but bring lot more name, fame and money to the school. But the current principal has a different idea to his life, he is rather concerned about the future of the kids, the balance of work—play in the life of kids who would be left with no ground for recreation in the school, his primary concern is to save the school's play ground, and to some how save the school from a cemented future. A hopeful principle tries to save the legacy of the school as it is about to lose its history and its pride. The Cricket ground has brought name, fame and success in the school in the past. And as we shall see it shall continue to bring. It has been over a decade since any thing eventful has happened in the school. Finally, now the time has come for the principal's dream to come true and become a reality.

The book conveys to its readers that sometimes the most impossible things happen in life, and that dreams do come true. The narration of emotions—jealously, competition and conflict keeps the readers interested throughout the book. The author successfully draws

lessons from life and relates them to the corporate world. People's attachment with themselves and the world around them has been explicitly expressed throughout the book.

The book has been dealt with great caution; each emotion is as intense and crucial. It is not an ordinary book on extraordinary people, instead an extraordinary book on ordinary people. The power of one is highlighted, which transforms to the group. The author has successfully threaded life into cricket where love, emotion, affection and adherence form the base for the story; it is a sneak peak at the life of children with their tough and unreasonable parents, teachers and peers. The tender years of life, they live as each day comes. Then something happens and the meaning of being alive is found, an experience of life towards reality. Their winning the Final Match becomes the purpose of their lives, and the only hope for the Principal. All the efforts get focused onto that one goal.

It casts a spell as you read, not because it speaks about cricket or cricketers. It's the spirit and emotion that Sampath displays, strong Sampath wins each and every ones heart except one who is bent

to take his share from the deal, the bigger game plan behind the whole scene.

The moral of the story is that, a good idea, strong plan of action, trustworthy leader and a dedicated team is all that's needed to succeed. So that tells us, success is not just a story but a reality a journey, a life time of efforts and experiences of people, worthy of it.

The book does not have an outline of do's and don'ts in cricket but it can tell you the same of life and success, a future path for the team is not discussed but the readers are left content with a sense of direction, a clear understanding of "they lived happily ever after" was not included in the book, but it's apparent that once such lessons are learnt in life, success is inevitable. The book has a much anticipated end and the element of non surprise in the book, with a clear cut flow of thoughts and actions makes it a good read to clear the mind off all the cloudy thoughts. The agenda of the school transforms into this book that entirely revolved around the cricket team, the connectivity of the flow is good, I could feel cricket for the first time and related to it more than just a game.

**Ms. Meenakshi Jain**

*Research Fellow,*

*Centre for Organization Development,*

*Hyderabad.*

*Email: jain.meenakshi.7@gmail.com*

**ERRATA FOR SAJM 17.3**

Subsequent to the publication of the paper, Chakraborty N and Mukhopadhyay C (2010), "Stock Price Response to Firm Specific Events: Indian Evidence", *South Asian Journal of Management*, Vol. 17, No. 3, pp. 38-52, the authors have informed us of the following corrections.

1.  $R_{p,t} = \log_e [(P_{p,t} + D) P_{p,t}]$  ... (1) is corrected as  
 $R_{p,t} = \log_e [(P_{p,t} + D)/P_{p,t-1}]$  ... (1)
2. Mean Adjusted Model -  $AR_{i,t} = \bar{R}_{i,t} - R'_i$  ... (2) is corrected as  
Mean Adjusted Model -  $AR_{i,t} = R_{i,t} - \bar{R}'_i$  ... (2)
3.  $H_0: E[AR_i] = 0; H_1: E[AR_i] \neq 0, at a = 0.05$  ... (11) is corrected as  
 $H_0: E[AR_i] = 0; H_1: E[AR_i] \neq 0, at a = 0.05$  ... (11)
4.  $H_0: E[CAR_i] = 0; H_1: E[CAR_i] \neq 0, at a = 0.05$  ... (14) is corrected as  
 $H_0: E[CAR_N] = 0; H_1: E[CAR_N] \neq 0, at a = 0.05$  ... (14)
5. The reference "Corrado (1989)" was missing under the reference list at the end of the paper, which should be added as:

Corrado, C (1989), "A Non Parametric Test for Abnormal Security Price Performance in Event Studies", *Journal of Financial Economics*, Vol. 23, pp. 385-395.

## Guidelines to Authors for Manuscripts

The South Asian Journal of Management (SAJM) was founded in response to the global needs to know about the current research and practice in the field of management in South Asia and the South Asian needs to network management development institutions and create a forum for promoting cooperative research and constructive dialogue on contemporary issues in South Asian Management.

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**Manuscripts:** All manuscripts must be printed in letter quality (font size 12) in double-space on one side of A4 paper with margins of at least one inch on all sides. Authors should submit one soft copy of their manuscripts to the Editor (SAJM).

**Cover Page:** Manuscript of a paper should have a cover page providing the title of the paper, the name(s), address(es), phone, fax numbers and e-mail address(es) of all authors and acknowledgements, if any. In order to facilitate anonymous review of the papers, please restrict the author-related information only to the cover page.

**Abstract:** Following the cover page, there should be an 'abstract' page, which should contain the title of the paper, the subtitle 'Abstract' and a summary of the paper in single space, not exceeding 150 words. The text of the paper should not start on this page, but on a fresh page with the title of the paper repeated.

**References:** References should be cited in the style prescribed in the Publication Manual of the American Psychological Association (4<sup>th</sup> Edition). Indicate the position of the reference in the text within brackets by the author's last name and the year of publication;

e.g.: '(Hooda 1998)' or 'as pointed out by Hannan and Freeman (1977)' if it is part of a sentence. At the end of the text, references should be listed in the alphabetical order of the last names of the authors, with a title REFERENCES. Examples of how the references are to be listed at the end is given below:

**(If it is a book):** Hooda R P (1998), *Indian Securities Market*, Excel Books, New Delhi.

**(If it is an article in a journal):** Hannan M T and Freeman J (1977), "The Population Ecology of Organizations", *American Journal of Sociology*, Vol. 82, No. 5, pp. 929-964.

**(If it is an article in an edited book):** Kanter R M (1988), "When a Thousand Flowers Bloom", in Staw B and Cummings I (Eds.), *Research in Organizational Behavior*, pp. 169-211, JAI Press, Greenwich, CT.

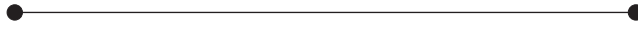
**Notes:** Do not use footnotes. Minimize notes. If they are unavoidable, number them serially in the text using superscript and list them together on a separate sheet under the heading NOTES immediately following the text of the paper. Notes are not for citing a reference but for offering a significant explanation which is important for understanding the text but is tangential to the main idea discussed therein.

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# ASSOCIATION OF MANAGEMENT DEVELOPMENT INSTITUTIONS IN SOUTH ASIA (AMDISA)



The leading business schools in the SAARC region initiated the Association of Management Development Institutions in South Asia (AMDISA) in 1988. This is the only Association which networks management development institutions across the eight South Asian Nations through exchanging information, facilitating inter-country research initiatives especially at the doctoral level and conducting regional conferences, workshops, colloquia and programs, and thereby providing a forum for interaction among academics and business leaders.

The Association interfaces management schools with corporate leaders interested in management development; promotes professional development of management faculty; and provides institution-building assistance to management schools and corporate management development centers in the region. AMDISA organizes institution-building workshops for Heads of institutions, faculty workshops on frontier areas of management, and inter-institutional cooperative research on contemporary managerial issues in South Asia. It publishes a scholarly academic journal, *South Asian Journal of Management* (SAJM) four times a year and a *Newsletter* three times a year. AMDISA is recognized by SAARC, the Inter-Government Agency, as a regional professional association with consultative status having 235 members, of which, 203 are Institutional Members, 4 Affiliate Members, 14 Corporate Members and 14 Reciprocal Members. Management development networks all over the world are eligible to become members of AMDISA.

AMDISA is closely associated with National Networks in India like AIMS and has helped establish networks in Bangladesh (AMDIB), Nepal (ADMIN), Pakistan (AMDIP) and Sri Lanka (ASLIM).

Since its inception, AMDISA has organized ten biennial South Asian Management Forums (SAMF) by rotation in all the South Asian (SAARC) countries. The 10<sup>th</sup> SAMF on the theme “Change and Continuity: Management Prospects and Challenges” was organized at Royal Institute of Management in April 2009. AMDISA has also organized 20 Regional Workshops for Faculty, 13 Regional Workshops for Deans and Directors, 3 South Asian Management Colloquia, 13 Regional SAQS Workshops, and 1 South Asian and 2 country-specific Training Programs. It has also initiated two medium-term quality initiatives, the Commonwealth-AMDISA Regional Doctoral and Post Doctoral Fellowship Program, and the South Asian Quality Assurance System (SAQS). A total of eight regional Fellowships have been awarded. Five reputable Management Schools (4 in India and 1 in Pakistan) have been accredited by SAQS, while 12 more schools (8 from India, 3 from Pakistan and 1 from Bangladesh) are in the process.

AMDISA is the founder-member of global Management Network INTERMAN which hosts a Global Management Forum every four years. The venues for earlier forums were Geneva (1986), Montreal (1990) Barcelona (1994), Chicago (1998) and Bangkok (2002).



## ASSOCIATION OF MANAGEMENT DEVELOPMENT INSTITUTIONS IN SOUTH ASIA

University of Hyderabad Campus,  
Central University Post Office, Hyderabad-500046  
Tel: 91-40-64543774/5226; Fax: 91-(0)40-2301-3346  
E-mail: [amdisa@amdisa.org](mailto:amdisa@amdisa.org), Website: [www.amdisa.org](http://www.amdisa.org)

