

USAGE AND PERCEPTIONS OF FRAUD DETECTION AND PREVENTIVE METHODS: EVIDENCE FROM MAURITIUS

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ABSTRACT

The aim of this study is to assess the extent to which junior auditors, senior auditors and professional accountants use fraud prevention and detection methods, and their opinions regarding the effectiveness of these methods in the Mauritian context. A questionnaire was designed and sent to ten most reputed companies including the Big 4 firms. 120 junior auditors, senior auditors and professional accountants responded successfully. The results shows that the techniques mostly adopted to combat fraud are bank reconciliation, staff rotation, cash reviews and password protection. However, virus protection, discovery sampling, reference checks on employees and vendor contract reviews were not often used. In contrast to other prior studies, methods which were frequently used on overall were the ones which have highest mean effectiveness ratings. This study sheds light on the least and most frequent fraud detection and prevention methods used in Mauritius by accounting practitioners. Organization should concentrate on creating an integrated strategy to combat and control any kind of potential risks instead of dealing with each issue separately. Also, organizations should weight up the significant intangible benefits against direct costs of combating fraud. Moreover, organizations should make sure that each abide to the policies and are well aware of the consequences of any malpractice. Finally, this study adds to the existing literature on perceptions of fraud detection methods. To the authors' prior knowledge, this is the first formal study in the Mauritian context.

JEL: M40, M49

KEYWORDS: Forensic Accounting, Internal Auditing, Fraud, Mauritius

INTRODUCTION

Fraud is defined differently depending on the context. The most common way of definition is derived as a false representation, act of dishonesty or an intentional step of deceit with the aim to gain an unfair advantage. As stated by Thomas and Gibson (2003), despite the fact that larger firms are more exposed to financial crimes and frauds, the smaller enterprises are also attained by such malpractices where the impact is however more serious as the damage is not easily recovered due to lack of finance and other constraints. Being involved in fraudulent activities may prove to be very costly for an organization in terms of the firm's image, the employee's motivation and may even worsen the relationship with different external stakeholders. Therefore, many organizations take different initiatives to eliminate the risks of fraud which are not necessary effective as they have a tendency to handle each case individually instead of implementing a long run strategy to combat the overall problem. The failure of internal auditing system to prevent such malpractice has led to the use a more effective system known as the forensic accounting.

According to the KPMG's fraud survey (2003), more companies have been lately confronting incidents of fraud than in previous years. This view concurs with PWC (2009) report which further added that the global economic accounting fraud has become more alarming. As such, measures have to be adapted to combat fraud and new antifraud initiatives and programs.

Based on by Bierstaker et al (2006), "The growth in fraud cases indicates that a strong need exists for research approaches that better enable auditors and investigators to prevent". Given the importance of this topic, there have not been till now any relevant formal study in Mauritius. To this end, this study looks at the different methods adopted in fraud detection and preventive methods in the organizations along with its effectiveness.

The remainder of this paper is organized as follows. The next section reviews prior research related to fraud detection and prevention methods. Thereafter, we discuss on the design, sample and research methods used in this study. The fourth section analyzes the data collected while the last section concludes the study.

LITERATURE REVIEW

Fraud is the act of cheat or misleading others in order to gain an advantage, which is categorized in two ways known as the misappropriation of assets where the physical assets of an organization is stolen or used for personal use and the fraudulent financial report where information is manipulated. Based on ACFE report (2012), approximately \$3.5 trillion around the world were lost out of fraud, misuse of assets and corruptions. Added to this, a survey designed by KPMG (1998), for CEO and CFO determined that 5000 reputed US companies loss on average \$116 000 per fraudulent incident while it is estimated that around \$600 billion are lost annually by US companies in fraud or theft. The most cited case of fraud is the case of Enron (2001) and the case of WorldCom (2001). Sherman (1999) hence claimed that due to these increase in worldwide scandals, awareness of fraud has been propagated and that auditors have been assigned the duties to investigate and report any suspicious activity, which however is not the situation despite the implementation of Sarbanes Oxley Act (2002) which as per Andersen (2004), focus mainly on punishment and accountability rather than insisting on ways to prevent frauds. The forensic accounting has therefore been introduced to prevent such malpractices and as stated by Bhasin (2007), the accountants are required to have adequate skills beyond the numerical transactions. The illegal acts determine the evidences and have the ability to handle any accounting crime.

There are indeed a number of studies carried in different countries to look at the views and impact of fraud. For instance, Modogu (2013), in a study of financial fraud and forensic accounting in Nigeria emphasizes on the rising level of fraudulent activities, which is nowadays considered to be normal in the environment. The research hence proposed to look at the effectiveness of forensic accounting in controlling fraud and what are the measures required to improve the situation. A survey was designed and circulated 143 auditors, preparers and users of financial statements. The responses proved that the majority of the candidates agreed with the effectiveness of forensic accounting in controlling fraud and improving the reporting system but that the accountants is bound to be vigilant in order to resolve the problems. It was also recommended that different association and the government should engage themselves to propagate awareness of forensic accounting and encourage the formulation and specialization in this particular field. Another study by Bierstaker et al. (2006) emphasizes on the accountant's perception with regards to fraud detection and prevention methods in the US. The project was based on a survey which was circulated to accountants, internal auditors and certified fraud examiners where 86 individuals successfully responded. The result proved that virus and password protection, firewalls, internal control were the most effective methods adopted to combat fraud, while forensic accountants, digital analysis, staff rotation, data mining and employment contracts are rated as

the least effective. It is hence recommended that the accountants should explore the usefulness of the techniques and methods defined to better monitor and control frauds.

Techniques Used by to Combat Fraud

As stated by Bierstaker et al (2006), there are various common methods utilized by external auditors to combat fraud and some are as follows.

Staff rotation: Staff rotation is the process of rotating the employees regularly. This technique help in reducing the risks as the delegated tasks will be assigned to someone else at an interval. The staffs would hence hesitate to commit an illegal act reducing the risk of fraud as the employees are conscious that there is a higher probability that the fraud and he culprit is exposed.

Inventory observation: Inventory is generally dealt with in large volumes giving rise to the exposure of risks, as many employees can have access and may case a fraudulent act. Inventor observation is hence very important as it validates the quantity received and each movement of the inventory is recorded to be observed to detect any misuse of the asset.

Bank reconciliation: This method looks at matching the cash balance of the bank with the statements of the company. If the two balances are not equal, investigation is made to determine the reason which might be a cause of fraud or an arithmetical error. As such the reason of the mismatch is find out. The reconciliation should however be made by an independent person not having the responsibility of book keeping to avoid a bias result to cover their mistakes.

Fraud reporting policy: It is important for any organization to create and respect a specified policy concerning fraud known as the fraud policy. This policy is not included in other policies such as code of ethics and of corporate governance so as to clearly guide the employees of their actions and its consequence on the firm's performance. The organization should however make sure that each employee is aware of the composition of the policy and have understood the guidelines defined.

Employee reference checks: This method is about the employer considering the background and the previous employment of the person to be employed. The references are contacted so as to avoid employing a dishonest person and to have feedback about the person. It is better the employer calls the previous organization itself to ask for the reference to have information instead of calling the reference directly as it may be a misrepresentation.

Vendor Contracts: It is also a good measure to regularly review contracts and agreements made with the different stakeholders. This will help the employees and others to be aware of their rights and the consequences of their acts, which would finally reduce the exposure to bribery, enjoying undeserved personal benefits or other kinds of fraud.

Cash reviews: The cash reviews is about checking and ensuring the amount being transacted is accurate. This process therefore requires the authorization of two executives simply to ensure no employee is being treated more favorably than others. The amount being transferred is hence checked twice as a preventive measure.

Virus protection: Cybercrimes has been increasing along with the modern way of doing business online. The situation thus requires more precaution and an increase in the security level to avoid hacking and other such malpractices. If an unknown user is detected who is trying to collect information, a firewall software can hence be set to control the overall access and preventing the possibility to transmit information while the firewall hardware make the IP address invisible to other parties which reduces the potential risks.

Financial ratios: The enterprise usually observes the trend of their ratios which may also be predicted. A sudden unexpected change may be caused by a fraudulent activity. The accountants of the firms should hence conduct an analytical review where a depth investigation of the financial statements is carried out to detect the source and find remedial actions. Different ratios are calculated to analyze different assets and liabilities.

Discovery sample: Discovery sampling is the technique where a sample population is targeted and observed the trend so as to find out if it includes any sign of fraudulent activity. Even if a minor situation of fraud is noted, the process is interrupted for further investigation to determine the source and the culprit.

Password protection: Furthermore, since more frauds are being committed through the use of internet, more protection is required in the e-commerce sector. The principle preventive act is hence the process of integrating the password approval which despite being an ancient defense is still the most effective tool in detecting and combating fraud. Modern ways of inputting password is by using biometric information to identify the respective user such as fingerprint or even voiceprints. The auditors should also make sure that only their respective employees have access to the network and that their identity and transactions are recorded.

Forensic accounting: Despite the existence of these techniques, fraudulent activities are still prevailing giving reason to adopt the forensic accounting as it consists of in depth investigations to unveil the criminal activities and the culprit. Considering the methods adopted by forensic accountant, the first method is the interview technique which as defined by Bronner (2011), is the process of making the suspect confesses his offence. The culprit is questioned and all the minor reaction is observed. The next factor is data mining techniques stated by Clayton et al (2006), where the accountants study the trends of transactions and if suspicion occurs due to a curious activity, an investigation is carried out. There is also a specified software known as metadata used to record details of computer files which shows detail of a transaction and the user modifying the record. Finally as per the view of Smith (2005), financial fraud is linked to the use of computers and as defined by Gavish (2007) and Dixon (2007), computer forensic is an effective tool to prevent such malpractices as it is the process of detecting and to prevent crimes which is recorded digitally.

However previous research such as Ernst & Young (2003), proved that despite being a very effective method, only around 20% of organizations around the world adopted forensic accounting to combat fraud. Also, according to Sonkushre (2012), the process of forensic accounting involves analysis of the statements of the organizations which is subject to violation of confidentiality, despite being against the rules and that the computer system required for the forensic accounting is expensive which a matter of concern for an organization.

DATA AND METHODOLOGY

The purpose of this study is to consider the extent to which the fraud prevention and detection methods are used by accountants and auditors in Mauritius. Questionnaires were designed to determine to know what are the techniques and measures considered in order to combat financial fraud. The questionnaire was designed following mainly the study of Bierstaker et al (2006). In order to meet the objectives set, both primary and secondary data collection methods were adopted as information were also collected from articles, past research papers and websites. Questions were set both ordinal and nominal types where the data collected were ultimately analyzed and represented using the software SPSS package.

The survey was conducted during 2015 and questionnaires were physically distributed to 10 reputed companies including the Big 4 firms obtained from Financial Reporting Council Online. The targeted

number of respondents was initially set at 200. However, only 120 employees mainly senior auditors, junior auditors and professional accountants responded successfully to the questions.

RESULTS

This section analyses the data collected. The demographic factors are determined and the techniques adopted to prevent fraud along with its effectiveness are evaluated.

Demographics Factors

As shown by Table 1, there are in all 120 participants and about 73% of them are from the age group of 21-30, followed by the age group of 31-40 with a percentage of 16.7. It was also noted that 64 respondents had only an undergraduate degree as qualifications while 28 had a postgraduate or ACCA qualifications. Although a quite high number of respondents had limited working experience (less than 1 year experience), there were more than 50% of the respondent who had more than one year experience. Overall, participants are dissimilar in terms of their years of experience, certifications held and age groups.

Table 1: Demographic Profile of Respondents

		Frequency	Percent
Age group	up to 20 years	6	5.0
	21 to 30	88	73.3
	31 to 40	20	16.7
	41 and above	6	5.0
Qualifications	Undergraduate	64	53.3
	Postgraduate	28	23.3
	Other-ACCA	28	23.3
Years of experience	Less than 1 year	44	36.7
	1-5 years	50	41.7
	6-10 years	19	15.8
	Above 10years	7	5.8

This table shows the respondents' personal characteristics from the survey.

Tools and Techniques Adopted by Traditional Auditors

Participants were asked to indicate the different methods used by their companies to detect and combat fraud. These measures were reference checks on employees, virus protection, vendor contract reviews, financial ratios, discovery sampling, staff rotation, fraud reporting policy, password protection, inventory observation, bank reconciliations and Cash reviews. In addition, respondents were asked to consider the effectiveness of these anti-fraud detection procedures used in their companies on a scale from 1 (completely effective) to 5 (completely ineffective). The results obtained are shown in Table 2 and the items are ranked in terms of their usage.

The most commonly (more than 80% usage) used methods to prevent fraud is bank reconciliation, staff rotation, cash reviews and password protection while the least methods which are used are virus

protection, discovery sampling, reference checks on employees and vendor contract reviews. The results are in sharp contrast with Bierstaker et al. (2006) where virus protection was the most commonly used method in the US. One could infer that most companies do not adequately make use of these fraud detection and preventive methods in Mauritius due to the fact that these methods might be perceived to bring additional high administrative costs. With regards to the effectiveness of the fraud detection methods, there seems to be a general consensus that most the methods are quite effective with all mean score being less than 3. The most effective methods to combat fraud seem to be the cash reviews, bank reconciliation and password protection. It seems that on overall, the most effective methods are being mainly used in Mauritius given that there is more than 70% usage for the top six most effective methods.

Table 2: Usage and Effectiveness of the Techniques to Combat Fraud

Techniques of Combating Fraud	% of Usage	Mean Effectiveness	Effective Ranking
Bank reconciliations	89.20%	2	2
Staff rotation	89%	2.267	6
Cash reviews	86.70%	1.942	1
Password protection	84.20%	2.15	3
Inventory observation	76%	2.15	4
Financial ratios	75%	2.4	7
Fraud reporting policy	73.20%	2.267	5
Vendor contract reviews	67.50%	2.417	9
Reference checks on employees	62.50%	2.433	11
Discovery sampling	61.70%	2.41	8
Virus protection	57.50%	2.425	10

This table shows the respondents' views on the usage and effectiveness of the techniques to combat fraud.

Demographic Factors, Usage and Effectiveness of the Techniques to Combat Fraud

Analysis is conducted to assess on whether the perception on the degree of effectiveness and usage of those anti-fraud methods are dependent on the different profile of the respondents. The aim is to validate whether there is a general consensus on the perceptions of the fraud detection and preventive methods. The Pearson Chi Square tests have been conducted to determine whether the effectiveness and usage of the techniques is associated with the demographic profile of the respondents. As illustrated by Table 3 and 4, the significant value was determined for each factor with respect to the age groups, qualifications and years of experience of the respondents. From Table 3, one can observe that there is no association between age groups and the perception on the usage of anti-fraud methods. With the exception of fraud reporting policy, there are no association between the level of qualifications and the techniques of combating fraud. Similarly, accountants with varying years of experience seem not to influence the usage of anti-fraud policy except for cash reviews.

With regards to the effectiveness as shown in Table 4, the age group has no association at all with any techniques to combat fraud implying that the effectiveness is define the same way for the different accountant of different age groups. Based on the qualifications of the accountants, only the password protection is associated as the methods in combating fraud with a significant value less than 5%. As such, respondent with different qualifications react differently to this specified method. Based on the respondents' years of experience, perceptions seem consistent overall except for the financial ratios technique. On overall, with very few exceptions, there seems to be a general agreement and perceptions on the use and effectiveness of anti-fraud measures, irrespective of the profile of the respondents.

Table 3: Demographic Profile and Usage of the Techniques to Combat Fraud

Techniques of Combating Fraud	Age Group		Qualifications		Years of Experience	
	Chi-Square	Sig.	Chi-Square	Sig.	Chi-Square	Sig.
Staff rotation	12.656	0.395	13.361	0.100	18.356	0.303
Inventory observation	12.705	0.176	5.990	0.424	14.384	0.277
Bank reconciliations	9.189	0.420	9.108	0.168	12.913	0.375
Fraud reporting policy	5.093	0.826	16.680	0.011**	17.958	0.117
Reference checks on employees	9.800	0.634	5.879	0.661	18.361	0.303
Vendor contract reviews	3.531	0.939	6.563	0.363	8.480	0.747
Cash reviews	11.814	0.224	3.398	0.757	19.331	0.081*
Virus protection	12.864	0.379	6.524	0.589	8.926	0.916
Financial ratios	4.345	0.887	1.589	0.953	13.095	0.362
Discovery sampling	5.319	0.806	8.043	0.235	11.808	0.461
Password protection	5.146	0.821	3.576	0.734	12.674	0.393

This table shows the relationship between the usage of the techniques to combat fraud and the demographic profile of the respondents. *, ** and *** indicate significance at the ten, five and one percent levels respectively.

Table 4: Demographic Profile and Effectiveness of the Techniques to Combat Fraud

Techniques of Combating Fraud	Age Group		Qualifications		Years of Experience	
	Chi-Square	Sig.	Chi-Square	Sig.	Chi-Square	Sig.
Staff rotation	4.937 ^a	0.960	7.427 ^a	0.491	12.835 ^a	0.381
Inventory observation	12.561 ^a	0.183	6.266 ^a	0.394	6.036 ^a	0.736
Bank reconciliations	6.103 ^a	0.730	4.608 ^a	0.595	5.565 ^a	0.783
Fraud reporting policy	19.879^a	0.069*	9.268 ^a	0.320	16.682 ^a	0.162
Reference checks on employees	8.001 ^a	0.785	8.996 ^a	0.343	10.650 ^a	0.559
Vendor contract reviews	4.854 ^a	0.847	3.953 ^a	0.683	5.159 ^a	0.820
Cash reviews	6.677 ^a	0.671	1.933 ^a	0.926	13.723 ^a	0.133
Virus protection	15.239 ^a	0.229	6.679 ^a	0.572	11.747 ^a	0.466
Financial ratios	9.478 ^a	0.662	6.295 ^a	0.614	35.709^a	0.000***
Discovery sampling	14.275 ^a	0.283	5.142 ^a	0.742	10.715 ^a	0.553
Password protection	5.752 ^a	0.928	16.958^a	0.031**	7.962 ^a	0.788

This table shows the relationship between the effectiveness of the techniques to combat fraud and the demographic profile of the respondents. *, ** and *** indicate significance at the ten, five and one percent levels respectively.

Firm Size and Anti-Fraud Methods

From the previous discussion, the data was collected based on 120 surveyed participants working in 10 reputed firms which included the big four companies in Mauritius. Based on Bierstaker et al. (2006), “it was expected that firms with greater revenues would have more resources to devote to technology and fraud prevention, thus accountants’ use of these methods should be greater at larger firms”. To this end, the usage of anti fraud methods was analyzed based on the firm’s size. The results are shown in Table 5.

Table 5: Firm Size and Usage of the Techniques to Combat Fraud

Techniques of Combating Fraud	% of Usage Overall	% of Usage Big 4 Firms	% of Usage Other Firms
Bank reconciliations	89.20%	83.33%	92.31%
Staff rotation	89%	90.48%	84.62%
Cash reviews	86.70%	88.10%	82.05%
Password protection	84.20%	78.57%	73.08%
Inventory observation	76%	69.05%	76.92%
Financial ratios	75%	80.95%	69.23%
Fraud reporting policy	73.20%	69.05%	66.67%
Vendor contract reviews	67.50%	59.52%	65.38%
Reference checks on employees	62.50%	69.05%	58.97%
Discovery sampling	61.70%	71.43%	56.41%
Virus protection	57.50%	66.67%	52.56%

This table shows the relationship between the usage of the techniques to combat fraud and firm size.

One clear pattern which is observed is that the most preferred methods from accountants seems to be bank reconciliation, staff rotation and cash reviews irrespective of firm's size. However, virus protection seems to be a much more common practice use from big 4 firms. Essentially, these results are consistent with the fact that smaller companies are reluctant to invest in anti-fraud technology because of concerns about cost. Smaller firms have also a tendency to do reference checks on employees. According to Thomas and Gibson (2003), anti-fraud measures are much more needed for smaller entities since fraud may be costlier to them.

CONCLUDING COMMENTS

This study emphasizes on the use and effectiveness of different techniques adopted by companies to reduce the scope of fraud and malpractices within an organization. As per the findings, the techniques mostly adopted to combat fraud are bank reconciliation, staff rotation, cash reviews and password protection. However, virus protection, discovery sampling, reference checks on employees and vendor contract reviews are less often used. With regards to the effectiveness of these methods, the results suggest that the most perceived effective methods on overall seem to the ones which are frequently used. It was also found that virus protection is most frequently used in larger firms rather than smaller ones. Also, smaller firms seem to have less recourse on reference checks on their employees. An implication of this finding could be the smaller firms should be more aware of the relative higher impact of fraud than larger ones. Organizations should weight up the significant intangible benefits against direct costs of combating fraud. Besides, organizations should make sure that each abide to the policies and are well aware of the consequences of any malpractice. Furthermore, this study sheds light on the least frequent fraud detection and prevention methods used in Mauritius by accounting practitioners. To this end, management could consider investing on these methods which are under utilized to enhance the effectiveness of their anti-fraud methods. To this end, organization should focus on creating an integrated strategy to combat and control any kind of potential risks instead of dealing with each issue separately. Furthermore, there could be different possible future research in terms of extending this study by either taking into account views from other types of practitioners or considering other firms in different sectors. Finally, one must recognize that the above study contains one main limitations in terms of the small sample size. However, the data is consistent based on the reliability tests undertaken.

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