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TECHNOLOGICAL INTERVENTIONS TO CONTROL FINANCIAL FRAUD

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ABSTRACT

The observations, auditing and continuous monitoring of routine processes of the organization/s is an ideal way to prevent the corruption and it will help to curb the financial fraud, which have direct impact on the net returns of the company / organization. The chronological events of financial fraud under different parts of the world as well as in India, gave an insight of this problem, while under present scenario of the country, use of big data, data mining, mobile application and forensic tools, to prevent financial fraud will be helpful to improve efficiency, address capacity problems and identify critical gaps. Hence, application of technological innovations will prove advantageous to prevent the corruption in the system. Therefore, to bring awareness among people of the country views of different workers are reviewed here to make this topic meaningful for the use of public in general and entrepreneurs in particular.

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INTRODUCTION

The irregularity in administrative / financial matter to get more benefits / higher return as compare to follow the proper rules / guide lines leads to malpractices by people in the different sector. These acts may be the habit of some or may be due to lethargic system based on old generation rules and regulations. The process of following these guidelines are some times very difficult due to times required for the purpose and market requirement. If, we reconciled the financial irregularities around us on daily basis, where, people are habituated to such extent that they can't pay heeds towards smaller scams / irregularities, but unscrupulous and enterprising scamster's money involved manifolds in the public / private sector. According to Greek mythology fraud is one of the evils viz : the personification of deceit, perfidy, trickery, dishonesty etc. The purpose of fraud may be monetary gain or other benefits like qualifying for a mortgage by way of false statements. Similarly, financial fraud can be broadly defined as an intentional act of deception involving financial transactions for the purpose of personal gain.

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In fact it is a crime and is violation of civil law. Many fraud cases involve complicated financial transactions conducted by 'white collar criminals' like: business professionals with specialized knowledge and criminal intent (Anonymous (2017). Under present scenario e-commerce is also one of the Indian economy's fastest growing sector, where online retail market to carry a gross merchandise value (GMV) of $62 billion will be by 2020, which is only $17 billion during this year. The role of e-commerce in the economy is important, but we must be aware about the risks involved in it, which is realized from the view expressed by Dhakappa (2017) suggested that North American businesses expect lose to the tune of 0.8% of total revenue due to fraud, whereas in India, it is ranges between 4-5%. Such frauds are categorised into three categories viz *:* (i) Buyer *side frauds,* (ii) *Merchant side frauds and (iii) Cyber security frauds. However, one* Nilsen report, suggested that losses caused by payment card frauds globally in 2015 was $21.84 billion, while frauds in any sector may be the result of bribery and corrupt practices to win a contract or to retain business or to get routine approvals from the government agencies or to influence the people in making favorable decisions.

Types of financial fraud

There are different types of fraud, which may be committed by email, phone, media, computer, advertisement etc., whereas, under present circumstances diversion of browsers to dishonest sites and steal credit card details, hacking of web sites etc are contributing very rapid growth of internet fraud. There have also been fraudulent "discoveries", to gain prestige rather than immediate monetary gain (Anonymous (2017 and 2017,b). However, all types of fraud can be categorized into following categories:

- (Financial institution :
  - employee fraud
  - examiner fraud
- Charitable donation fraud
- Power of attorney fraud
- Disproportionate of income / assets
- Social Engineering fraud
- Online fraud and scams

Financial fraud through internet

The use of internet services or software for fraud by different methods are rising day by day, where some high-profile methods include the following:

- Business e-mail compromise
- Data breach
- Denial of service
- E-mail account compromise
- Malware/ Scareware
- Phishing/Spoofing
- Ransomware

All these methods / tack-tics are used for financial fraud individually or by stealing the information / data of individual / firm and use for fraud may be for transfer of funds or else.

Brief history of fraud

A brief history of fraud reported in the different countries is summarized here as below (Maria, 2016) :

Circa 300 BC : The earliest fraud attempt on record is that a Greek merchant tries to sink his ship to collect the money of insurance.

1496: A 20-year-old Michelangelo forges an ancient sculpture of Cupid and sells it to a cardinal.

1704: A Frenchman claiming to be a native of Formosa (modern-day Taiwan) publishes a book describing made-up customs like drinking viper's blood for breakfast.

1863: President Lincoln signs the false claims act to counter the sale of fraudulent supplies to the Union Army.

1920: Charles Ponzi collects about $15 million in eight months through his fraudulent investment company.

1925: An Austro-Hungarian con man known as "The Count" sells the *"Eiffel Tower"* to a scrap-metal dealer.

1989: Nigerian fraudsters send messages via telex to British businessmen, seeking a small investment for a huge future payoff.

1995: British police arrested John Myatt for forging paintings by Monet, Van Gogh, Matisse, and other masters.

Major scam in India

The corruption in India after independence increased day by day is clearly visualized from the Table-1, where list of some major scam is given. It shows that bribery and corrupt practices were customized in Indian society, which is deeply rooted and must be removed through the civil law as well as people awareness.

The scam listed in the Table-1, are relevant to finance, administration and misuse of power by the officials involved in the decision making process. Hence, we must have a system, where such act must be punishable and common public must be aware of these rules. At the same time technological intervention shall be used to control such fraud.

Technological intervention to avoid financial fraud

Advances in technology make possible to access huge data without any difficulty, which could be compare with similar enterprises. The access of information and transparency in the system are potential tools to support the customer against corruption (Lauren, 2016).

Big Data: It is true that better quality data will help to improve policy decisions and accountability for sustainable development or growth of the business.

This involves use of technology and tools like: big data, advanced networks and data-related infrastructure to improve efficiency, address capacity problems, identify critical gaps and collaboration to achieve the common goals and to gain valuable insights.

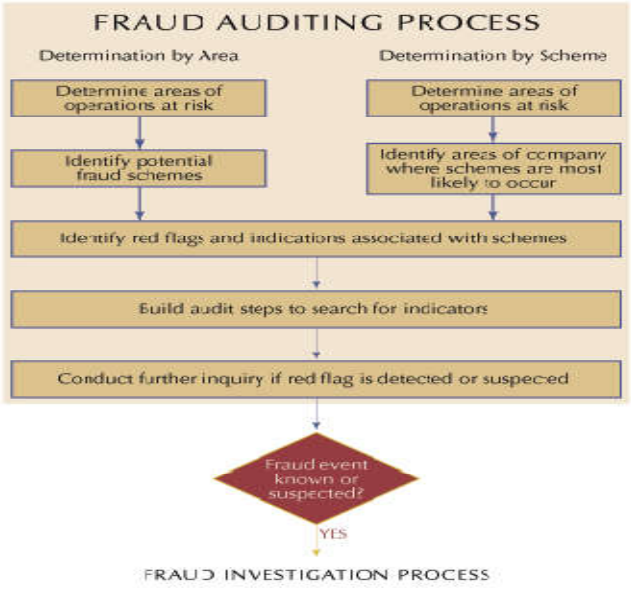
Data mining: In government / public procurement, data mining is being used for auditing in order to monitor the system like : issuing bids and to identify red flags, patterns of collusion and false information. It is also used to identify 'corrupt intent' in payments or transactions through data visualization. The use of anti-corruption software as a tools being designed specifically for detecting and responding to fraud, including "intelligent mining" of data sets and administrative procedures to cross-checks data from various public and private institutions. This software helps to identify projects susceptible to risks of fraud, conflict of interests or irregularities. The effective integration of these tools into the e-governance / e-procurement practices of the governments would not only enhance decision making but also bring greater transparency through the simplification of processes.

(Mobile applications: The tactics used by cyber-criminals to target financial institutions / customers is a big cyber-threat? But technological innovation brings promise and excitement to the financial services industry, which also brings new opportunities for fraudsters and hackers. The following five trends are expected to see in the future of cyber security.

Table 1. Major frauds reported in India after independence

Sr No	Scam	Year	Amount (Rs Crore)	State / Sector	Scammer/s / Main accused
1	Jeep Scandal	1948	0.80	Army	V K Krishna Menon
2	Mundhra Scam	1958	12.4	Share –Stock Market	Haridas Mundhra
3	Nagarwala Scandal	1971	0.60	Bank	Rustom Sohrab Nagarwala and Ved Prakash Malhotra
4	Cement Scam	1981	30	Industry	A R Antulay
5	Fodder Scam	1985 - 1996	950	Bihar : Animal Husbandry	Lalu Prasad Yadav, Jagannath Mishra, Jagdish Sharma
6	Bofors Scandal	1987	1500	Defence	Rajeev Gandhi and Others
7	Hawala Scandal	1988 - 1991	2000	Illegal transfer of money	L. K. Advani, Balram Jakhar, V. C. Shukla, Madan Lal Khurana and Others
8	Harshad Mehta Security Scam	1992	4000	Stock Exchange	Harshad Mehta
9	Telecom Scam	1996	30	Telecom	Sukh Ram Sharma
10	Navy War Room Leak Scandal	2006	18,000	Defense Sector	Abhishek Verma, Ravi Shankaran
11	2G Scam	2008	1,76,000	National	A. Raja, Nira Radia, M K Kanimozhi
12	Satyam Scam	2009	7,000	Software	Ramlinga Raju
13	Common Wealth Games Scam	2010	70,000	Delhi : Sports	Suresh Kalamadi, Shiela Dikshit
14	Arms Deal Scandal	2012	80,000	Delhi : Defense Sector	Abhishek Verma and Anca Verma
15	Coal Scam	2012	1,85,591	National	Private Co. and State Electricity Boards
16	NRHM Scam	2012	10,000	Uttar Pradesh	Mayavati, Babu Singh Kushwaha
17	Saradha Group Financial Scandal	2013	40,000	West Bengal : Chit Fund	Kunal Ghosh, Sudipto Sen, Madan Mitra and others

Source : Anonymous (2016); Anonymous (2017,a); Anonymous (2017,c)



Source: Anonymous (2009)

Figure 1. Fraud Investigation Process

Risk-based authentication in the Cloud

The protection against attacks by vectors is possible for financial institutions and is easier to respond against known malware attacks through outsourced protection or moved into the cloud. The cloud providers can provide you lot of background information about attacks and it may not hit to you, but can hit others. The cloud security providers can muster more comprehensive defense.

Biometric-powered bank applications

The common problem of all is to remember the password, which is easy to store in an unprotected area.

But if an application goes to extreme lengths to avoid storing usernames and passwords within its protected data area, it's hard to stop users from pasting their passwords into an unencrypted notebook page. However, biometrics technique is easier than remembering (or copying and pasting) a password. One approach to biometrics is voiceprint ID, in which the user is asked to repeat a phrase or a series of digits. The main drawbacks of voiceprint IDs is that the user may not be in a quiet area conducive to providing a clean sound sample, which otherwise might be vulnerable to "replay attacks" with the current level of technology. The another potential vector is to register facial biometrics as a movie. "You'd rotate your head to the left, and then do a 180-degree rotation to the right,".

"At the time of registration, the system will built a three-dimensional model based on that. Then, when you authenticate, you can compare two 3-D images of a head instead of just two 2-D images." The technique is good if used properly, but some times may trouble you due to many reasons.

Credit cards with token generators

The main problem with the device is that it is bulky and you could get your one-time password from the credit card in your wallet? It's size is same as that of a credit card. If deployed at scale, the production costs could be reduced significantly while offering strong protection against fraud.

Forensic tools

As per United Nation's Sustainable Development Goals, the investment to improve data for monitoring and accountability shall be increased, which will help to create a global 'Network of Data Innovation Networks' that would bring organizations and experts together to contribute in adoption of best practices for monitoring and improving the efficiency. In the public / private sector, forensic tools are being employed to combat corruption along with technological advances. These tools are increasingly sophisticated enough to handle data velocities as they can involve real-time analyses of transactions, predictive modeling, anomaly detection and risk-scoring algorithms seek to flag or stop potentially improper payments much sooner in their procure-to-pay processes.

To strengthen internal processes and prevent fraudulent practices, data analytics are able to periodically investigate transactions in procurement and payment models, check for anomalies and quickly identify suspicious transactions, such as illicit financial flows. Other benefits of technology that lead to detection and prevention include the automation of processes that remove human agents, e.g. contracting officials and corruption opportunities from procurement operations. The process for development of sophisticated tools and next generation software to detect red flags and mitigate risks will be easier.

Financial fraud investigating process

To investigate the financial fraud Internal Audit teams should take steps to prevent fraud and detection measures for which priorities of action is summarized here as below :

- Prepare a profile of potential frauds
- Examined transactional data for possible indicators of fraud
- Implement the continuous auditing and monitoring system
- Communicate the monitoring activity throughout the organization
- Provide management with immediate notification when things are going wrong
- Fix any broken controls immediately

Financial analysis of balance sheets as well as financial data by the expert shall be carried out periodically and comparative results should be compare with similar enterprises operating in the same geographical region.

Along with this financial statement analysis of company's financial reports can help investigators to discover and examine unexpected relationships in financial information. The fraud investigation process as explain in the Figure-1 may also be follow for better results from the enterprises or company, particularly non profit companies.

Conclusion

Under the present scenario, financial analysis technique will be helpful in financial management. It is also important to avoid the financial fraud and might be prove best guide to run the enterprises profitably. The types of fraud, detection of fraud and technological intervention in detection of financial fraud will be highly effective to run the business profitably.

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