

FRAUD: A REVIEW AND RESEARCH AGENDA

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ABSTRACT

Corporate scandals such as Enron, Tyco, WorldCom and Adelphia have drawn significant attention to the occurrence of fraud. This has implications for public interest as the prevalence and consequences of fraud may affect the shareholders, creditors and the public's confidence in the financial system. Much research has been published on various aspect of fraud. In this paper, we selected fraud articles published in accounting and management journals between 1996 and 2010 based on selected search phrases. We identified a total of 56 articles and perform content analysis on the fraud phenomenon in the articles, classified them into a number of fraud topics and eventually developed three fraud themes that encapsulate the fraud literature in the selected articles. The fraud themes from our content analysis are (1) Factors, Motivations and Antecedents of Fraud, (2) Auditor's Role in Fraud Detection and Prevention, and (3) Information Technology Fraud. In addition, we also noted how the research was done and what we have learned from the research that could help researchers better understand fraud. The opportunities identified from this review may allow researchers to explore important research agenda.

Keywords: Fraud, Corporate Scandal, Content Analysis

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INTRODUCTION

Corporate scandals such as Enron, Tyco, WorldCom and Adelphia have drawn significant attention to the occurrence of fraud. The Association of Certified Fraud Examiners (“ACFE”) estimated the amount of fraud-related losses reached US\$650 billion in 2006 (Wells, 2007). The prevalence and consequences of fraud affect the shareholders, creditors, auditors and the public’s confidence in the financial system, including the integrity of the financial statement (Rezaee, 2005).

Duffield and Grabosky (2001) defined fraud as an act involving deceit (such as intentional distortion of the truth or misrepresentation or concealment of a material fact) to gain an unfair advantage over another in order to secure something of value or deprive another of a right. It occurs when a perpetrator communicates false statements with the intent of defrauding a victim out of property or something of value (Vasiu and Vasiu, 2004).

To better understand fraud, we can examine fraud from various perspectives. For example, we can examine whether a fraud perpetrator is internal or external to the organization that suffered from the fraudulent acts. Fraud perpetrated by insiders is increasingly common. For example, 85 to 90 percent of Information Technology (“IT”) frauds are committed by perpetrators internal to the organization, including management and employees (Haugen and Selin, 1999).

Fraud may also be distinguished by its nature. A 2008 joint-report⁶ by The Institute of Internal Auditors (“IIA”), American Institute of Certified Public Accountants (“AICPA”) and ACFE offered the following sample fraud risk exposure taxonomy: (1) financial reporting fraud, (2) misappropriation of tangible assets, intangible assets or proprietary business opportunities, and (3) corruption, including bribery, gratuities, money laundering and embezzlement.

⁶ “Managing the Business Risk of Fraud: A Practical Guide”, available from all three organizations, for example, ACFE at <http://www.acfe.com/documents/managing-business-risk.pdf>, accessed 8 October 2011.

Others may categorize fraud into victim sector and subsectors (Levi, 2008). For instance, within the financial services sector, fraud may include cheque fraud, insurance fraud, lending fraud, procurement fraud. Whereas in the public sector, fraud may include benefit fraud, procurement fraud and other types of fraud.

THE INFLUENCE OF SOCIAL CONTEXT

Fraud must be studied within the social context and with all stakeholders. Fraud may impact individuals as well as the organizations fraud occur and is thus detrimental to society. For example, Sikka (2008) observed the widespread of 'enterprise culture' of indulging in fraudulent practices that demonstrated little regard for social norms and laws. Fan (2002) studied the business practices in China and attributed many instances of business fraud to the influence of "*guanxi*" (usually translated as relationship or connection) culture. Hyman (2001) identifies the complexity in effectively addressing healthcare fraud and attributed it to the evolving social context.

In addition, institutional structure, in particular, institutional trust also plays a significant role in fraud detection and prevention. Ratnasingam (2005) highlights the importance of creating institutional structures for online exchange relationships. Using the notion of institutional trust, effective governance mechanisms are developed to mitigate fraud prevention and detection in online business environment. Sikka (2004) views external audit as a trust-engendering technology that failure of which may undermine confidence in corporate governance. Therefore one can conclude ethical culture within organizations has a direct impact on the level of fraud risk. According to Anand et al. (2004), this may be due to the socialization practices that allow perpetrators of unethical activities to influence newcomers to accept fraudulent practices. Ashforth and Anand (2003) further classify the socialization practice into three processes: (1) cooptation, (2) incrementalism, and (3) compromise.

Besides institutional structure, the role of state regulation also has a role to play in fraud prevention and detection. Sikka (2008) argues that in an environment of poor regulation, enforcement and lack of ethical constraints, the occasional

investigations by financial regulators may not deter fraudsters in committing fraudulent activities. Baker (2003) examined the relationship between Enron and the deregulation of US energy industry and concludes that deregulation which fostered the creation of an unsustainable business model might have fuelled its fraudulent practices. Grandori (2004) suggests corporate governance is about wealth generation and risk management that requires continuous active market regulation. Pontell (2005) examined major financial debacles in the United States and concluded that corporate governance models and policies are needed to avoid future financial crises. According to Tonry (1998), the US government ignored white-collar crimes in favor of more visible street and violent crimes because of voters' growing concerns. As a result, because of the low probability of being caught, more people engaged in white-collar crimes.

Overall, it is clear one needs to consider the social context when examining the issue of fraud. It is with this knowledge we conduct our review of the fraud literature. Recognizing the impact of social context allows us to better understand and learn from the earlier fraud studies as we attempt to make sense of their findings and identify potential research opportunities.

Whilst one can find many fraud studies in the literature, we believe a review of the fraud literature can contribute by offering an insight into what kind of fraud was examined, how the research was done and what we have learned from the research that could help society better understand this ever-increasing problem. The opportunities identified from this review may also allow researchers to explore important research agendas related to fraud. To contribute to the development of a more cumulative knowledge base, we performed content analysis of accounting and management journal articles related to the topic of fraud.

The rest of the paper is organized as follows: First, we present our research method. This is followed by a summary of the fraud literature published in our stipulated period in major accounting and management academic refereed journals. We then provide an analysis of the three research themes identified and highlight several future research opportunities.

RESEARCH METHOD

The process of identifying and reviewing fraud studies involves two steps (Harris, 2001): identifying relevant articles to be examined; and determining the classification categories. Using the *Business Source Complete* database, we searched for publications whose titles, abstracts or keywords contain the selected search phrases by browsing major accounting and management journals⁷. In terms of period selection, we focused on the period between 1996 and 2010. According to Bales and Fox (2011), the annual cost of fraud has grown steadily over the past twelve years. For example, the cost of fraud in the United States has increased from \$400 billion in 1996 to over \$990 billion in 2008. This represents an increase of over 148 per cent. While we believe many of the fraudulent behaviours committed in the 1980s and early 1990s, may be adequately explained by fraud triangle and other fraud frameworks, the number of antecedents to fraud have increased in the past 15 years. This may be due to the growing complexity and creativity in financial markets and white-collar schemes and the rapid rise of online businesses and electronic commerce transactions (MacInnes et al., 2005). We admit the alarming rate of fraud occurrence and its evolving nature between 1996 and 2010 have influenced our selection of the fraud literature.

The search phrases used were: 'fraud', 'business fraud', 'fraudulent' and 'deception'. Abstracts of all articles identified were read by the authors to decide if they fall within the scope of this study. We excluded book chapters, working papers, and other articles not subjected to peer-review process. The selection process resulted in a total of 56 articles. The selected articles were then examined

⁷ Major accounting and management journals include: The Accounting Review, Critical Perspectives on Accounting, Journal of Accounting Research, Accounting, Organizations and Society, Accounting Horizons, Accounting, Auditing and Accountability Journal, Managerial Auditing Journal, Journal of Forensic Accounting, Journal of Accountancy, Academy of Management Review, Academy of Management Executive, Harvard Business Review, California Management Review, Journal of Management, IEEE Computer, Communications of the ACM, MIS Quarterly, International Journal of Electronic Commerce, Review of Business, Industrial Management and Data Systems, Journal of Consumer Affairs, Psychology & Marketing, and Journal of Business Ethics.

in-depth by the authors to determine the objective, methodology, major findings and contributions, and suggested future research directions. We began our review by reading all 56 articles and highlighting the descriptions that were related to the search phrases ‘fraud’, ‘business fraud’, ‘fraudulent’ and ‘deception’.

As shown in Table 1 below, our data analysis involved the following steps: (1) A phenomenon is defined in a tentative manner using topics identified from our literature review, (2) scanning text to identify fraud topics, (3) developing fraud themes, and (4) continually refining themes until all articles are accounted for.

	Step	Additional Description	Illustration
1	A phenomenon is defined in a tentative manner	Formulating provisional statements about the phenomenon	Our review of the fraud literature provided us with a working list of over 20 fraud topics, for example: determinants of fraud, auditor’s fraud judgments, prevention, and incidences of IT fraud.
2	Scanning text to identify fraud topics	Creating descriptive codes that require little or no inference beyond the text itself	We conducted line-by-line coding that helped us to focus on the content of the text in the line and allow us to identify fraud topics in the selected articles.
3	Developing fraud themes	Creating inferential codes that pull together text into smaller and more meaningful units	We analyzed the fraud topics in the articles and compared them across various articles. The analysis led us to derive our three research themes.
4	Continually refining fraud themes until all are accounted for	Refining and substantiating the emerging themes	Our iterative process continued until it was possible to comprehensively explain the three fraud research themes.

Table 1: A Summary of the Data Analysis Procedures Adopted in this Study

The final classified fraud topics and themes are shown in Table 2 below. The three fraud themes identified were (1) Factors, Motivations and Antecedents of

Fraud, (2) Auditor's Role in Fraud Detection and Prevention, and (3) Information Technology Fraud.

Fraud Themes	Fraud Topics (within the Fraud Theme)
1. Factors, Motivations and Antecedents of Fraud	Determinants of fraud Perspectives on fraud Psychology of fraud Incidence of fraud Vulnerability to fraud Antecedents and consequences of fraud
2. Auditor's Role in Fraud Detection and Prevention	Auditors' fraud judgments Auditors' responsibility for uncovering fraud Auditors' fraud risk classification Auditors' fraudulent behaviours The impact of audit approaches on fraud prevention and detection Audit committee's impact on fraud prevention Auditors' fraud detection decision making process Auditors' position regarding fraud detection Auditors' characteristics Audit planning
3. Information Technology Fraud	Fraud and deceit on Internet Electronic commerce fraud Determinants of IT fraud Internet auction fraud Online auction communities and auction fraud Computer-based fraud techniques Shill bidding

Table 2: Classified Fraud Theme and Fraud Topics

The fraud topics and themes reflect our interpretations of the fraud phenomenon. Relevant texts from these articles were sorted according to the various themes. The list contained the location of each relevant text on an article, the article reference, and links to other texts and articles. In order to reduce researcher bias, a senior colleague was asked to take part in early analysis of some of the data. The role of this colleague was to bring a different perspective in our data analysis and classification process. No biases were detected and any differences between our classification and that of our colleague were taken into account during the

iterative classification process. The next section examines and presents our review of fraud research identified between 1996 and 2010.

FRAUD RESEARCH

Our review suggests three major themes: (1) Factors, Motivations and Antecedents of Fraud, (2) Auditor's Role in Fraud Detection and Prevention and (3) Information Technology Fraud. Table 3 provides a list of articles relevant to the three research themes of fraud, arranged by first author. The articles' objectives, research methodologies, major findings and contributions, and suggested future research directions are summarized in Appendix A.

Theme 1 Factors, Motivations and Antecedents of Fraud	Theme 2 Auditor's Role in Fraud Detection and Prevention	Theme 3 Information Technology Fraud
Albrecht et al. (2001) Bagnoli and Watts (2010) Baker (2003) Ball (2009) Duffield and Grabosky (2001) Erickson et al. (2006) Hochberg et al. (2009) Langenderfer and Shimp (2001) Lee and Seberon-Ferrer (1997) Miller (2006) Zahra et al. (2005)	Agoglia et al. (2003) Albrecht et al. (2004) Alleyne and Howard (2005) Apostolou et al. (2000) Bakre (2007) Bayou and Reinstein (2001) Beasley (1996) Brazel et al. (2009) Brazel et al. (2010) Briloff (2001) Cullinan and Sutton (2002) Doogar et al. (2010) Durtschi et al. (2004) Hammersley et al. (2010) Hoffman and Zimbelman (2009) Hunton and Gold (2010) Karin and Siegel (1998) Knapp and Knapp (2001) Lange (2008) Matthews (2005) Mustafa and Youssef (2010) Norman et al. (2010) Owusu-Ansah et al. (2002)	Baker (1999) Baker (2002) Casabona and Yu (1998) Chua and Wareham (2004) Chua et al. (2007) Graziolo and Jarvenpaa (2003) Gregg and Scott (2006) Haugen and Selin (1999) MacInnes et al. (2005) Nikitkov and Bay (2008) VasIU and VasIU (2004)

	Payne and Ramsay (2005) Ramos (2003) Rezaee (2005) Sikka (2004, 2008) Telberg (2004) Tyler et al. (2008) Wagner and Dittmar (2006) Wells (2004a; 2004b) Wilks and Zimbelman (2004)	
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Table 3: List of Articles Classified by Fraud Themes

Theme 1: Factors, Motivations, and Antecedents of Fraud

Articles in this theme examined the factors, motivations, and antecedents of fraud. Zahra et al. (2005) conducted a systematic review of the psychology, sociology, economics and criminology literature and developed a framework examining the antecedents, moderators and effects of management fraud at societal, industry, organizational and individual levels. Similarly, Albrecht et al. (2001) examine the antecedents and motivations for management fraud by exploring the relationship between corporate structure, rewards and incentives, and executive behaviour. They recommend a carefully specified fraud hypothesis approach to detect fraud. The hypothesis approach identifies ‘red flags’ and analyzes targeted transactions and suspicious companies. Targeted transactions may include high-risk transactions that involve new vendors and purchasing departments. On the other hand, Erickson et al. (2006) did not find empirical support for the association between executive equity incentives and alleged accounting fraud.

At the individual level, the motivation to commit fraud includes financial strain, ego and rationalization (Duffield and Grabosky, 2001). In addition, fraud risk is promoted by personality and environmental factors. Lee and Seberon-Ferrer (1997) report higher fraud risk for older, single and less educated consumers. In order to examine consumers’ vulnerability to fraud, Langenderfer and Shimp (2001) propose a theory that incorporates individual variables such as age, social isolation, cognitive impairment, gullibility and scepticism. Duffield and Grabosky (2001) discuss the individual psychological aspects of fraud relating to four fraud categories: fraud committed against the organization by senior official, and by

client/employee, fraud committed against one individual by another and fraud committed through print and electronic media.

At the societal level, Baker (2003) highlights the linkage between governmental policies and fraud by examining Enron from a public-private partnership perspective. Ball (2009) suggests that markets rely on trust by investigating accounting scandals from two contrasting perspectives (market perspective versus political/regulatory perspective). Hochberg et al. (2009) hold the view that the Sarbanes-Oxley Act (SOX) would reduce misconduct and mismanagement by corporate insiders as SOX would improve disclosure and corporate governance. Miller (2006) states the press acts as a watchdog for accounting fraud. At the industry level, Bagnoli and Watts (2010) show that industry rivalry and product market competition affects companies' earnings management decisions.

Theme 2: Auditor's Role in Fraud Detection and Prevention

Several articles identified the important role played by auditors in detecting and preventing fraud. For example, Ramos (2003) provides an in-depth, section-by-section explanation as well as implementation guidance and practice tips for Statement of Auditing Standard (SAS) Number 99 (Consideration of Fraud in a Financial Statement Audit) fraud standard. Durtschi et al. (2004) introduced Benford's Law, a useful digital analytical procedure used by auditors to detect fraud. Nonfinancial measures were effective in assisting auditors to assess fraud (Brazel et al., 2009). Owusu-Ansah et al. (2002) examined the effectiveness of 56 standard audit procedures in detecting fraud. Auditors are also affected by the format of the justification memo (supporting, balanced and component) in assessing fraud (Agoglia et al., 2003).

Brainstorming sessions help auditors to improve fraud assessments (Brazel et al., 2010; Hoffman and Zimbelman, 2009). Hunton and Gold (2010) show that auditors using the most commonly used brainstorming procedure in practice (open discussion) generate lower number of fraud risks identified than auditors using the nominal group and round robin brainstorming procedures. Hammersley et al (2010) show that priming auditors who receive summary documentation

increase their fraud risk assessments, however priming auditors who receive specific documentation reduces their fraud risk assessments.

Wilks and Zimbelman (2004) highlight the importance of audit policy and action plans to improve fraud prevention and detection. According to Wilks and Zimbelman (2004), auditing standards ought to discourage auditors from anchoring on prior fraud risk assessments, and they should be designed in such a way to maximise opportunities for auditors to learn from prior experience. In addition, auditors must always consider adopting unpredictable audit strategies, such as varying the nature, extent and timing of their audit tests to improve the effectiveness of fraud detection. Auditors ought to also align their resources with auditee fraud risk according to changes in auditing standards (Doogar, 2010). Wagner and Dittmar (2006) view the Sarbanes-Oxley Act an asset to strengthen the control environment, to improve documentation and audit committee involvement, and to strengthen weak control links as well as to minimize human error. Payne and Ramsay (2005) concur with Wilks and Zimbelman (2004) and find that the auditors' predisposition to fraud based on fraud risk assessments and audit experience may affect their level of professional scepticism. This is due to the fact that auditors anchor on the results of their fraud risk assessments. Payne and Ramsay (2005) further propose the need for increased focus on professional scepticism through ongoing training for auditors and continuous reminders to auditors.

To help auditors in detecting fraud, Wells (2004a) provides a case of a purchasing manager who received kickbacks to illustrate a list of 'red flags' that auditors ought to pay attention, tips when confronting fraud suspects, and control measures for fraud prevention. Furthermore, Wells (2004b) proposes a Model Organizational Fraud Deterrence Program to provide auditors a more holistic approach to fraud deterrence. Wells (2004b) suggests utilising the skills of antifraud specialists during audits to identify key risk areas so as to support the increasing complexities of corporate fraud. Apostolou et al. (2000) suggest that knowledge of how forensic experts classify the risk factors help auditors to improve the assessment of fraud risk. According to Karin and Siegel (1998),

auditors ought to accept disproportionate false alarm rates in order to maintain audit effectiveness in the presence of management fraud. Auditors should thus be exposed to forensic practice to improve their ability to estimate prior probabilities of management fraud, which improves fraud detection. Telberg (2004) echoed similar sentiment by highlighting the growing trend of FBI crime investigators partnering with CPAs to deal with fraud. This is because the independence, objectivity, and scepticism of CPAs make them crucial partners in detecting fraud. Rezaee (2005) also suggests several fraud prevention and detection strategies in reducing financial statement fraud incidents. For example conducting regular fraud vulnerability reviews, gamesmanship reviews to assess top management, effective corporate governance, fraud prevention programs and establishing vigilant audit committees. Bayou and Reinstein (2001) suggest that auditors need to learn how fraud emerges and operates from a system view in order to detect fraud.

While most of the above studies agree with the auditor's important role in fraud detection and prevention, Beasley (1996) found that audit committees do not significantly reduce the likelihood of financial statement fraud and the proportion of outside directors on the board is lower for firms experiencing fraud as compared to no-fraud firms. The effectiveness of audit committee in reducing the occurrence of misappropriation of assets also depends on the financial expertise of the audit committees' members (Mustafa and Youssef, 2010). Norman et al. (2010) suggest that internal auditors perceive more personal threats when they report high levels of risk directly to the audit committee, resulting in reduced assessed levels of fraud risk. Similarly, Alleyne and Howard (2005) highlight an "expectation gap" where auditors may feel the detection of fraud is management's responsibility, whereas users and managers view auditors responsible. Cullinan and Sutton (2002) warn that the increased emphasis by auditors on systems assessments may widen the expectation gap as it is less effective at detecting the most common frauds since most frauds originate at the organization's top management level. Alleyne and Howard (2005) recommend auditors ought to use an engagement letter to inform companies their perception of their roles and responsibilities. Tyler et al. (2008) support the notion users ought to play a more

active role in fraud prevention. One way to encourage user participation is the importance of building value-based cultures, as employee value has an important influence on rule adherence. Employees would comply and act ethically if they view management as legitimate, perceive policies as congruent with their own values, and organisational procedures as fair.

Finally, Lange (2008) devised a typology of organisational control on corruption fraud that includes bureaucratic, punishment, incentive alignments, legal/regulatory sanctioning, social sanctioning, vigilance, self-controls and concertive controls. Sikka (2004, 2008) discusses the values governing accountancy firms in understanding audit failures and anti-social behaviours. Accountancy firms are focused on making profit which may come at the expense of the public interest (Matthew, 2005; Sikka, 2004; 2008). Bakre (2007) and Briloff (2001) suggest that professional bodies and regulators are not capable of regulating the accountants and auditors engaging in unethical practices.

Theme 3: Information Technology Fraud

While the use of IT and internet users have increased exponentially in recent years, so has the rise in IT fraud. To understand IT fraud, Vasiliu and Vasiliu (2004) propose a taxonomy of IT fraud with respect to the perpetration platform and method. Haugen and Selin's (1999) IT fraud categories include alteration of input, theft of computer time, software piracy, alteration of data files, theft of computer output, and unauthorized access to systems. They identify several fraud techniques such as Trojan horse, salami technique, trapdoor, SuperZap, piggybacking, masquerading, hacking, eavesdropping, browsing and use of viruses. Haugen and Selin (1999) also discuss IT controls, which are grouped into the use of passwords, firewalls, connectivity security and cryptography. MacInnes et al. (2005) categorise IT fraud into five major causes: incentives of criminals, characteristics of victims, the role of technology, the role of enforcement, and system related factors. For internet fraud, Baker (1999; 2002) categorises fraud into fraud in securities sales and trading, fraud in electronic commerce, and fraud by internet companies.

To address IT fraud, Graziolo and Jarvenpaa (2003) conduct a study to find out which tactics are most commonly used, and which IT products are most susceptible to fraud. Casabona and Yu (1998) suggest the need to understand the occurrence of fraud in which data processing stages - input, processor, software, storage or output stage, in order to handle IT fraud. The authors suggest a three-tier line of defence, which are, prevention, detection and minimization. For example, to establish an environment of integrity, design a set of sound internal controls and enhance the role of internal audit departments. In response to internet auction fraud, Chua and Wareham (2004) propose increasing cooperation among auction communities, governments and auction institutions and empowering the auction communities to work with relevant authorities. In a later study, Chua et al., (2007) adopt social disorganization theory to understand the role of online anti-crime communities and suggest community-based clan control, when operated in concert with authority-based formal control, could solve the problem of internet auction fraud more effectively. Nikitkov and Bay (2008) also consider the possibility of having users as a policing force that would reduce the rate of shill-bidding, which is the practice of a seller entering a bid on his or her own item. Gregg and Scott (2006) demonstrate the usefulness of reputation systems in capturing information about fraud. Buyers with more online auction experience are less likely to be victims of fraud. In addition, recent negative feedback is a useful predictor of whether a particular transaction would be fraudulent.

CONCLUSION

In this paper we have conducted a systematic review of existing fraud literature and classified them into three major research themes. While much has been done in understanding the fraud phenomenon, our review suggests several opportunities for future research. First, our review of the fraud literature suggests several prior studies that examined the factors, motivations and antecedents of fraud. Some researchers have explored the antecedents of management fraud at societal, industry, organizational and individual levels. Others provided a comprehensive discussion on fraud triangle, fraud scale (Albrecht et al., 1984) and fraud diamond (Wolfe and Hermanson, 2004). While this paper concurs with

earlier researchers that fraud triangle and other fraud frameworks provide an efficient conceptual model for understanding antecedents to fraud, due to the growing complexity and creativity in financial markets and white-collar schemes, some of the fraud frameworks may not fully capture the antecedents and factors of fraud. For example, there may be new psychological and sociological antecedents (personality and behavioural characteristics) to fraud. As a consequence, future research should examine what additional undiscovered or undefined personality and behavioural antecedents can help to describe fraudster. In terms of additional avenue of future research, Zahra et al. (2005) suggest empirical research on the antecedents and moderators of fraud is needed. In particular, understanding the motivational factors of fraudulent behaviours is currently underdeveloped. A typology of motivational factors at individual, firm and industry levels and their impacts may offer a potential research direction. Another research agenda may involve providing empirical support to Albrecht et al. (2001)'s fraud hypothesis model. Researchers may consider testing the relationship between corporate structure, incentives and behaviour. Proxies may be used to test the predictive value of the fraud hypothesis approach in detecting fraud.

Second, in terms of auditor's role in fraud detection and prevention, our review of the literature concludes that most studies agree auditors should not be held responsible for failing to detect and prevent fraud. While some researchers continue to examine the factors contributing to the expectation gap between auditors and clients, others advocate bridging the gap with auditors adopting a greater role in fraud detection and prevention. They argue characteristics of auditor, audit policy, audit planning and auditor's fraud risk assessment approach may affect the success of fraud detection and prevention. This paper supports the view auditors ought to play a bigger role in fraud detection and prevention. In particular, the role of internal auditors is important as internal audit adds value through improving the control and monitoring environment within organizations to detect and self-report fraud. While this is true in the case of organizations with an internal audit function, it may vary with organizations that outsourced their internal audit functions (Coram et al., 2008). A review of the literature suggests the

relationship between outsourced internal audit function and fraud detection and prevention remains inconclusive so far. As a consequence, future research may examine the determinants of fraud detection and prevention in an outsourced internal audit setting. The results should have significant bearings on the growing number of organizations that have outsourced their internal audit functions. In terms of other future research directions, both Karin and Siegel (1998) and Payne and Ramsay (2005) suggest examining the decision making process of auditors to identify factors, apart from the role of audit experience, that may raise the level of auditor's professional scepticism. Another interesting research direction may involve exploring the level of influence contextual and cultural differences have on fraud prevention and detection (Alleyne and Howard, 2005; Lange, 2008).

Last, in terms of IT fraud, our review highlights a growing number of studies related to internet fraud. Most of these studies have examined the determinants of internet fraud, range of fraudulent practices, the importance of having an appropriate control environment and a set of effective internal controls to mitigate internet fraud risks. Our assessment of internet fraud research highlights two research challenges. First, while several researchers have discussed various types of internet fraud, classification of the internet fraud types remains ambiguous. This could be due to the multiple forms of internet fraud which is more difficult to define as compared to traditional offline crime (Gordon and Ford, 2006). For example, a computer can be the agent, target or facilitator of the crime, and the crime can take place on the computer alone or in other offline locations. As a result, there is no consistent definition across agencies and organizations (White and Fisher, 2008). A follow on issue is related to data problem. Given limited classification, it is unclear if one can perform a comparison analysis of two sets of internet fraud data. Future research should consider developing a taxonomy with respect to internet frauds and their respective consequences.

Another potential challenge revolves around Chua et al's (2007) suggestion of using community-based clan control to combat internet auction fraud. Given the diverse background and expertise of the internet auction users, it remains to be seen how effective such community-based clan control may work. Instead of

relying on general internet auction users, one suggestion is to explore the IT security experts' community network. Exploring the best practices shared by IT security professionals could prove instrumental to proactively responding to internet fraud threats, as well as gathering reliable information about current threats and vulnerabilities. Future research should examine the conditions that lead to formation of experts' communities in response to internet fraud. Future research may also examine the conditions and antecedents of the formation of advanced and interdependent anti-fraud communities. One possibility is to track anticrime communities over longer time periods to observe their development so as to understand them better (Chua et al., 2007). In addition, another interesting topic in internet auction research is to explore whether the shill bidding strategy used depends on the price and nature of the product (Nikitkov and Bay, 2008). One possible angle is to consider whether including product names in feedback records can improve buyers' abilities to identify fraudsters building reputations by selling inexpensive items and then suddenly switching to big-ticket items (Gregg and Scott, 2006).

Overall, our tentative research agenda for fraud focuses on informing the existing state, enabling actions, and transforming outcomes. We urge accounting and management scholars to conduct ground-breaking research on fraud that refines current perspectives, questions its premises and extends existing state into a higher level.

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Appendix A: List of Articles Relevant to the Three Research Themes of Fraud

Theme 1: Factors, Motivations and Antecedents of Fraud

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Albrecht et al. (2001)	Provide empirical evidence about the plausibility of using the fraud hypothesis approach to detect fraud	Used actual operating data for a large oil refinery where fraud had not yet been discovered	<p>-Red flags are often not recognized. It is when they are carefully applied and analyzed, formalizing red flags searches into a carefully specified fraud hypothesis approach, that fraud can be effectively detected</p> <p>-In addition, the approach was also useful in further analyzing the targeted transactions and suspicious companies</p> <p>-It is also useful in identifying high-risk areas where certain people like vendors and employees needed careful monitoring.</p>	To test the predictive value of the fraud hypothesis approach in detecting financial statement fraud
Bagnoli and Watts (2010)	Examine how biased financial reports affect product market competition and how product market competition affects incentives to bias financial reports	Develop a theoretical model, using an incomplete information Cournot duopoly model in which each firm knows its own production costs, but not its rival's	<p>-Cournot competitors bias their reports to create the impression that their costs are lower than they actually are, leading to lower total production and higher product price.</p> <p>-When the costs of misreporting are asymmetric, the lower-cost firm engages in more earnings management than its rival, produces more than it would in a full-information environment, and earns greater profits.</p>	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Baker (2003)	Explore the relationships between the Enron business model and the deregulatory phase of the American economy during the 1980s/1990s	Commentary	<p>-Deregulation in the natural gas distribution and electricity industries allowed the creation of the Enron business model, and that this model was unsustainable, leading ultimately to the demise of Enron Corp.</p> <p>-The Enron scandal can be better understood as an American form of public private partnership rather than just another example of capitalism excess, highlighting the linkage between government policies and business failures.</p>	Not specified
Ball (2009)	Examine accounting scandals from two contrasting perspectives (market perspective and the political/regulatory perspective)	Commentary	Markets need rules and rely on trust. The US system worked well in detecting but not in preventing the problem.	Not specified
Duffield and Grabosky (2001)	Examine the motivation and psychological factors associated with fraud	Review of literature	<p>Common Elements of Motivation for Fraud:</p> <ul style="list-style-type: none"> -Financial strain e.g. desire to possess what one cannot afford -Ego/power e.g. contemptuous delight and gratification in fooling others -Rationalisation 	More research is required to define which personality traits make up characteristic predispositions toward fraud.

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Erickson et al. (2006)	Examine whether the incidence of alleged accounting fraud is associated with executive equity incentives	Compared executive equity incentives of firms accused of accounting fraud by the SEC during the period 1996-2003	There is no consistent evidence that executive equity incentives are associated with fraud, in contrast to assertions by policy makers.	Not specified
Hochberg et al. (2009)	Evaluate the impact of the Sarbanes-Oxley Act (SOX) on shareholders	Studied the lobbying behaviour of investors and corporate insiders	The results support the improved disclosure and governance view of SOX, suggesting that the benefits of SOX may outweigh the compliance costs.	Not specified
Langenderfer and Shimp (2001)	Present a theory of consumers' vulnerability to fraud	Informed by the authors' own survey of expert opinion	-Proposed a theory of scamming vulnerability that incorporates individual difference variables thought to account for consumer vulnerability to scams. Two key constructs—individual motivation to receive a scam-related reward and visceral influences undergird the theory. When elaboration likelihood is high, but visceral influence is low, consumers are less likely to be scammed.	Future research may involve testing and validating the scamming vulnerability model
Lee and Seberon-Ferrer (1997)	Investigate the effects of factors that have been proposed to influence	-Data provided by the 1993 Survey of Older Consumer Behavior was	-Older consumers are more vulnerable to fraud than their younger counterparts -The impact of gender on consumer vulnerability is not very clear -Non-married consumers are more vulnerable than	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
	consumers' susceptibility to fraud	used. -Based on telephone interviews with a nationally representative sample of 957 adults	married ones -Less educated consumers are more vulnerable -Older, less educated and non-married consumers are the most vulnerable to unfair business practices, hence they may need special protection. Consumer protection programs can take this into account.	
Miller (2006)	Examine the press's role as an early information intermediary in the public identification of corporate financial malfeasances	Used a sample of firms whose accounting was challenged by the SEC	-Press is involved in early public identification in 29% of the cases. -Provides evidence regarding the role of press as a watchdog for accounting fraud.	Not specified
Zahra et al. (2005)	Examine fraud by senior executives in terms of its nature, scope, antecedents and consequences	Conducted a literature review drawn from the fields of psychology, sociology, economics and criminology	Provided a framework to examine the antecedents of management fraud (societal, industry, organizational and individual levels)	-Develop a typology of corporate illegal acts, and typology of motivations and consequences of management fraud -Further explore the effect of individual variables

Theme 2: Auditor's Role in Fraud Detection and Prevention

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Agoglia et al. (2003)	Examine the impact of alternative justification memo formats on auditors' fraud judgments	Conducted an experiment with 90 practicing auditors from large international public accounting firms	-The memo format affects the documentation and judgments of reviewees as well as the judgments of reviewers. -The use of unrestricted component memos can direct an auditor's attention away from control weaknesses.	Examine the performance of alternative justification memos for other types of audit tasks
Albrecht et al. (2004)	Explore the relationship between theories of management and recent financial statement frauds	Commentary	-Examined prevailing theories of management that explain relationship between various stakeholders in an organization -Analyzed recent frauds and conditions that led to them and proposed a model to identify fraud risk factors that may predict fraudulent behaviour	Empirical testing of proxies for the elements in fraud models
Alleyne and Howard (2005)	Investigate how auditors and users perceive the auditors' responsibility for uncovering fraud, the nature and extent of fraud in Barbados, and audit procedures utilized in Barbados since Enron	Conducted a survey of 43 respondents (19 auditors and 24 users), using qualitative (personal face-to-face interviews) and quantitative approaches (questionnaires)	-Wide expectation gap- auditors felt that the detection of fraud is management's responsibility, while users and management disagreed -Users expected that auditors would actively search for illegal acts as part of their audit procedures while auditors disagreed. -Organizations with strong internal controls, internal auditors and audit committees were better equipped to deal with fraud. -Use of engagement letter to inform clients that responsibility for fraud rests with the company	Investigate the functional and operational aspects of auditing for fraud
Apostolou et al. (2000)	Examine how forensic experts classify risk factors	Surveyed 35 forensic experts	Knowledge of how forensic experts classify the risk factors help auditors to improve the assessment of fraud risk	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Bakre (2007)	Examine the claim that the professional bodies are capable of protecting the public interest	Analysis of cases of fraud, falsifications and deliberate overstatement of companies' accounts.	-Provided evidence that suggests professional misconduct by accountants, particularly the members of the Institute of Chartered Accountants of Nigeria (ICAN). -ICAN has been reluctant to either investigate or sanction its erring members in accountancy firms.	Not specified
Bayou and Reinstein (2001)	Argue that traditional auditing and holistic approaches would not contribute much towards fraud detection/deterrence	Reviewed seven prominent fraud cases	To deter and detect fraud, auditors have to learn how it emerges, operates, repeats identity and forms cycles.	Not specified
Beasley (1996)	Investigate the prediction that the inclusion of larger proportions of outside members on the board of directors reduces likelihood of financial statement fraud	Cross-sectional regression analysis of 75 fraud and 75 no-fraud firms	-No-fraud firms have higher percentages of outside directors than fraud firms. -Audit committees do not significantly reduce the likelihood of financial statement fraud -The higher the level of ownership of common stock held by outside directors, the lower the likelihood of fraud -As the number of years of board service for outside directors increases, the lower the likelihood of fraud -As outside directors hold more directorship responsibilities in other firms, the likelihood of fraud increases -As board size increases, likelihood of fraud increases	Additional research to uncover more knowledge about processes of boards is needed, especially about how differing levels of board composition affect the nature of board activities
Brazel et al. (2009)	Examine whether auditors can	Regression analysis of firms	-The difference between financial and nonfinancial performance is significantly greater	Explore whether the research can

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
	effectively use nonfinancial measures (NFM) to assess the reasonableness of financial performance and help detect financial statement fraud	charged by SEC with having fraudulently reported revenue in at least one 10-K filing	for firms that committed fraud than for their non-fraud competitors. -NFM can be effectively used to assess fraud risk.	be replicated with quarterly data
Brazel et al. (2009)	Examine how brainstorming quality affects auditors' fraud decision-making processes	Surveyed auditors from Big 4 firms and another international firm.	-High-quality brainstorming improves the relationship between fraud risk factors and fraud risk assessments. -Brainstorming quality positively moderates the relations between fraud risk assessments and fraud-related testing.	Not specified
Briloff (2001)	Review and reflect on "Fraudulent Financial Reporting: 1987–1997 An Analysis of US Public Companies"	Analyzed Accounting and Auditing Enforcement Releases (AAERs)	This study raises the concern that the SEC fails to sufficiently name and penalize auditors.	Not specified
Cullinan and Sutton (2002)	Examine whether the increased emphasis on systems assessments is at odds with auditors' position regarding fraud detection	Commentary	The generally accepted auditing standards should be changed to reflect the independent auditor's responsibility for the detection of fraudulent financial reporting.	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Doogar et al. (2010)	Examine whether the association between audit fees and auditee fraud risk increase after the replacement of Auditing Standard No 2 (AS2) by AS5	Cross-sectional regression analysis between audit fees and an indicator of auditee fraud risk	<ul style="list-style-type: none"> -AS5 audit fees are aligned with auditee fraud risk, but not AS2 audit fees. -Relative to AS2 benchmark levels, AS5 audit fees on average are lower for all auditees. -Relative to AS2 benchmarks, AS5 fees are lower for lower-fraud-risk auditees but greater for higher-fraud-risk auditees. 	Not specified
Durtschi et al. (2004)	Assist auditors in the most effective use of digital analysis based on Benford's Law	Conducted digital analysis on 2 accounts of a large medical centre in US	<ul style="list-style-type: none"> -Most accounting-related data can be expected to conform to a Benford distribution -Benford analysis is a useful tool for identifying suspect accounts and complement existing tools already employed by auditors 	Not specified
Hammersley et al. (2010)	Examine the effect of priming on auditors' fraud risk assessments	Experiment involving 81 audit seniors.	<ul style="list-style-type: none"> -Un-primed auditors who receive more specific documentation increase their fraud risk assessments -Priming auditors who receive summary documentation increases fraud risk assessments. -Priming auditors who receive specific documentation reduces fraud risk assessments. 	Not specified
Hoffman and Zimbelman (2009)	Examine the effects of two interventions – strategic reasoning and brainstorming in groups on auditors' planning decisions in a high-fraud-risk setting	Experiment involving 91 practicing audit managers from a large international audit firm	Strategic reasoning and brainstorming help auditors to effectively modify their standard audit procedures.	-Examine whether the strategic-reasoning intervention is also helpful to more junior auditors when they are working individually as

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
				well as when they are part of a brainstorming group.
Hunton and Gold (2010)	Examine the outcomes of three fraud brainstorming procedures (nominal group, round robin, and open discussion)	Experiment involving 150 audit clients and 2,614 auditors who participated in natural, hierarchical audit teams.	-Nominal group and round robin brainstorming resulted in equivalent numbers of unique fraud risks and comparable increases in planned audit hours, while open discussion brainstorming yielded the least number of unique ideas and the smallest increase in planned audit hours. -Nominal group and round robin brainstorming yielded more changes/additions to the nature and timing of substantive testing than open discussion brainstorming.	Not specified
Karin and Siegel (1998)	Apply signal detection theory to the problem of detecting management fraud	-SDT methodology used to model and analyze the audit process.	- The auditor must accept disproportionate false alarm rates in order to maintain audit effectiveness in the presence of management fraud -Audit effectiveness is maintained only if the increase in the power of audit technology is matched by the corresponding increase in false alarm rates	Understand the process of how auditor's decisions are influenced by the base rates of management fraud
Knapp and Knapp (2001)	Examine the effects of audit experience and explicit fraud risk assessment instructions on the effectiveness of analytical procedures	Experiment involving 119 auditors	-Audit managers are more effective than audit seniors in assessing the risk of fraud with analytical procedures. -Explicit fraud risk assessment instructions resulted in more effective assessments of the presence of fraud.	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
	in fraud detection			
Lange (2008)	Provide a theoretical foundation for scholarly exploration of tensions and complementarities among corruption control types	Drawn from organizational control and corruption control literature	-Typology of organizational corruption control that describes their conceptual similarities and distinctions -This typology includes bureaucratic controls, punishment, incentive alignments, legal/regulatory sanctioning, social sanctioning, vigilance controls, self-controls and concertive controls	Investigate how context differences affect the effectiveness and cost of each type of corruption control
Matthews (2005)	Examine the collapse and its subsequent implications of the London and Country (L&C) Securities bank in 1973	Case study drawing on the report by the Department of Trade inspectors and the national and trade press	-Commentators and the regulatory and legal system need to distinguish between different types of fraud. -Commercial pressures impact adversely on the audit process. -DT inspectors conducted by accountants are not independent in their judgements. -Self-regulation is always likely to be ineffective.	Not specified
Mustafa and Youssef (2010)	Examine the relation between the financial expertise of the audit committee (AC) and the incidence of misappropriation of assets	The sample consists of 28 publicly held companies in the USA experiencing misappropriation of assets from 1987 to 1998 and 28 matched companies.	An independent AC member is only effective in reducing the occurrence of misappropriation of assets in publicly held companies if he/she is also a financial expert.	Investigate the role of the financial expertise of AC members and the smooth implementation of the IFRS by companies in the USA.

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Norman et al. (2010)	Examine the effects of internal audit reporting lines on fraud risk assessment	Experiment involving 172 experienced internal auditors and additional surveys	Internal auditors perceive more personal threats when they report high levels of risk directly to the audit committee, relative to management. Perceived threats lead internal auditors to reduce assessed levels of fraud risk when reporting to the audit committee and it reveals potential conflicts of interest and independence threats created by the audit committee itself.	Not specified
Owusu-Ansah et al. (2002)	Assess the degree of fraud-detecting effectiveness of standard audit procedures that are applicable to the stock and warehousing cycle	Surveyed New Zealand auditors to ascertain their opinion on the effectiveness of 56 fraud-detecting audit procedures	Size of audit firm, auditor's position tenure, and auditor's years of experience are statistically significant predictors of the likelihood of detecting fraud in the stock and warehousing cycle.	Not specified
Payne and Ramsay (2005)	Examine whether planning-stage fraud risk assessments and audit experience affect the level of professional skepticism during fieldwork	Experiment involving professional auditors	-Auditors predisposed to low fraud risk assessments were less skeptical than those with no knowledge of fraud risk. -Staff auditors were more skeptical than senior auditors. -Need for increased focus on professional scepticism during the course of an engagement	Identify other factors that can help to raise the level of professional skepticism in the profession
Ramos (2003)	Provide an in-depth explanation and implementation guidance for the new fraud standard, SAS No. 99	Commentary is based on SAS No. 99	-Provided guidance on how to purposefully make inquiries -Provided guidance on how to design effective audit tests. Risk synthesis is the key link. -Provided steps to address the risk of management override of internal control	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Rezaee (2005)	Increase corporate governance participants' attention toward financial statement fraud and strategies for its prevention and detection	Performed an analysis of a selected sample of alleged financial statement fraud cases	Propose five interactive factors with abbreviation of CRIME that may increase the likelihood of financial statement fraud: 1. Cooks—people responsible for fraud 2. Recipes—overstating revenues/assets, understating liabilities/expenses, earnings management 3. Incentives—economic incentives to meet forecasts, coupled with egocentric or ideological motives 4. Monitoring—role of audit committee, internal control structure 5. End results—consequences of fraud	Incorporate the five interactive factors in auditors' decision model
Sikka (2004)	Argue that audit failures are the product of the values governing accountancy firms	Commentary	Accountancy firms are firmly focused upon the need to make a profit, possibly at the expense of wider social obligations	Examine the value systems governing accountancy firms
Sikka (2008)	Argue that enterprise culture is producing negative effects	Commentary	Accountancy firms are engaged in anti-social behaviour. Evidence is provided to show that in pursuit of higher profits firms have operated cartels, engaged in tax avoidance/evasion, bribery, corruption and money laundering	Examine the accountability and social responsibility of accountancy firms
Telberg (2004)	Highlight the trend of FBI crime investigators partnering with CPAs to deal with fraud	Commentary	-FBI investigators have now sought expanded cooperation with CPAs to confront fraud -CPAs will be involved as third-party expert witnesses, eyewitnesses, and as candidates to join the agency.	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Tyler et al. (2008)	Establish that employees will comply and act ethically if they view management as legitimate and see policies as congruent with their own values	Random sample of American employees versus a sample of corporate bankers	<ul style="list-style-type: none"> -Employee beliefs about whether their organizations are legitimate and whether procedures which are fair are used are key to engaging employee values -The ethical culture of organizations can be improved by focusing on two issues - the quality of decision making and the quality of interpersonal treatment, at the organizational and workgroup level. 	Not specified
Wagner and Dittmar (2006)	Demonstrate that Sarbanes-Oxley Act can actually be an advantage for those who leverage on it well	Commentary	<p>SOX compliance has benefited companies in the following areas:</p> <ul style="list-style-type: none"> -Strengthening the control environment provides good governance, discipline and structure -It is an opportunity to overhaul systems documentation -Increased efforts by the board, and AC involvement -Convergence opportunities, which leads to cost savings and refocus on higher-value activities 	Not specified
Wells (2004a)	Use the example of a purchasing manager who received kickbacks to show what companies can do to prevent it	Commentary	<ul style="list-style-type: none"> -Provided a kickback checklist. This shows the high fraud risk areas (red flags) that raise the alarm -Practical tips were provided when confronting a fraud suspect -Control measures to prevent kickbacks were provided (job rotation, closer supervision, and separation of duties) 	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Wells (2004b)	Provoke thought and debate on how different approaches can be adopted in the way audits are conducted in order to give assurance of integrity	Commentary	-The auditing profession needs to adopt a more holistic approach to the deterrence of fraud - Model of Organizational Fraud Deterrence Program (identify factors that affect occupational fraud, develop a model deterrence program, and disclose the client's degree of compliance with the model).	Not specified
Wilks and Zimbelman (2004)	-Examine academic research that can assist auditors in detecting and preventing fraudulent financial reporting -Assist auditors in performing 3 key tasks: 1. Fraud risk assessment 2. Audit planning 3. Audit plan implementation	-Surveyed practising auditors -Reviewed theoretical and empirical research from game theory, social psychology, judgment and decision making, and auditing	-Recommends that auditors structure their fraud risk assessments to facilitate effective predictions, and suggests some ideas (e.g. using strategic reasoning -Audit planning should emphasize cautioned reliance on fraud cues (e.g. incentive, opportunity and attitude cues) -Audit plans should vary the nature, timing, and extent of audit tests -Audit policy should encourage frequent updates of fraud judgments. Audit standards should discourage auditors from anchoring on prior fraud risk assessments -Learning from experience is critical to performing audit	-Examine the issue of how auditing standards can address auditees' ability to manipulate cues to influence auditors' perceptions -Develop effective methods for getting auditors to go beyond standard audit programs and typical audit procedures

Theme 3: Information Technology Fraud

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Baker (1999)	Examine fraud relating to the securities markets and electronic commerce	Commentary	Primary reason for the advent of fraud is a lack of controls combined with a high degree of credulity on the part of participants in the securities markets and electronic commerce.	Not specified
Baker (2002)	-Examine the questions of crime, fraud and deceit on the Internet -Discuss whether such activities constitute a new type of abusive social behavior or are an extension of capitalistic excesses -Discuss the role of the state in regulating the abuses	Review of literature about cyberspace, fraud and hyperreality	-Examined questions of crime, fraud and deceit on the Internet within the context of debates about the nature of cyberspace, through 3 mains areas: 1. Securities law violations using the Internet (email spam, online investment newsletters, pump and dump, bogus securities offerings and risk-free offers). 2. Fraud in electronic commerce (carding cash, web site capture and online auctions) 3. Deceitful acts by Internet companies (misleading advertising revenues, undisclosed kickbacks, and undisclosed invasions of privacy).	Not specified
Casabona and Yu (1998)	Examine computer fraud and propose strategies to deal with computer crime	Commentary	-Highlighted the need to establish an environment of integrity (through hiring policy, policy of recognition and rewards, rotation of duties, and management attitude) -Designed internal controls to prevent fraudulent reporting (preventive, detective and corrective controls) -Increased role of internal audit department	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Chua and Wareham (2004)	Understand and devise proposals to deal with Internet auction fraud	-Conducted a review of news reports and auction transactions through bulletin board postings, news articles, government sources -Visited Internet auction discussion groups and interviewed individuals who have fought Internet con artists.	-Developed proposal to empower auction communities to integrate their work with that of governments and auction institutions in identifying antifraud mechanisms specific to their market segment -Proposed that communities establish regulations that reduce the fraud's efficacy	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Chua et al. (2007)	Explain how online auction communities address auction fraud	<ul style="list-style-type: none"> -Qualitative analysis of 3 cases of online anticrime communities employed. -Observed community activities and interviewed community members directly 	<p>Community-based clan control may operate in concert with authority-based formal control to manage the problem of Internet auction fraud:</p> <ol style="list-style-type: none"> 1. Communities address fraud in ways that are substantially different from the way the authorities do 2. Communities at different stages of development have separate relationships with the formal control exercised by authorities 3. Authorities should facilitate the process of community development by encouraging clan control and cooperating with community members in combating Internet auction fraud 	<ul style="list-style-type: none"> -Social disorganization theory can be used to analyze nonmarket online communities e.g. open source software development -Examine the conditions and antecedents leading to the formation of more advanced, interdependent communities.
Graziolo and Jarvenpaa (2003)	Aims to understand the tactics used by deceivers on the Internet	Built a research database of cases of Internet deceptions between 1995 and 2000 to study deceptive tactics used	Categorized Internet deception cases to identify which tactics and types are most commonly used (B2C, then C2C), and which goods and services are most susceptible to fraud	<ul style="list-style-type: none"> -More research on the determinants of deviant behaviors on the Internet -Examine defences against each deception tactic

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
Gregg and Scott (2006)	Improve understanding of online auction fraud and investigate whether on-line reputation systems are a useful mechanism for potential buyers to avoid fraudulent auctions	Examine 6,571 negative feedback comments about online auction sellers posted on eBay, and categorized them using content analysis	<ul style="list-style-type: none"> -Demonstrates the role reputation systems play in capturing information about on-line auctions fraud -Contributes to the reduction of online auction fraud by identifying seller characteristics (such as recent negative feedback posted) that predict whether an auction is likely to be fraudulent -Highlights need for buyers to be educated about fraud, as experienced on-line auction buyers are in a better position to use reputation system data to avoid potentially fraudulent auctions 	<ul style="list-style-type: none"> -Provide further insights into the usefulness of reputation systems -Examine the factors that buyers take into account when deciding whether to participate in a particular auction
Haugen and Selin (1999)	<ul style="list-style-type: none"> -Help managers understand the problems that fraud can cause and how they can protect the organization -Convey the importance of initiating a proper internal control system 	Commentary	<ul style="list-style-type: none"> -Factors which cause fraud were identified (inadequate rewards, management controls, reinforcement and performance feedback mechanisms, support, operation reviews, and enforcement) -Common types of computer fraud were identified (altering input, theft of computer time, piracy, stealing data files, theft of computer output, and unauthorized access) 	Not specified
MacInnes et al. (2005)	Determine the factors that contribute to electronic commerce fraud, and present them using a model with 5 causes: incentives of criminals, characteristics of	<ul style="list-style-type: none"> -Statistics from the Internet Fraud Complaint Centre and National Consumers League were used -Analysis of suits filed by the US 	<p>Presents a model that integrates all the factors as causes of crime</p> <ol style="list-style-type: none"> 1. Criminal related factors—Personality, profit motive and technical ability 2. Victim related factors—asymmetric information, nature of Internet as a medium (anonymity), and trust in the Internet 3. Policing factors—grey areas of the law, 	Not specified

Article	Objective	Methodology	Major Findings/ Contributions	Future Research
	victims, the role of technology, the role of enforcement, and system related factors	Federal Trade Commission to gain a high level view of the type of crimes committed on the Internet	limited resources, penalties not severe, and limited enforcement powers 4. Means related factors—characteristics of the Internet (international network, anonymity, and lack of face to face contact)	
Nikitkov and Bay (2008)	Examine shill bidding (a form of internet fraud where a seller enters a bid on his/her own item) to illustrate the ethical and legal issues related to internet fraud	Performed a systematic analysis of the rate of shill-bidding occurrence on eBay, transaction data were gathered from the history of bids web pages maintained by eBay.	-Findings revealed that the rate of shill-bidding is relatively high, much higher than the 0.1% estimated by eBay (18% for motor category, 15% for computers, 28% for beauty category) -Given the magnitude of internet fraud, it is likely that controls will have to be instituted, e.g. governmental, code based ,user initiated or instituted by the firm	Further research to address the speculation that the shill bidding strategy depends on the price and nature of the product
Vasiu and Vasiu (2004)	Propose a taxonomy of computer fraud to assist in prevention	Adopted the conceptual-analytical research approach	Proposed a taxonomy of computer fraud with respect to perpetration platform, and perpetration method: -Perpetration method: Data fraud & program fraud -Contribution is to extend the existing knowledge of the phenomenon, and assist those who are fighting computer fraud to better understand it and to design means of preventing and reporting it.	-Develop a taxonomy with respect to types of computer frauds and their consequences -To research about information security strategies for prevention of computer fraud