

FORENSIC ACCOUNTING CONCEPT: MEASURING THE EFFECTIVENESS AND POPULARITY ON THE BASIS OF MAJOR SCAM EVENTS IN INDIA

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Abstract: Forensic accounting is emerging out to be an indispensable discipline in the modern world. India, along with the globe, is not at all ready to accept the frauds and scams taking place on an ongoing basis. Frauds are alarming notifications for a country's degradation. Hence India is also not lagging behind in the race to incorporate forensic accounting in its operational activities. Thus this study has been conducted on the basis of Indian scams events during the period from 2008 to 2018. The forensic accounting process works with the help of specific techniques that have enhanced the urge to conduct the research work. The objective of this research study is to critically evaluate the applicability and effectiveness of modern forensic accounting process. The selected respondents for this study consists of auditors, forensic accountants, people belonging to corporate firms, banks, insurance companies and web developers in India. The focused frauds in this study are those of banks, corporate, cyber securities, identity theft and insurance, considering their frequency of occurrence. The forensic accounting techniques that have been assessed are Benford's Law, Theory of Relative Size Factor (RSF), Computer Assisted Auditing Tools (CAATs), Data Mining Techniques and Ratio Analysis. The survey findings have been assessed with the help of statistical tool and the implications have been clearly stated. The research work has been concluded with presentation of further scope in this particular arena.

Keywords: Forensic Accounting, Frauds and Scams, Forensic Accounting Techniques, Theft and Frauds.

1. Introduction

India is a vast operator of financial services inclusive of both formal and informal mode. The arrangement of financial institutions plays a tremendous role in facilitating flow of funds within the economy. Thus the importance of this segment is heavy and needs close lookout with respect to its operation. Along with maintaining financial stability in this segment, it is also necessary to assure customer protection. The duty lies on the shoulder of not only the regulators but also on the financial institutional operators. Forensic accounting or forensic auditing is a buzzing word in this case. The popularity of forensic accounting as an effective tool for eradicating fraud in the modern world has been thought way back before major Indian accounting scam (Hopwood, 2009). The dynamic monetary properties triggers several new and innovative modes of accounting practices (Ezzamel, Xiao and Pan, 2007). The present research field has been chosen so that the effectiveness and applicability of this dynamic accounting system can be evaluated.

Forensic accounting concept is a way accounting process than the normal phenomenon carried out related to accounting in companies. The accountants or the auditors associated with forensic accounting techniques require enormous investigative aptitudes along with great accounting skills (Gomide, 2008). Forensic accounting process has been declared as an essential way to eradicate several types of frauds in an organization. However, the main types of frauds typically handled by forensic accounting process are those of management fraud, Embezzlement, employee fraud and cybercrime (Kuchta, 2001). As of now, it can be proudly mentioned that forensic accounting practices has successfully managed to separate itself from the concept of overall accounting practice.

Forensic accounting has moved way ahead than the latter in regards to provision of services related to litigation and investigation (Smith, 2015). The turnaround of forensic accounting practice has been possible throughout the years due to the fact that it operates with the help of a handful of techniques accountable with latest technological up gradation (Oyedokun, 2016). However, the process will fail to operate skilfully if the concerned forensic accountants are not efficient enough. These accountants are considered as a blend of private investigator as well as auditor for an organization (Gray, 2008).

The present research paper will try to gain strong insights upon the level of effectiveness of forensic accounting system in Indian companies. The effectiveness will be measured with the help of a comparison test between the data related to number of accounted frauds in the companies before installation of forensic accounting system and after the installation.

On the other hand, it is also required that the applicability of forensic accounting system is verified. In this respect, events of occurrence of big accounting frauds have been considered and “The Satyam Scandal” has been taken as an eye-opener for the Indian companies. Thus data in relation to application of forensic accounting system in the companies before Satyam scam and after the scam have been collected. Here, application factor has been measured in terms of frequency of seeking help of forensic accountants in a particular financial year. The frequencies varied enormously before and after the occurrence of Satyam scandal and this is a really alarming notification for all the companies.

1.1 Statement of the Problem

Forensic accounting is vested with the charge of reducing financial frauds with the objective of improving customer relationship and trust. In the recent past, forensic accounting system has evolved as an effective mode of scrutinizing and verifying whether all the accounting policies of a firm are maintained or not (Akkeren & Tarr, 2014). The system also critically evaluates whether any unusual or foreign information have been inserted in the accounting process. Pertaining to the increased accounting frauds in the corporate world, various or almost all the companies take the help of forensic accountants in looking after their accounting process.

1.2 Importance of the Study

The present research study holds strong importance since forensic accounting system is a sprouting field and a lot of assessment is required. The techniques that are popular under the system of forensic accounting are Benford’s Law, Theory of Relative Size Factor (RSF), Computer Assisted Auditing Tools (CAATs), Data Mining Techniques and Ratio Analysis. The use of software in forensic accounting system has gained manifold importance in the recent past. The necessity of instigating software feel in the work process of forensic accountants is increasing and will increase in the future a lot (Kuchta, 2006). However, everything depends upon how effectively the entire system is working at present and how efficiently it is expected to work in the future. Henceforth the present study is essential in the terms that its result will state a clear picture about forensic accounting scenario in India.

2. Literature Review

The importance of forensic accounting system in the modern world can be assessed by going through the review of following literatures that have given varied but equivalent view about this process and its importance. The mindset of forensic accountants had been critically overviewed and their job has been magnificently described by Bologna & Lindquist (1985). They described that forensic accounting process is a phenomenon of applying financial skills with the mindset of an investigator towards solving certain typically unresolved issues. The authors had mentioned that along with knowledge about business reality and financial backgrounds, the forensic accountants should also have ample knowledge about fraud. The publication year of this book shows that forensic accounting is an age old technique, may be, whose popularity has enhanced during the recent past pertaining to increasing volume of accounting frauds around the world.

Forensic accounting has been defined as a science by Zia (2010). According to the author’s point of view, the effectiveness of forensic accounting emerges out prosperously when in an organization a perfect blend of accounting, finance, auditing and tax is made. Not only this, the blend of these ingredients has to be fully utilised for analysing, inquiring, investigating, examining and testing jurisdictions. A similar point of view

regarding forensic accounting has also been presented by Crumbley (2005) who believed that this branch of accounting has taken birth from a perfect integration level of accounting, investigation and auditing.

As per the analysis presented by Zysman (2004), the integrative approach of forensic accounting provides strong basis for a matter of discussion in the court. The outcome of the discussion instigated by results of forensic accounting process at times shall take up the mode of debate that would finally resolve a dispute. The author of this literature has also described forensic accounting as a integrative process that comes as a concrete process of auditing, investigation and accounting.

Eiya & Otor (2013) have signified forensic accounting as a measure of fighting the crimes related to finance in a company. Forensic audit is a fundamental process that aims to look beyond mere verification of records in accounts. Forensic accountants or the auditors concentrates more on close observation of the substances in a particular recorded transaction. The authors have strongly emphasized upon incorporation of forensic accounting process as a regular phenomenon in every organizations so that timely correction of accounting misrepresentation can be detected to avoid massive crimes in the future.

A number of other literatures of the past have talked about the advantages and work of forensic accounting system in detection and removal of accounting frauds. A few of them have been reviewed in this present research process. Chaturvedi (2015) has tried to measure some white collar crimes within the complex corporate environment in India with the help of forensic accounting system. Singh (2012) has researched about the uniqueness of forensic accountants and growing acceptance of them in the modern corporate world. Chakrabarti (2014) has discussed about forensic accounting as a profession in India and evaluated its problems and outlook. Sharma (2014) has evaluated the tools of forensic accounting with respect to their effectiveness in detection and prevention of financial frauds in India. Shaheen et.al (2014) have discussed about the recent scope of forensic accounting in India and suggested that its effectiveness can be improved a lot if it is used as an investigative tool rather than a preventive tool. Wadhwa and Pal (2012) have critically examined the available tools and techniques of forensic accounting system in regards to their role in detection of frauds in India. Dubey (2014) has scrutinised forensic audit as an effective mode of examining evidence in a standardized manner as prescribed by the court. These reviewed literatures lack the use of primary data from the field of personnel using forensic accounting practically. Thus considering this gap, the present research work has been undertaken.

3. Research Objectives:

The following are the main objectives of this research paper:

- To measure the level of effectiveness of forensic accounting system in India
- To determine the scope of applicability of forensic accounting process in India
- To assess various techniques of forensic accounting and determine their respective utility
- To anticipate future scope of forensic accounting system in India

4. Research Methodology

The research is concerned with use of both primary as well as secondary data. Primary data have been collected from a set of respondents belonging to various industries inclusive of the banking sector, auditing concerns, insurance sector, corporate houses and some other service firms belonging to different parts of the country. Telephonic conversation and electronic medium of questionnaire survey were used for collecting authentic data. A set of 10 questions have been presented to 65 respondents, out of which 60 have replied that have been methodically analysed. The number of occurrences of accounting frauds in the companies have been collected conditioned to before and after installation of forensic accounting system in the concerns. Data related to number of accounting frauds before and after installation of forensic accounting systems have been analysed with the help of paired t-test.

Also, considering Satyam scandal as an eye opener for all the companies, data related to frequency of using forensic accounting system both before and after the scam have been collected and analysed. Satyam scandal has been considered as an important event that created the fear of indulging into fraudulent activities by the

companies. Primary reason is that Satyam scam is related to accounting frauds that was done by some important authorities of the company. Secondly, pertaining to such deed by a (then) reputed company like Satyam, almost all companies started to think that the time has come when they use forensic accounting as a preventive system. In regards to this fact, data of the frequency of seeking forensic accounting help have been accumulated that paved a strong path for testing level of applicability of this system in the modern days. Z test for difference of two sample means has been used in this case.

The third objective has been fulfilled by measuring the popularity of the various modern tools of forensic accounting system. This has been done by simple representation of data related to the use of several forensic accounting tools.

5. Research Hypotheses

Hypothesis I

H₀: There is no significant difference between the number of accounting frauds before and after installation of forensic accounting system

H₁: There is difference between the number of accounting frauds before and after installation of forensic accounting system

Hypothesis II

H₀: There is no significant difference between average number of using forensic accounting in a year before and after Satyam Scam

H₁: There is significant difference between average number of using forensic accounting in a year before and after Satyam Scam

6. Findings and Analysis

6.1 Testing the Hypothesis I

Let the number of accounting frauds before installing forensic accounting system be represented as X and the number of accounting frauds after installing forensic accounting system be represented as Y.

Then taking the null hypothesis that installation of forensic accounting system has not reduced the number of accounting frauds,

H₀: $\mu_1 = \mu_2$

H₁: $\mu_1 \neq \mu_2$

The level of significance at which the result will be tested is 5 %

The t statistic is

$$t =$$

where SE =

The collected data are as follows:

Accounting Frauds before Installation (X)	Accounting Frauds after Installation (Y)	Difference (d) = X - Y	Difference Squared
21	12	9	81
18	8	10	100
20	10	10	100
7	2	5	25
11	3	8	64
17	11	6	36

19	10	9	81
8	0	8	64
20	11	9	81
22	15	7	49
25	20	5	25
15	11	4	16
17	10	7	49
18	6	12	144
20	11	9	81
25	20	5	25
8	2	6	36
10	3	7	49
31	12	19	361
11	4	7	49
13	3	10	100
18	12	6	36
11	9	2	4
20	2	18	324
9	3	6	36
12	4	8	64
15	7	8	64
16	8	8	64
18	10	8	64
19	11	8	64
14	8	6	36
15	8	7	49
16	10	6	36
15	12	3	9
16	8	8	64
20	12	8	64
14	3	11	121
15	6	9	81
14	8	6	36
16	9	7	49
14	12	2	4
17	7	10	100
18	9	9	81
19	11	8	64
20	12	8	64
8	1	7	49
7	5	2	4
8	6	2	4
7	5	2	4
7	2	5	25

6	1	5	25
14	8	6	36
15	10	5	25
17	12	5	25
18	9	9	81
20	8	12	144
14	10	4	16
15	5	10	100
14	7	7	49
16	8	8	64
	Total	441	3845

Table 1: Data of respondents' reply towards number of accounting frauds before and after installation of forensic accounting system

Calculation of t statistic using Excel

t-Test: Paired Two Sample for Means

	Variable 1	Variable 2
Mean	15.38333333	8.033333333
Variance	25.29124294	17.89717514
Observations	60	60
Pearson Correlation	0.774535209	
Hypothesized Mean Difference	0	
df	59	
t Stat	17.79903133	
P(T<=t) one-tail	1.06693E-25	
t Critical one-tail	1.671093033	
P(T<=t) two-tail	2.13385E-25	
t Critical two-tail	2.000995361	

The above calculation is with reference to the data presented in Table 1

Since the calculated value of t is greater than critical value of t, hence the null hypothesis is rejected and alternative hypothesis is accepted with the conclusion that installation of forensic accounting system has definitely played a significant role in reducing the number of accounting frauds in India.

6.2 Testing the Hypothesis II

The second hypothesis is related to the testing of assumption that application of forensic accounting system after occurrence of Satyam scandal has drastically taken a turn (basis from primary and secondary data). The firms that were not concerned about the utilities of this system, have started installing. Thus the frequency of seeking forensic accounting help or the frequency of using forensic accounting system has been considered for testing. Thus the framing of null and alternative hypothesis is as follows:

H₀: There is no significant difference between average number of using forensic accounting in a year before and after Satyam Scam

H₁: There is significant difference between average number of using forensic accounting in a year before and after Satyam Scam

i.e., H₀: $\mu_1 = \mu_2$

H₁: $\mu_1 \neq \mu_2$

The above hypothesis will be tested with the help of Z test for difference of two sample means whose test statistic is given by:

$$z = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)_0}{\sqrt{\sigma_1^2/n_1 + \sigma_2^2/n_2}}$$

where, $\mu_1 - \mu_2 = 0$

σ_1^2 and σ_2^2 are the variances of the two samples X_1 and X_2

The degrees of freedom for the test are $(n-1)$ i.e. $(60-1) = 59$. This time the test will be conducted at 1% level of significance.

Avg No of Using FA in a year before Satyam Scam (X_1)	Avg No of Using FA in a year after Satyam Scam (X_2)
3	4
2	3
4	5
8	9
3	7
3	5
5	8
4	8
5	9
5	6
3	4
3	4
5	5
5	7
3	5
6	8
3	5
5	7
5	6
7	10
4	7
5	8
4	7
6	9
5	8
4	7
5	8
5	8
3	6
3	6
5	7
4	6

3	5
5	7
2	4
1	3
5	7
3	5
5	7
5	7
0	2
2	4
5	7
5	7
5	7
1	3
2	4
5	7
5	9
3	7
2	6
3	7
3	7
5	9
5	9
5	9
5	9
3	7
3	7
2	6

Table 2: Respondents' replies towards average number of using forensic accounting in a year before and after the incidence of Satyam Scam

Variance 1	2.236158192
Variance 2	3.305084746

Calculation of Z statistic using Excel

z-Test: Two Sample for Means

	3	4
Mean	3.983050847	6.542372881
Known Variance	2.24	3.31
Observations	59	59
Hypothesized Mean Difference	0	
z	-8.34457937	
P(Z<=z) one-tail	0	
z Critical one-tail	2.326347874	
P(Z<=z) two-tail	0	
z Critical two-tail	2.575829304	

The above calculation is with reference to the data presented in table 2

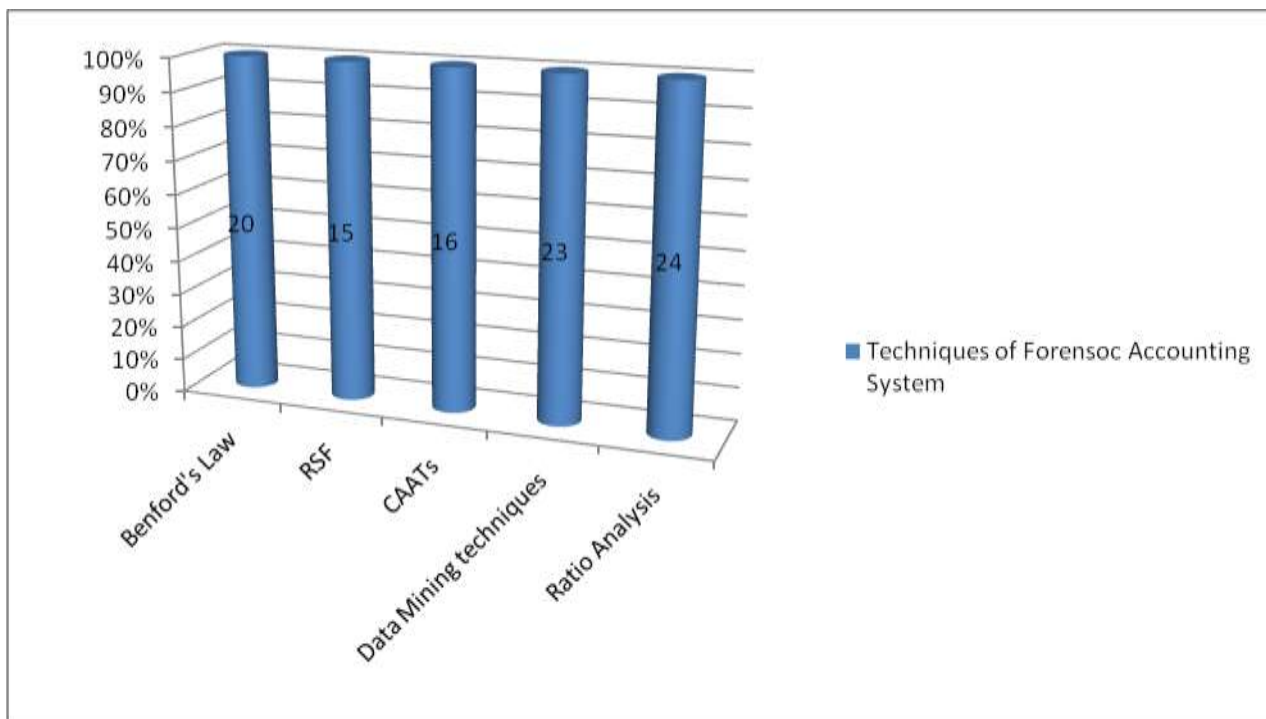
The above result shows that the calculated value of z statistic falls under the rejection criteria and hence it can be concluded that the assumption that there is no significant difference between average number of using forensic accounting in a year before and after Satyam Scam is wrong. The test result (less than type) which is of left tailed depicts that the average number of using forensic accounting in a year before and after Satyam Scam has increased.

6.3 Assessment of Various Techniques of Forensic Accounting System in the Modern Day

The selected techniques of forensic accounting system for this study are Benford's Law, Theory of Relative Size Factor (RSF), Computer Assisted Auditing Tools (CAATs), Data Mining Techniques and Ratio Analysis. The respondents were asked to notify the most popular and effective technique(s) that is/are used in their respective organizations. Since it is not obligatory that a company has to operate with only a single or two forensic accounting system, thus, during the research as well, it was observed that no company has restricted itself to a single or two forensic accounting system. The respondents stated that their respective organizations act according to the situation and choose the best suited forensic accounting technique.

As per the replies of the respondents, the following observations with respect to applicability of the techniques have been recorded:

Data Representing the Number of Respondents Selecting their Respective Most Useful Technique(s) of Forensic Accounting System



Source: Own

The above chart shows that ratio analysis is the most popular technique of forensic accounting as its usability and mode is convenient. However, the other techniques seem more or less equally popular in relation to their applicability. The above representation of data depicts that the selected companies use more than one tools of forensic accounting to keep themselves away from events of frauds.

7. Conclusion

The corporate world, at present, is not free of financial and accounting frauds that are leading to vulnerable consequences for the economy. As per the findings of the survey consisting of both primary and secondary research data, it was evaluated that the corporate world is polluted with a lot of frauds that sometimes even leads to crime. The respondents selected for this survey belonged to banking sector, insurance sector, service industry and several other corporate houses. As per the interviews conducted with them, a number of facts come into the play that displayed ages of frauds taking place in the cyber world, theft of the identity, laundering of money, creation of black money, misrepresentation of accounting details, to name a few. However, the research process has ended up in generating useful results for the society.

The paired t-test used for evaluating the first hypothesis result depicted that the companies that have been surveyed experienced a tremendous change in terms of decrease in the number of accounting thefts and frauds after installing forensic accounting system.

Z test for difference of two sample means has been used to test the second hypothesis and it has been found that the average number of using forensic accounting in a year before and after Satyam Scam has increased.

The selected forensic accounting system techniques have been assessed as per their present popularity. It was overviewed that companies, these days, are more inclined towards utilising more than one effective forensic accounting systems aimed towards bringing in perfection in the entire process.

After analysing the research results, it can be recommended that further research can be conducted in this area by taking a large sample and spreading the area of respondents' coverage around the country. Use of better test statistic can also work well in generating better results.

During the research process, the set of objectives have been fulfilled with a few limitations. However, the limitations can be overcome in the future if further study on the same arena can be conducted.

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