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Forensic accounting: a blend of knowledge

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Abstract

Purpose – The purpose of this paper is to develop an insight into the skill sets that forensic accounting practitioners need to possess to succeed in the practice of forensic accounting.

Design/methodology/approach – The present paper is based on a literature review.

Findings – Forensic accounting education is multi-disciplinary. It encompasses auditing, accounting, statistics, information technology (IT), legal rules and human skills. It is similar to auditing, yet different. Hands-on statistical tools act like an additional equipment for quick delivery of the output when data are large. Proficiency in using IT tools is a must to detect cybercrimes. Human skills are gaining importance because of social engineering attacks. Forensic accountants must be acquainted and updated with the relevant laws. Various investigative skills and knowledge are also essential in forensic accounting.

Practical implications – Forensic accounting education can be developed as a separate discipline for proper regulation of forensic accounting profession. In that case, the need for development of separate forensic accounting standards may arise. This issue needs to be dwelt upon by the academia and professional bodies.

Originality/value – The paper will enable the universities/institutes to design the appropriate curricula, assigning due consideration to the required knowledge and skill sets in forensic accounting education.

Keywords Accounting, Forensic

Paper type Literature review

1. Introduction

Stewardship form of management, increased competition and pressure to show better results, etc. have given rise to corporate frauds (Cox and Weirich, 2002; Albrecht *et al.*, 2004). Sometimes fraud detection is accidental (Seidman, 1939). However, in today's era, it should not be a matter of chance. Frauds have several implications such as change of management personnel, fall in stock prices, delisting, bankruptcy, reduced productivity, legal charges and disruption, etc. It has necessitated a specialised field of study known as forensic accounting. Forensic accounting evolved in the USA. Its application in the corporate field was widely noticed in the late 1980s by the US Government, with increased litigation charges after the deregulation of the savings and loan industry, rising corporate frauds and white-collar crimes[1] (Carter, 1997; Carnes and Gierlasinski, 2001). However, it should not be construed as mere fraud detection work (Kahan, 2006). It is the socio-professional activities based on the techniques and skills of law, accounting, audit and assessment to handle and solve the problems of illegal encroachment, damages, value maintaining and value adding for legal purposes (Renzhou, 2011).

Broadly, forensic accountants render three kinds of services – consultancy, non-scientific testimony and investigative services (Glusman, 2007; D'aunno, 2009; Akkeren *et al.*, 2013). These services are not mutually exclusive. As consultants, they are retained by parties to handle disputes, bankruptcy, insolvency, reorganisation, settle

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insurance claims, consumer protection, arbitration, valuation and family disputes (Steinberg, 2007; Huber, 2014) and report manipulations in corporate filings (Watson, 2007). They act as a potential witness for non-scientific testimony, for fact-finding, collection of indisputable documents and evidence of criminal investigation in legal and administrative proceedings (Raghavan, 2014). They render investigative services to assist the fact-finder to detect accounting manipulations, assessment of the damages, corruption and negligence by employees and management[2]. Their services are essential for lawyers, police forces, insurance companies, government bodies, banks, courts, corporate houses and investors, among others (Figure 1).

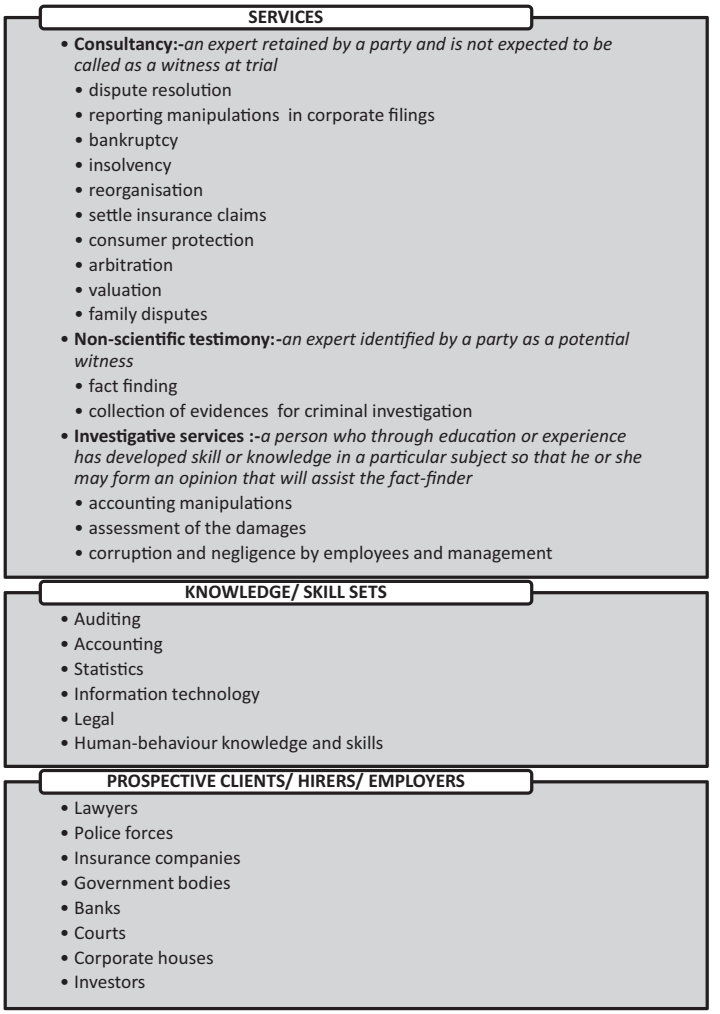

Figure 1.
Forensic accountant: services, skill sets and opportunities

Source: Compiled by the author

2. The context

In many countries including Australia, Canada (Quebec), Ireland, South Africa and India, forensic accounting services are rendered by the members of the professional accounting bodies (such as Chartered Accountants). They undergo diploma programmes, training, certificate courses, etc. in forensic accounting (Akkeren and Tarr, 2014; Gosselin, 2014; Brennan, 2014; McIntyre *et al.*, 2014; http://cit.icai.org/FAFD.html). Forensic accounting courses are often offered as upper-class electives (Seda and Kramer, 2014). In the USA, forensic accounting profession/industry is unregulated, as forensic accountants need not necessarily be public accountants. They come from various professions, such as auditors, accountants, fraud investigators, loss prevention specialists, attorneys, educators and criminologists (Carnes and Gierlasinski, 2001). They may hold multiple certifications (Huber, 2014, 2015). To bring uniformity and general acceptability of forensic accountants as an independent profession, it is vital that forensic accounting education is developed as a separate discipline. However, there appears to be no consensus among various stakeholders regarding the qualification of forensic accountants and ideal content of forensic accounting curriculum (Seda and Kramer, 2015).

3. Objective

The purpose of this paper is to develop an insight into forensic accounting education, highlighting the skill sets that forensic accounting practitioners need to possess to succeed at the practice of forensic accounting.

4. Discussion

The growing need for forensic accounting experts has necessitated the adoption of a formal approach to forensic accounting education (Seda and Kramer, 2014; Matson, 2016). The curriculum for forensic accounting education must be comprehensive (West Virginia University, 2007; Shanikat and Khan, 2013; Lang *et al.*, 2014; Clements and Knudstrup, 2016).

Forensic accounting education enhances students' creative ability (Lee *et al.*, 2015). A broad range of personal attributes and knowledge base including written and oral communication, interviewing techniques, specialised computer skills and investigative skills is crucial for forensic accountant (Akkeren *et al.*, 2013). Case-/problem-based approach can be one of the effective modes in forensic accounting education (Coller *et al.*, 2004; Brezina *et al.*, 2012).

To bridge the gap between demand and supply of efficient forensic accountants, enhanced research approaches are crucial (Carnes and Gierlasinski, 2001; Bierstaker *et al.*, 2006). Forensic accountants use auditing, accounting, statistics, information technology, legal and human behaviour skills. The present paper is an attempt to describe the relevance of the different subject knowledge (and skills) in forensic accounting education.

4.1 Accounting tools

"Why" fraud is dealt by a psychiatrist and "how" is it a concern for the accountant (Seidman, 1939). Forensic experts should have competence in accounting and independence in examining the records (Dykeman, 1982 cited in Horngren, 1983), otherwise, it may lead to wastage of time and resources. For example, a record which seems like a fraud in the first place may prove to be a normal practice as per that country's local conventions of accounting (Chattopadhyay, 2014). To ensure that the records are fraudulently tailored, the forensic accountants have to be well acquainted with the country's accounting conventions, relevant accounting standards and assumptions. For instance, the real estate companies in India were suspected of accounting frauds because of the uncertainty involved with the percentage calculation method of revenue collection (The Economic Times, 2011). Again, accounting

knowledge is vital to ascertain secret profits and personal gains made by corporate houses such as related party transactions. These are often made by the management to expropriate for themselves a higher than proportionate share of the wealth created in the company and in its wealth-creating assets[3]. Knowledge of accounting is vital for effective analysis of historical and projected financial statements during business valuations by the forensic accountant (Rasmussen and Leauanae, 2004).

Accounting ratios are effective in signalling irregularities. The gross margin index, the sales growth index and the accounts receivable index are recommended for fraud detection (Grove and Basilico, 2008). Further, six well-known ratios and models – Quality of Earnings, Quality of Revenues, Sloan Accrual, Altman Bankruptcy (Z-scores), Beneish and Dechow Fraud Models (F-scores) can be used for fraud prediction (Elam, 1975; Grove *et al.*, 2010; Grove and Victoravich, 2014; Grove and Clouse, 2014; Grove *et al.*, 2016). These red flag models combined together or coupled with ratings and rating changes are considered good predictors of bankruptcy and insolvency (Pottier, 1998; Chen and Shimerda, 1981; Wilcox, 1971). If these are calculated and compared over a period of time, it might give a clue for possibility of frauds for further investigation. However, Kaminski *et al.* (2004) opine that financial ratios have limited ability to detect and/or predict frauds.

4.2 Auditing tools

Even though basic knowledge of accounting and auditing techniques is a prerequisite, forensic accounting goes beyond auditing (Arens and Elder, 2006; DiGabriele, 2009; Raghavan, 2014; Singh, 2012; Popoola *et al.*, 2014). Auditors try to figure out deliberate misstatements, whereas forensic accountants look for the misstatements recorded deliberately (Singh, 2012; Rezaee *et al.*, 2016). Auditing is a regular and periodic affair and has inherent cost constraints, but forensic accounting is need-based and is availed even at high prices (Ratner, 1995; Golden *et al.*, 2006; DiGabriele, 2009; Basu, 2014; Colon, 2015). Auditors, as an element of management/employee, often fail to give qualified audit report because of fee pressure, lack of time, collusion and lobbying (Matsumura and Tucker, 1992; Carnes and Keithley, 1993; Patterson and Smith, 2007; Suresh, 2014; Ettredge *et al.*, 2014; Silviu and Timea, 2015).

The question is whether fraud detection is the responsibility of an auditor or the organisation has to incur an additional cost of employing a forensic accounting expert? The difference between audit and forensic accounting lies in the fact that as per Generally Accepted Accounting Standards (GAAS) audit, the *objective* of the audit is to provide an overview of the financial statements in its entirety and report the deviations. Whereas, forensic accounting leads to identification and determination of the size of fraud. The *purpose* of GAAS audit is to serve the needs of the third-party users of financial statements. But, the *purpose* of forensic accounting comes into picture only when there is a reasonable suspicion of fraud. The *value* of GAAS audit lies in the fact that it adds trustworthiness to the reported financial statements. On the other hand, forensic accounting leads to resolving all doubts, and suspicions regarding fraud in the organization. For GAAS audit, the *sources of evidence* are inquiry, scrutiny and assessment of the recorded financial transactions to provide credibility to the financial statements. For forensic accounting, it is the detailed analysis of the financial statements. It includes both financial and non-financial records. A forensic accountant conducts interviews with the parties (including third parties) by relying on their intuition and expertise which may provide any sort of information. The forensic accountants search all records and try to determine the facts so as to prove the occurrence/non-occurrence of frauds. In case of GAAS audit, the *sufficiency of evidence* lies in providing reasonable assurance. In case of forensic accounting, it provides sufficient proof to either hold up or

disprove the doubts in respect of the fraud (Golden *et al.*, 2006). When the volume of data is large and digitized, predefined audit tests in combination with a data extraction tool is very useful (Wenig and Reinartz, 2011).

Independent medical exam and a medical audit; investigation of the site; recorded or sworn statements from the claimant, the insured and/or a witness to the accident; referral to a special investigative unit; and an activity check of the claimant are the tools used by forensic accountants handling insurance company cases (Tennyson and Salsas-Forn, 2002).

4.3 Statistical tools

Knowledge of statistical methods, model-fitting tests and data-mining techniques may help the forensic accountant in summarizing large data sets and locating the abnormalities. Widely used statistical tests include mode, binomial test in case of nominal data, and mean, variances, correlation, regression, etc. for interval and ratio scale data sets. These techniques are applied to predict the outcomes of a dependent variable with the help of a set of predictor variables from large historical data sets. The data-mining techniques can be predictive and descriptive. Descriptive data-mining techniques are applied to reduce internal fraud risk in selected business processes (Jans *et al.*, 2010), whereby the predictive statistical data-mining techniques detect anomalies in data sets. The descriptive data-mining techniques are used to describe the underlying association in the data such as association rules and clustering (Baesens *et al.*, 2009). Predictive techniques are used to predict value for a certain target variable, such as credit scoring to predict repayment behaviour of loan applicants[4], and logistic regression models, both binary and multinomial logit models, are used for detecting manipulation such as dishonest insurance claims (Olinsky *et al.*, 1996; Major and Riedinger, 2002; Artís *et al.*, 2002; Caudill *et al.*, 2005). Regression is used to predict the value of a continuous target variable such as stock price, credit loss and sales.

The statistical methods used for fraud detection can be broadly categorised as supervised and unsupervised. Data-mining techniques fall in the category of supervised methods. The supervised methods also include linear discriminant analysis and logistic discrimination, neural networks, rule-based methods, tree-based algorithms and link analysis. The unsupervised methods (used when there are no prior sets of legitimate and fraudulent observations) are digit analysis using Benford law. The Benford law, based on Newcomb' (1881) law of frequency of the natural numbers, is an easy, simple, objective and effective measure for detecting abnormalities in large data sets. It is based on the law of probability and relates to occurrence of the natural numbers 1, 2, 3 … 9 as the first digits. As per this law, digit 1 occurs nearly 30 per cent of the times and the occurrence of each successive digit is less frequent, with 9 appearing less than 5 per cent of the times. The deviation from the law signals irregularities and abnormalities. It holds good for parametric distributions (Leemis *et al.*, 2000). Data sets in ratio scale are best fit and data in nominal scale are not fit for this law (Benford, 1938; Cho *et al.*, 2007). It is proved to be an effective tool for detecting accounting frauds with increased application in computer design with mathematical modelling (Hill, 1995). Fraud can be detected by selecting some random data sets, and if irregularities are noticed, the investigator can probe further. Computer-assisted audit tools such as IDEA and ACL are also based on the Benford law (Singleton, 2011; Louwers, 2015). The Benford law thus, may be incorporated as an essential element in forensic accounting education curricula.

4.4 Information technology tools

The USA, Canada, UK, India and Australia are the top five countries ranked by the total number of cybercrime complaints received by Internet Crime Complaint Centre in the year 2013 (Federal Bureau of Investigation, 2013). The rise in cyber frauds has posed a challenge to auditors. Forensic accounting education should emphasise on equipping the experts with

software-embedded statistical IT tools. Digital analysis software based on the Benford law may be used to detect fraudulent transactions (Bierstaker *et al.*, 2006). "Logic bombs" is a strategy developed to prevent software piracy when installed into programs (Seetharaman *et al.*, 2004).

"Computer examinations" may enable the forensic accountants to detect cybercrimes. Through content examination, the type of data files can be determined, and comparison examination enables data files to be compared with known documents. Through transaction examination, the time and sequence of creation of the data files can be determined on a computer. Further, data files can be extracted and deleted data files can be recovered from the computer or computer storage media. Data files can be converted from one format to another. Other IT-related forensic examination tools include search of keywords in data files and its occurrences, recovery of passwords and their use to decrypt encoded files (Waggoner, 2007). Microsoft Access and Excel can also act as a primary data interrogation tools to find exceptions and irregularities (Bolton and Hand, 2002; Spangler *et al.*, 1999).

With increased integration and business-to-business transactions, outsourcing of business process, etc., the IT system of an organisation has become highly vulnerable for espionage. The American Institute of Certified Public Accountants and the Canadian Institute of Chartered Accountants have jointly derived a series of assurance services, i.e. "Trust Services", and provide for attestation over system reliability (SysTrust) (Sutton, 2006). The forensic accountants may also derive and use such system reliability services.

One of the efficient and effective digital forensic investigation models proposed by Valjarevic and Venter are the concurrent processes. These are comprehensive and expected to increase the admissibility of digital evidence in the court of law. The concurrent processes include obtaining proper authorization for investigation of each process, systematic documentation of each process performed, uninterrupted information flow among different investigators, preserving chain of custody, maintaining integrity of digital evidence and interaction with the physical investigation (Valjarevic and Venter, 2016).

Securing computer network and database by providing access to legitimate users only, and use of firewall protection, both at software and hardware levels, may also help in fraud prevention. Fraud-detection systems based on computer software have a high implementation cost and a cost-benefit analysis becomes crucial (Schiller, 2006).

4.5 Human behaviour skills

Literature reveals that accounting graduates possess technical and analytical skills, but they lack adequate generic skills such as team work, interpersonal and communication skills (Abayadeera and Watty, 2014). These skills are vital for forensic accountants, as they deal with both people and papers during their investigation process and brainstorming sessions[5] (Carpenter, 2007). Social engineering attacks are side-lining the internal control system of an organisation by gaining confidential information from its employees (Bakhski *et al.*, 2009; Brody *et al.*, 2012). The fraudsters influence and manipulate the employees by applying the human skills. A forensic accountant should have good command over the subjects like criminology and psychology (Shanikat and Khan, 2013). Knowledge of sociology is essential for detecting the clues leading to commitment of fraud, i.e. the behavioural aspects of fraudsters. They should have an understanding of the fraud-facilitating environment (Kleinman and Anandarajan, 2011). Forensic accountants should possess mentality, method and experience (Prabowo, 2013). They must be equipped with persistence, scepticism, surveillance tactics, puzzle skills, interrogative skills and investigative skills (McMullen and Sanche, 2010; Samuel *et al*, 2012). They must remain objective and neutral (Rezaee *et al.*, 2016). They should be able to withstand the pressures

(Prabowo, 2013). Ethics education is important for forensic accounting course for enabling them to overcome ethical dilemmas (Misiewicz, 2006).

4.6 Legal aspect

Forensic accountants take courts as their working field and provide expert testimony on financial litigation support for criminal or civil lawsuits (Renzhou, 2011; Domino *et al.*, 2015). Forensic accountants use economics, finance, business, taxation, legal concepts and procedures to deal with issues in question (Rezaee and Burton, 1997). A forensic accountant is one who assists in fact-finding and, in most cases, legal counsel for one of the parties, in understanding specific financial issues. Such an accountant will be skilled in analysing financial data and related transactions and putting them into context for the case at bar (Glusman, 2007; Rezaee *et al.*, 2016). Restrictions imposed by the regulatory bodies aim at better disclosure and increased transparency in management of company affairs. Some organisational-level policies and rules might also prove to be effective, such as, every organisation should frame a fraud policy and should obtain written acknowledgement from employees that they have read and understood the clauses. Another way could be use of telephone hotlines, employee reference checking, fraud vulnerability review to identify vulnerable assets, vendor contract reviews to identify conspiracies for personal gains (Bierstaker *et al.*, 2006; Holtfreter, 2005). Forensic accountants help the organisation legally, as it assists in the process of arbitration and/or any other form of litigation. Failure to detect frauds leads to monetary loss (through lawsuits) and/or loss of reputation from failure to detect fraud for the auditors. As the investigation under forensic accounting is admissible in the court of law, it helps the lawyer by providing them with thorough investigation reports of the situation including the different proofs essential to make the case stronger in the court of law. In case of forensic accountants, it can be acknowledged that they are skilful in finding out frauds. They are experts in placing the different evidence to substantiate their findings as per the laws laid down for the scams and frauds. The forensic accountants are able to locate the assets and unearth the funds of the organization. They are also expert in analysing and interpreting the transactions the fraudsters have recorded and proof it by documents and necessary information. The fraudsters are unable to find out that they are being investigated by the forensic accountants, as they do the investigation along with other jobs assigned to them. This is done so that the fraudsters do not get any idea regarding the investigation. The organizations in which both auditing and forensic accounting is a part of the accounting and internal control system, the people are more cautious and they avoid any wrongdoings (Chattopadhyay, 2014). The role of the forensic accountants is much complicated when they tend to prove a fraud. They must be up-to-date in their legal knowledge, relevant laws of the country and must be acquainted with courtroom procedures and litigation process (Rasmussen and Leauanae, 2004). Forensic accountant is authorised to use abnormal financial results and/or criminal referrals filed by external source, media reports, etc. Further, he may have access to information using the Right to Information Act prevalent in many nations (Calavita *et al.*, 1997).

5. Conclusion

Forensic accountants render consultancy, non-scientific testimony and investigative services. Their prospective employers include lawyers, police forces, insurance companies, government bodies, banks, courts, corporate houses and investors. They use auditing, accounting, statistics, IT, legal and human behaviour skills. Apart from acquiring these skills, the forensic accountant should possess strong instincts and at times should be able to identify the key indicators to unearth the possibility of frauds. For example, the

non-performing assets can be regarded as a key indicator in banking industry in case the number of defaulters is significantly high during the times when fraud is sensed.

The forensic accounting profession is neither regulated nor there is any consensus regarding the qualification of forensic accountants (Huber, 2013). But, the demand for forensic accountants is on the rise. It is important for a forensic accountant to possess relevant credentials. Thus, forensic accounting education should be developed as a separate discipline. Development of forensic accounting education as a separate discipline may help in proper regulation of forensic accounting profession. In that case, the need for development of separate forensic accounting standards may also arise[6] (Prabowo, 2013; Robertson *et al.*, 2014). The academia and professional bodies needs to discuss and deliberate these issues and bring consensus in developing the discipline of forensic accounting education.

Notes

1. The main players in the major corporate scandals, i.e. Waste management scandal in 1988, the year after the Treadway Commission report, the Association of Certified Fraud Examiners (ACFE) was established in the USA to educate and aid the work of individuals trained in the highly specialized aspects of detecting, investigating and deterring fraud and white-collar crime. The professionals have to undergo an extensive application process and on passing a uniform examination, members receive the CFE designation.
2. In 1998, Enron Scandal 2001, WorldCom Scandal 2002, Freddie Mac Scandal 2003, Lehman Brothers Scandal 2008, Bernie Madoff Scandal 2008, Satyam Scandal 2009, managers at the top level were involved, and in some cases, involvement of accountants and auditors was also revealed.
3. In India, as per Accounting Standard 18[4], the financial reports must reveal the details of such transactions. However, loopholes were observed in compliance of this accounting standard. Hence, the new Companies Act 2013 in India provided for approval by companies Board of Directors and mandatory disclosure in the Board's report to the shareholders about related party transactions.
4. On the basis of historical data with the objective of distinguishing good payers from defaulters.
5. These should be similar to brainstorming sessions of audit teams. According to the experiment by Carpenter (2007), these sessions generate more and new quality fraud ideas and higher fraud risk assessments than individual auditors.
6. In line with Australian forensic-specific standards. For details, please refer to Robertson *et al.* (2014).

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