

## **A STUDY ON THE FACTORS STRENGTHENING THE PERFORMANCE OF SEBI IN FRAUD DETECTION, INVESTIGATION AND PREVENTION**

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### **Abstract**

*Three factors were selected for the study to examine the factors strengthening the performance of SEBI in Fraud Detection, Fraud Investigation and Fraud Prevention. The total variance explained by these three factors is 65.929%. Out of which 31.237% contributed by Fraud Detection Practices, 19.636% by Fraud Investigation Practices and 15.056% by Fraud Prevention Practices. Hence, it is concluded that the SEBI is playing an important performance in Fraud Detection compared to other two factors. The second part of the questionnaire consists of three factors and each factor is loaded with twenty statements. This study is also extended to identify the most influencing statements out of these three factors. With the help of rotated component matrix the most influencing statements from the first, second and third factors are 1, 2, 3, 5, 6, 7, 8 and 20; 25, 27, 28, 29 and 30; 45, 51, 52, 53, and 56 respectively.*

**Keywords:** *Fraud Detection, Fraud Investigation, Fraud Prevention.*

### **1. Introduction**

Fraudulent financial reporting practices can have significant consequences for organizations and all stakeholders, as well as, for public confidence in the capital and security markets. In fact, comprehensive, accurate and reliable financial reporting is the bedrock upon which our markets are based. Frauds occur with alarming periodicity and cannot be regulated. But can be tried to minimize its deleterious impact.

Historically, scams have led to regulatory reforms, including forming institutions and strengthening the institutional framework. Increased co-ordination between the various regulators is imperative to ensure perpetrators do not fall between the cracks. Investors are equally susceptible fraud can be looked at in two different ways. One way of looking at fraud is to assume that those who commit fraud are genius or creative people who always find innovative ways to commit fraud.

This research paper is aimed to identify the factors strengthening the performance of SEBI in fraud detection, investigation and prevention. This study was conducted with the help of perceptions collected from the five groups of respondents such as investors, stock brokers and sub-brokers, stock exchange officials, SEBI officials and auditors.

### **2. Review of Literature**

**Rezaee, Sharbatoghlie, Elam, & McMickle (2002)**<sup>1</sup> argue that achievements of information technology and web-based applications have made it more feasible to monitor and control

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<sup>1</sup> **Rezaee, Z., Sharbatoghlie, A., Elam, R., & McMickle, L. (2002).** Continuous auditing: Building automated auditing capability. *Auditing: A Journal of Theory and Practice*, 21(1).

operations by continuous auditing. **Hulbert (2003)**<sup>2</sup> assesses the implications of moving into new markets. Moreover, future fraud prevention methods such as screening of applicants are examined and the dire need to reviewing the current situation is emphasized. **Goyal (2004)**<sup>3</sup> claims that SEBI has successfully defined strict norms and contributed to establishing a steady capital market which has energized growth and activated markets more efficiently.

**International Organization of Securities Commissions (2005)**<sup>4</sup> identifies seven separate areas that have figured prominently in many recent high-profile financial scandals. They are: (i) corporate governance, (ii) auditors and audit standards, (iii) issuer disclosure requirements, (iv) bond market regulation and transparency, (v) the performance and obligations of market intermediaries, (vi) the use of complex corporate structures and special purpose entities, and (vii) the performance of private-sector information analysts. There are numerous studies on the capital market scams and other issues. This study is mainly concentrates on the factors strengthening the performance of SEBI in fraud detection, investigation and prevention.

### 3. Objective of the Study

The main objective of the study is to identify the factors which are strengthening the performance of SEBI in Fraud Detection, Investigation and Prevention in a better way.

### 4. Hypothesis of the Study

There is no significant difference in the perception of select respondents on the factors strengthening the performance of SEBI in fraud detection, investigation and prevention.

### 5. Research Methodology

The research methodology used in the present study is presented as follows:

**5.1. Sources of Data:** This study is mainly based on primary data. The primary data was collected through structured questionnaire. The questionnaire is divided into three parts such as 20 statements each related to fraud detection, investigation and prevention practices.

**5.2. Type of Sample:** The sample selection for this study is done by using purposive sampling. The purpose of this study is to judge the performance of SEBI in fraud detection, investigation and prevention practices with the help of opinions collected from select respondents.

**5.3. Sample Size:** The detailed sample respondent groups and their representation are presented in table-1.

No.	Type of Respondents	No. of Respondents
01	Retail Investors	250
02	Stock Brokers and Sub-brokers	50

<sup>2</sup> **Hulbert, J. (2003).** Carrefour of fraud in Europe, *Journal of Financial Crime*, 1(2), 122 – 127.

<sup>3</sup> **Goyal. A. (2004).** Regulation and de-regulation of the securities market in India, Presented at the Regulation Conference, of the Public Policy Programme, National University of Singapore.

<sup>4</sup> **OSCO (2005).** Strengthening Capital Markets against Financial Fraud, February, 2005.

03	Stock Exchange Officials	15
04	SEBI Officials	05
05	Auditors	50
	Total	370
Source: Compiled from primary data.		

**5.4. Statistical Tools:** The data collected was tabulated, presented, analyzed, tested and interpreted with the help of Kruskal-wallis test and chi-square test.

**5.5. Reliability:** Cronbach's alpha is the most common measure of internal consistency ("reliability"). The results of the overall reliability statistics are presented in table-2.

<b>Table-2: Overall Reliability Statistics</b>		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.948	0.947	60
Source: Compiled primary data and processed with the help of SPSS package.		

The Cronbach's Alpha value is greater than 0.80 hence the study is valid.

## 6. Factor Analysis

The factor analysis is performed on the responses collected from the investors, stock brokers, market regulators, and auditors to know the important factors which are strengthening the performance of SEBI in the fraud detection, investigation and prevention. The descriptive statistics of the study are presented in the table-3.

<b>Table-3: Descriptive Statistics of Three Factors</b>			
	<b>Mean</b>	<b>Std. Deviation</b>	<b>Analysis N</b>
Q1	3.36	1.198	370
Q2	3.30	1.083	370
Q3	3.09	1.132	370
Q4	3.14	1.219	370
Q5	3.43	0.911	370
Q6	3.73	1.001	370
Q7	3.63	0.940	370
Q9	3.23	1.001	370
Q12	2.88	1.241	370
Q16	3.37	0.959	370
Q20	3.43	0.820	370
Q24	3.05	0.944	370
Q25	3.67	0.997	370
Q27	3.33	1.014	370
Q28	3.80	0.932	370
Q29	3.80	0.879	370
Q30	3.63	1.081	370
Q32	3.04	1.186	370
Q42	3.25	0.953	370
Q45	3.57	1.173	370
Q50	3.25	1.175	370

Q51	3.47	1.048	370
Q52	3.49	1.123	370
Q53	3.35	1.276	370
Q56	3.56	0.801	370
Source: Computed from primary data with the help of SPSS Package.			

From the table-3, it is observed that the mean and standard deviation is ranged between 2.88 – 3.80 and 0.801–1.276 respectively. The sample size is 370; it is a combination of investors, stock brokers, market regulators and auditors. The next output from the analysis is the correlation coefficient.

A correlation matrix is simple rectangular array of numbers which gives the correlation coefficients between a single variable and every other variable in the investigation. The correlation coefficient between a variable and itself is always 1; hence the principal diagonal of the correlation matrix contains 1s. The correlation coefficients above and below the principal diagonal are the same. The determinant of the correlation matrix is not shown here but the correlation of the variable is less than 0.5 deleted from the analysis. The communalities on 60 statements are presented in the table-4.

**Table-4: Communalities for Three Factors (including all 60 items)**

Q1	1.000	0.666	Q21	1.000	0.401	Q41	1.000	0.630
Q2	1.000	0.616	Q22	1.000	0.672	Q42	1.000	0.607
Q3	1.000	0.708	Q23	1.000	0.658	Q43	1.000	0.415
Q4	1.000	0.560	Q24	1.000	0.558	Q44	1.000	0.304
Q5	1.000	0.563	Q25	1.000	0.662	Q45	1.000	0.657
Q6	1.000	0.507	Q26	1.000	0.384	Q46	1.000	0.422
Q7	1.000	0.602	Q27	1.000	0.566	Q47	1.000	0.694
Q8	1.000	0.486	Q28	1.000	0.697	Q48	1.000	0.467
Q9	1.000	0.585	Q29	1.000	0.686	Q49	1.000	0.718
Q10	1.000	0.424	Q30	1.000	0.724	Q50	1.000	0.645
Q11	1.000	0.396	Q31	1.000	0.294	Q51	1.000	0.600
Q12	1.000	0.553	Q32	1.000	0.646	Q52	1.000	0.570
Q13	1.000	0.377	Q33	1.000	0.519	Q53	1.000	0.725
Q14	1.000	0.339	Q34	1.000	0.806	Q54	1.000	0.771
Q15	1.000	0.673	Q35	1.000	0.825	Q55	1.000	0.356
Q16	1.000	0.500	Q36	1.000	0.654	Q56	1.000	0.613
Q17	1.000	0.408	Q37	1.000	0.791	Q57	1.000	0.291
Q18	1.000	0.466	Q38	1.000	0.736	Q58	1.000	0.381
Q19	1.000	0.554	Q39	1.000	0.488	Q59	1.000	0.604
Q20	1.000	0.521	Q40	1.000	0.251	Q60	1.000	0.752
Source: Computed from primary data with the help of SPSS Package.								

One of the underlying assumptions of factor analysis in a given set of variables, one variable shares its variance with other variables. Higher the shared variance is greater the factorability of the set of variables. A commonly used measure of shared variance is ‘communality’. Higher is the value of communality of the variable, greater its suitability for factor analysis.

In the present case, when all the 60 items are included in the analysis, 19 items have shown the communality below 0.50, viz., Q8, Q10, Q11, Q13, Q14, Q17, Q18, Q21, Q26, Q31, Q39, Q40, Q43, Q44, Q46, Q48, Q55, Q57, Q58. Those items are excluded from the analysis, due to lower value of communality. When the factor analysis was re-conducted with the remaining items, the following items were causing inconsistency in deriving theoretically consistent factors. Hence, they are also removed from the analysis. The items removed are Q15, Q22, Q23, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q47, Q49, Q54, Q59, and Q60. Finally, the factor analysis was re-conducted with remaining 25 items. The results are presented in the table-5.

**Kaiser Meyer Olkin (KMO) and Bartlett’s Test:** This test measures the strength of relationship among the variables. The resultant values are presented in the table-5.

Table-5: KMO and Bartlett’s Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.682
Bartlett's Test of Sphericity	Approx. Chi-Square	10042.872
	df	300.000
	Sig.	0.000
Source: Computed from primary data with the help of SPSS Package.		

Table-5 shows the results of KMO and Bartlett’s test of sphericity. The purpose of Bartlett’s test of Sphericity is to compare the observed correlation matrix with identity matrix. If the observed correlation matrix is closer to identity matrix, it implies that each item is strongly correlates with it and has least correlation with other items in the matrix. For such pattern of correlation among the variables, factor analysis is not suitable. The null hypothesis of Bartlett’s is the observed correlation matrix is identity matrix. In the present case, null hypothesis is rejected ( $p < 0.05$ ), so, it can be inferred that the observed correlation matrix is not an identity matrix.

Bartlett’s test of sphericity is based on correlation matrix. One inherent limitation of simple correlation is it does not factor in the partial correlation. Where the correlation between two variables is influenced by third variable, the simple correlation matrix may give misleading results. To overcome this limitation, KMO index is constructed. It is the ratio of squared value of simple correlation to sum of squared values of simple correlation and squared values of partial correlation. If the value of the index is closer to ‘1’, it indicates that partial correlation is very low compared to simple correlation. In the present case, the KMO index is 0.682. It implies that the presence of moderate level of partial correlation. However, the KMO index above 0.50 is acceptable for employing factor analysis.

**Total Variance Explained:** Eigen value actually reflects the number of extracted factors whose sum should be equal to number of items which are subjected to factor analysis. The next item shows all the factors extractable from the analysis along with their Eigen values. The Eigen value table has been divided into three sub-sections, i.e. Initial Eigen Values, Extracted Sums of Squared Loadings and Rotation of Sums of Squared Loadings. For analysis and interpretation purpose it is only concerned with Extracted Sums of Squared Loadings. Here one should note that the first factor accounts for 31.237% of the variance, the second 19.636% and the third 15.056%. All the remaining factors are not significant (table-6).

In order to produce theoretical results, fixed number of components has been specified, instead of extracting the factors based on Eigen value criterion. Variance extraction table indicates that the three components together can explain 65.929% of the total variance. Eigen value corresponding to component three is 3.764. It indicates the possibility of extracting more than three factors. But, based on underlying theory, extraction is stopped at third component only.

**Rotated Component Matrix:** The rotated component matrix results of the study are presented in the table-7.

**Table-6: Total Variance Explained**

Component	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1. Fraud Detection	7.809	31.237	31.237	7.809	31.237	31.237	6.826	27.306	27.306
2. Fraud Investigation	4.909	19.636	50.873	4.909	19.636	50.873	4.830	19.322	46.627
3. Fraud Prevention	3.764	15.056	65.929	3.764	15.056	65.929	4.825	19.301	65.929

Source: Computed from primary data with the help of SPSS Package.

**Table-7: Rotated Component Matrix<sup>a</sup>**

	Component		
	1. Fraud Detection	2. Fraud Investigation	3. Fraud Prevention
Q1	.796		
Q2	.794		
Q3	.786		
Q5	.730		
Q6	.743		
Q7	.764		

Q8	.726		
Q20	.691		
Q25		.730	
Q27		.695	
Q28		.807	
Q29		.834	
Q30		.862	
Q45			.863
Q51			.686
Q52			.676
Q53			.890
Q56			.619
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Source: Computed from primary data with the help of SPSS Package.			

The rotation of component matrix has been done by applying varimax rotation method with Kaiser Normalization and the results are presented in table-7.

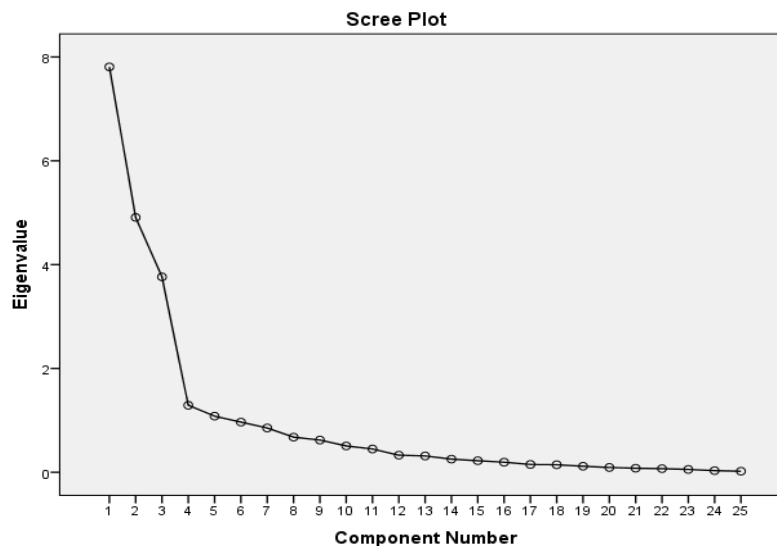
**Component one** is labeled as fraud detection and it is represented through eight items. They are Q1, Q2, Q3, Q5, Q6, Q7, Q8 and Q20. In this component all the items are having factor loading above 0.70 except, Q20. It indicates better representatives of the fraud detection through these items. It can be inferred from the remaining seven items that the existing surveillance detecting market manipulations and price rigging, issue related manipulations, insider trading practices, forensic accounting cell detecting frauds, existing circuit filters, daily price bands and weekly price caps are curbing abnormal price behavior and volatility, interaction and co-ordination with stock exchanges detecting frauds, and exchanges stock watch system detecting abnormal price and volume movement. Hence, these factors strengthening the performance of SEBI in fraud detection from the time to time.

**Component two** is labeled as fraud investigation and it is represented through five items. They are Q25, Q27, Q28, Q29 and Q30. In this component all the items are having factor loading above 0.70 indicating better representatives of the fraud investigation through these items. It is identified and highlighted that the current investigation process is flexible and it takes market and static data for analysis, the percentage of cases taken up for investigation and cases completed is satisfactory, investigations contribute to policy changes with a view to further strengthening the regulatory and enforcement environment, current consent mechanism norms of SEBI are relevant and enquiry officers have sufficient power to identify and issue show cause notices to persons who might be involving in violations. Therefore, these factors are strengthening performance of SEBI in fraud investigation and its performance is satisfactory as per the opinions expressed by investors, stock brokers, market regulators and auditors.

**Component three** is labeled as fraud prevention and it is represented through five items such as Q45, Q51, Q52, Q53 and Q56. In this component all the items are having factor loading above 0.60 indicating better representatives of the fraud investigation through these items. It is recognized that existing corporate governance guidelines preventing frauds, preventing violations by entities, current crisis management helps to maintain financial stability, current

system preventing money laundering activities and playing efficient performance in registering and regulating stock brokers in order to prevent the fraudulent financial practices. Hence, these factors strengthening the performance of SEBI in fraud prevention.

**Scree Plot:** The scree plot is a graph of the Eigen values against all the factors. The graph is useful for determining how many factors to retain. The point of interest is where the curve starts to flatten. It can be seen that the curve begins to flatten between factors 4 and 5. Note also that factor 5 onwards have an Eigen value of less than 1, so only 5 factors have been retained.



### **The Kruskal-Wallis Test for Difference in Statements**

The Kruskal-Wallis test is the non-parametric alternative to the One Way ANOVA. Non-parametric means that the test doesn't assume data comes from a particular distribution. The Kruskal-Wallis test is used when the assumptions for ANOVA aren't met. It is sometimes called the one-way ANOVA on ranks, as the ranks of the data values are used in the test rather than the actual data points.

To perform this test, Prism first ranks all the values from low to high, paying no attention to which group each value belongs. The smallest number gets a rank of 1. The largest number gets a rank of N, where N is the total number of values in all the groups. The discrepancies among the rank sums are combined to create a single value called the Kruskal-Wallis statistic. A large Kruskal-Wallis statistic corresponds to a large discrepancy among rank sums.

The Kruskal-Wallis test will tell that there is a significant difference in statements (questions) or not. However, it won't tell which groups are different. For that, it is required to run a Post Hoc test. The Kruskal-Wallis H test is used to determine whether the medians of three groups i.e., fraud detection, fraud investigation and fraud prevention are different or not. The hypothesis for the test is framed and presented as follows:

**H<sub>0</sub>:** There is no significant difference in the perception of respondents on the factors strengthening the performance of SEBI in fraud detection, investigation and prevention.

First group, fraud detection consists of eight questions. Second group, fraud investigation includes five questions and third group fraud prevention has five questions. The perception of

370 respondents was processed by using this test to know the perception of respondents on these three groups. The mean ranks of fraud detection, investigation and prevention were presented in the table-8.

	<b>Dimension</b>	<b>N</b>	<b>Mean Rank</b>
Response	<b>1.0.</b> Fraud Detection	2960	3210.35
	<b>2.0.</b> Fraud Investigation	1850	3578.29
	<b>3.0.</b> Fraud Prevention	1850	3286.26
	Total	6660	

Source: Computed from the primary data with the help of SPSS Package.

It is known from the table-8 that the first group’s number of relations is 2960; second and third group’s number of relations is 1850 each. The mean rank of first, second and third group is 3210.35, 3578.29 and 3286.26 respectively. Each group of every question is answered by 370 sample respondents, of which 250 investors, 20 market regulators, 50 each stock brokers and auditors. The Kruskal-Wallis test statistics are presented as follows:

	<b>Response</b>
Chi-Square	48.646
df	2
Asymp. Sig.	0.000
a. Kruskal Wallis Test	
b. Grouping Variable: Dimension	
Source: Computed from the primary data with the help of SPSS Package.	

The chi-square test statistic value is 48.646 with degrees of freedom of 2. The ‘p’ value of the statistic (0.000) is less than 0.05. Hence, the null hypothesis is rejected and alternative hypothesis is accepted inferring that there is a significant difference in the perception of the respondents on three groups relating to the factors strengthening the performance of SEBI in Fraud Detection, Fraud Investigation and Fraud.

**7. Findings of the Study**

The factors strengthening the performance of SEBI in fraud detection are the existing surveillance detecting market manipulations and price rigging, issue related manipulations, insider trading practices, forensic accounting cell detecting frauds, existing circuit filters, daily price bands and weekly price caps are curbing abnormal price behavior and volatility, interaction and co-ordination with stock exchanges detecting frauds, and exchanges stock watch system detecting abnormal price and volume movement.

The factors strengthening the performance of SEBI in fraud investigation are the current investigation process is flexible and it takes market and static data for analysis, the percentage of cases taken up for investigation and cases completed is satisfactory,

investigations contribute to policy changes with a view to further strengthening the regulatory and enforcement environment, current consent mechanism norms of SEBI are relevant and enquiry officers have sufficient power to identify and issue show cause notices to persons who might be involving in violations.

The factors strengthening the performance of SEBI in fraud prevention are existing corporate governance guidelines preventing frauds, preventing violations by entities, current crisis management helps to maintain financial stability, current system preventing money laundering activities and playing efficient performance in registering and regulating stock brokers in order to prevent the fraudulent financial practices.

## 8. Conclusion of the Study

Finally, it can be concluded that the SEBI is playing an efficient and effective performance in the fraud detection, fraud investigation and fraud prevention in the Indian capital market. From the last twenty five years it has been molding and improving itself to meet the future requirements at national and international level.

## 9. References

1. **Bainbridge Stephen M. (1986).** *The Insider Trading Prohibition: A Legal and Economic Enigma*, Florida Law Review, Volume-38, Pp.35-68.
2. **Balanaga Gurunathan K. (2007).** *An Investors' Requirements in Indian Securities Market*, Delhi Business Review, Volume-8, No.1, January-June, 2007, Pp.31-40.
3. **Bhasin M. L. (2012).** *Corporate Accounting Frauds: A Case Study of Satyam Computers Limited*, International Journal of Contemporary Business Studies, October 2012, 3(10), Pp.16-42.
4. **Daniela Petraşcu and Alexandra Tîeanub (2014):** *The Role of Internal Audit in Fraud Prevention and Detection*, 21st International Economic Conference 2014, IECS 2014, 16-17 May 2014, Sibiu, Romania, Pp.489-497.
5. **Ghosh S. (2010).** *Creative accounting: A fraudulent practice leading to corporate collapses*, Research and Practice in Social Sciences, 6(1), 1-15.
6. **Goyal A. (2004).** *Regulation and de-regulation of the securities market in India*, Presented at the Regulation Conference of the Public Policy Programme, National University of Singapore.
7. **Karamjit Kaur and Rajneesh (2014).** *Capital Market Reforms in India*, International Journal of Commerce, Business and Management, Volume-3, Number-3, June 2014, Pp.422-439.
8. **Madan Lal Bhasin (2016).** *Fraudulent Reporting Practices: The Inside Story of India's Enron*, International Journal of Management Sciences and Business Research, October-2016, Volume-5, Issue-10, Pp.33-46.
9. **Pandya V. H. (1992).** *Securities and Exchange Board of India: Its Role, Powers, Functions and Activities*, Chartered Secretary, Volume-22, No. 9, Sept.1992, p. 7.
10. **Panigrahi P. K. (2006).** *Discovering fraud in forensic accounting using data mining techniques*, Chartered Accountant, 54(10), Pp.1426-1431.
11. **Rezaee Z. Sharbatoghlie, A. Elam R. & McMickle L. (2002).** *Continuous Auditing: Building Automated Auditing Capability*, Auditing: A Journal of Theory and Practice, 21(1).
12. **Richard G. Brody and Frank S. Perri (2016).** *Fraud detection suicide: the dark side of white-collar crime*, Journal of Financial Crime, Volume-23, Issue-4, Pp.786-797.
13. **Sabarinathan G. (2010).** *SEBI's regulation of the Indian securities market: A critical review of the major developments*, VIKALPA.com, 35( 4).
14. **Varma R. J. (1997).** *Corporate Governance in India: Disciplining the Dominant Shareholder*, The Journal of the Indian Institute of Management, 9(4), Pp.5-18.