

EFFECTIVE DETECTION AND PREVENTION OF FRAUD: PERCEPTIONS AMONG PUBLIC AND PRIVATE SECTORS ACCOUNTANTS AND AUDITORS IN SAUDI ARABIA

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Abstract: Globalization has inevitably transmuted fraud into a transnational hazard and raised significant apprehensions. Fraud affects organizations worldwide irrespective of nature, size, profitability, or industry. The pervasive nature of fraud serves a premise to study the menace further. Hence, this research investigated the perceptions among accountants and auditors on the effectiveness of fraud detection and prevention by public and private Saudi organizations. This research presented an exploratory case study within the Saudi Arabian social, economic, and cultural environment. Data-gathering through inquiries and questionnaires were performed among accountants, internal and external auditors from public and private sectors. The results revealed that accountants and auditors in Saudi private and public firms were highly cognizant on fraud awareness, general guidelines, subsequent responsibilities, and reporting venues. In addition, both sectors were found to have invested extensively in fraud detection and prevention technologies. Also, employees were found not have been regularly trained on fraud prevention and detection. Furthermore, forensic accounting, being a relatively new genre in fraud detection and prevention, is found sparingly utilized among public and private sectors' organizations. Forensic accounting is yet to be accorded adequate authority in the Saudi context, and was found superficially placed under the Saudi Organization of Certified Public Accountants (SOCPA). Despite qualification, experience, and age being recognized as key elements to Saudi accountants and auditors in fraud detection and prevention, lack of proper training leaves employees with limited dexterity and exposes them to legal repercussions. In general, the current legal infrastructure in Saudi Arabia needs to be revisited to improve effective detection and prevention of fraudulence. This study provided insights into the Saudi Arabian fraud detection & prevention, hardware, infrastructure, and human resources as the contributors of a fraud-free society.

Keywords: Fraud awareness, fraud detection and prevention methods, fraud detection technology usage, forensic accounting, public and private sectors.

JEL Classification: K42, H83, M14, M15, M19.

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Introduction

Fraud has metamorphosed into a major global concern. Regardless of size, profitability, or industry, organizations currently face severe challenges concerning economic

and operational sustainability in the wake of deliberate and unethical fraudulent acts. The PricewaterhouseCoopers (hereinafter referred to as PwC) (2020) survey revealed that 47% of international firms were affected by fraud

compared to 49% in 2018, 36% in 2016, 37% in 2014, and 34% in 2011. The PwC's (2020) survey respondents reported total losses of 42 billion USD owing to fraud that negatively impacted brands, reputations, and market shares. Ironically, only 56% of the affected organizations conducted investigations, whereas barely one-third of these companies reported fraudulent outcomes to their boards.

Retrospectively, the PwC (2018) survey speculated that the reported 49% of victimized organizations through fraudulent acts should be much higher as fraudulent behaviors were not easily detected. The PwC's Global Economic Crime and Fraud Survey (2018) also stated that economic crimes were rapidly increasing. For example, economic crimes in the Middle East escalated from 25% in 2016 to 35% in 2018, increasing by 10% within merely 2 years. Additionally, the Ernst & Young (2018) survey comprising 55 countries reported no reduction in fraudulent incidents and highlighted international cases over the past 2 years in the emerging markets.

Globally, the Association of Certified Fraud Examiner (hereinafter referred to as ACFE) (2020) report also revealed that 44% of victimized organizations involved private companies, 26% involved public companies, 16% involved government entities, and 9% involved non-profit organizations. In contrast, the ACFE's (2018) report in the Middle East and North Africa (MENA) region stated that 50% of victimized organizations were private companies, 31% consisted of public companies, 8% involved government entities, and 6% were non-profit institutions. Additionally, the ACFE's (2020) report emphasized that many fraudulent cases were undisclosed by governmental and non-profit entities.

Regarding the Middle East, the PwC's (2020) survey indicated a steep rise in financial crimes. For example, the financial crimes rate in 2020 reached 46% compared to the recorded rate of 36% in 2018. A sharp increase was highlighted in the reported incidents of procurement and customer frauds, bribes, and corruptions from 2018 to 2020, thus suggesting that organizations were becoming more effective in fraud identifications and assessments. Nevertheless, the results indicated that Middle Eastern firms were yet to manage economic crimes comprehensively and consistently. The PwC (2020b) Middle East

Forensic Leader asserted that the increase in victimized organizations indicated the significant need to deploy the right talents and technologies proactively to construct better anti-fraud frameworks, hence enabling Middle Eastern businesses to identify and act on potentially fraudulent activities efficiently.

Correspondingly, the PwC Middle East Economic Crime and Fraud Survey (2020b) indicated that the good intentions of Middle Eastern organizations regarding fraud detection and prevention were not reciprocated by their abilities to improve organizational performance. Given the commitments to counter fraud, precautions including the implementation of internal control (Middle East: 63%; Global: 44%), anti-fraud policies and procedures (Middle East: 61%; Global: 39%), and anti-fraud training for employees (Middle East: 37%; Global: 27%) were taken against economic crimes. In particular, an Ernst & Young (EY) (2018) survey comparing respondents' views on the prevalence of corruption from 2014 to 2018 revealed a 20% increase among respondents' beliefs that corruption was widespread in Saudi Arabia despite the enforcement of Saudi Anti-Corruption Act in 2017.

In Saudi Arabia, anti-fraud regulations are still underdeveloped covering a limited range of sectors. For example, the Saudi Arabian Monetary Agency (hereinafter referred to as SAMA) issued the Saudi Arabian Anti-Fraud Regulations in 2008 for only insurance and reinsurance companies. Additionally, the incomplete scope of regulations only covered internal fraud, insurance service provider fraud, and policyholder fraud (SAMA, 2008). Although SAMA issued anti-fraud regulations for finance companies in 2017, the new rules were only enacted to regulate the operationalization of banking and financial sectors.

Despite the extended scope of newly-issued rules, compliance for procedures and penalties remained lacking (SAMA, 2017). Furthermore, financial reports on fraud detection and prevention mechanisms, and internal control were superficially reviewed by external auditors in Saudi Arabia. The lack of legislative power, monitoring and weak portrayal of fraud prevention and detection as an accounting discipline by SOCPA could serve as plausible reasons for the lukewarm responses.

Essentially, public and private organizations need to develop fraud detection and prevention

approaches for effective operationalization in order to minimize fraudulent incidents. Fraud detection and prevention methods were widely studied and reported in international literature, primarily focusing on the private sector (Bierstaker et al., 2006; Chin et al., 2019; Lee & Fargher, 2013). Cotton et al. (2016) emphasized the significance of '*Fraud Risk Management Executive Summary*' published by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in collaboration with ACFE. Fraud detection and prevention through organizational control measures (both private and public) were key indicators for effective practices.

By its very nature, the auditing profession has undergone re-evaluations for failure to detect and report fraud upon discovery. In this respect, Quick (2020) reviewed the academic literature on Audit Expectation Gap (AEG). He concluded AEG was primarily associated with differences in public perception of auditors' responsibilities to detect, prevent, and reveal key errors and fraudulent acts; and, the auditors' perceptions of their responsibilities. Quick (2020) highlighted that AEG misleadingly focused on auditors when corporate governance should be primarily responsible for fraud detection and prevention. Quick (2020) also noted that despite extensive AEG research coverage, the research efforts mainly emphasized Anglo-Saxon regions and some developing countries, such as Iran and Nigeria.

Studies on fraud detection and prevention in Saudi private and public sectors were sparse. Hakimi and Rahmat (2019) conducted a study focusing on fraud prevention strategies in Saudi banking sector. Contrarily, Alanezi and Brooks (2014) primarily examined how online fraud control measures were organized and managed in Saudi financial institutions. In'airat (2015) investigated the role of corporate governance in reducing fraudulence in the private sector.

Given the previous studies' outcomes, this study addressed the gap involving fraud detection and prevention in Saudi public and private organizations. Saudi Arabia's Vision 2030 aimed to transform the "government-led economic and social model to a more market-based approach that corresponded to other modern economies" (Al-Kibei et al., 2015). Following the Saudi Attorney General (Kalin & Paul, 2018), the anti-corruption initiative in 2017 recovered the misuse of 100 billion

USD through systematic corruptions and embezzlements over decades. As such, this research proved both timely, relevant, and sought to answer the main research question regarding the implementation of fraud detection and prevention methods by Saudi private and public organizations.

Based on the main research question, the study aimed to achieve several objectives from the relevant literature review such as identifying the level of fraud awareness among public and private sectors' employees, examining the existence of fraud detection and prevention methods, investigating technological implementations to detect and prevent fraud in public and private Saudi organizations.

The following sections are arranged as follows: Section 1 presents the literature review; Section 2 describes the research methodology employed; Section 3 provides the study analysis and discussions of the results, and finally the conclusion of the study.

1. Literature Review

Fraud, as an intentional act of deception or use of other unfair means, serves to deprive an individual or organization of property or money (ACFE, 2007). According to Cressey (1973), fraud can be represented as a triumvirate of motive, rationalization and opportunity. Acute financial needs typically beget motive, bolstered by rationalization with a mental state justifying fraudulence, and aptly enabled by an opportunity to perpetrate fraud with weak or non-existent internal control in private or public organizations.

Although fraud detection and prevention methods are generally used to prevent fraudulence, there needs to be a clear distinction between both aspects. Typically, fraud prevention methods are installed to counter potential fraudulent acts. However, failure to prevent fraud triggers detection to identify the fraud types perpetrated (Bolton & Hand, 2002). Multiple evidence indicates that conventional auditing approaches proved insufficient in fraud detection and prevention, even delaying fraudulent discoveries by months (Bollen et al., 2005; Hassink et al., 2010). Bollen et al. (2005) in conducting a study evaluating 60 European business failures over the past 25 years, revealed considerable skepticism surrounding auditors' roles, as audit firms were more likely to be sued for business failures involving

frauds committed by managers or employees. Additionally, an empirical study by Hassink et al. (2010) to disclose auditors' roles in fraudulent cases revealed that fraud detections by external auditors were relatively small in number. It was also reported that non-Big 4 auditors identified more high-profile fraudulent cases than their counterparts and concluded that most auditors lacked the expertise in fraud detection and reporting. The consequent losses from fraudulence might render organizations unsustainable.

A PwC's (2012) survey on fraud awareness, prevention, and detection methods in New Zealand public sector reported that internal control systems were effective fraud detection mechanisms. Specifically, 36% of the survey respondents stated that internal control systems were capable of fraud detection. The survey also indicated that external auditors discovered less than 1% of fraudulent acts as fraud detection was neither emphasized nor substantial in external audit work. Nevertheless, Apostolou and Crumbley (2008) mentioned that both stakeholders and accounting bodies strengthened auditors' roles in fraud detection. For example, the Public Company Accounting Oversight Board (PCAOB) included a provision in auditing standards (AU section 316.52) to discuss the scope, nature, and timing of auditing procedures to address fraud-related risks through material misstatements.

A collaboration between KPMG and *Australian National Audit Office* to prepare a 'Better Practice Guide' identified fraud detection and prevention methods as the primary cost-effective defense lines (KPMG, 2013). Both organizations concurred on developing efficient internal control systems and conducting regular vendor reviews, data mining, and analysis. The development and assessment of internal and external reporting mechanisms, such as hotlines, web-based reporting, establishment of ethical organizational cultures, and regular fraud awareness programs for staff, vendors, and customers were also highlighted to counter fraudulence.

Further, Sahdan et al. (2020) reiterated the essential role of forensic accountants in public organizations to thwart fraudulent activities. It was revealed that the number of fraud cases detected or prevented rose from 75,000 to 80,000 between 2016 and 2017. Regardless, the findings cited low enthusiasm

and ambivalence concerning the value of Forensic Accounting Services (FAS) arising from financial constraints. According to Hegazy et al. (2017), the Fraud and Corruption Tracker (CFaCT) report by the Chartered Institute of Public Finance & Accountancy (CIPFA, 2016), covering all 353 Local Authorities in England acknowledged fraud as a major predicament in the public sector. Hegazy et al. (2017) also noted that CIPFA did not promote the implementation of external fraud prevention and detection mechanisms despite the significant global development in anti-fraud measures.

As a tool, Eiya and Otolor (2014) asserted that forensic accounting was crucial in managing financial crimes. Regarding forensic accountants as expert witnesses, skills and expertise were utilized to articulate opinions on investigations of fraudulent activities. Moreover, Bierstaker et al. (2006) observed that despite minimal engagements involving forensic accountants from public and private organizations in fraud detection and prevention, assignments still retained the highest mean ratings concerning effectiveness.

Albrecht et al. (2018) stressed that technological advancements enabled proactive fraud detection techniques through data analyses and transactions to distinguish fraudulent signs, such as trends, numbers, and other distinctive anomalies. Earlier, Bierstaker et al. (2006) highlighted that firewalls, password protection, and computer anti-viruses were constantly used to prevent fraudulence. Bierstaker et al. (2006) also identified that discovery sampling, continuous auditing, digital analyses, and data mining were infrequently used by accountants as fraud detection techniques despite their high ratings on effectiveness. For example, Chen et al. (2019) recommended data mining techniques in fraud detection regarding financial statements of business groups. In a study on Islamic banks, Rahman and Anwar (2014) reported that protective software, firewalls, passwords protection, and filtering were effective fraud detection and prevention methods.

Pincus (1989) studied the potency in employing red flag questionnaires to evaluate and detect possibilities of fraud. The study revealed that auditors using red flag questionnaires in fraud-related risk assessments comprehensively measured potential fraud indicators much better compared

to auditors without red flags questionnaires. Additionally, Gullkvist and Jokipii (2013) examined red flags based on fraud types, asset misappropriations, and fraudulent financial reporting. It was revealed that red flags were vital entries in internal auditors' reports to detect asset misappropriations.

In a study on listed Malaysian companies, Chin et al. (2019) revealed that continuous monitoring of internal control systems and protection software positively related to fraud prevention. As for the public sector, Othman et al. (2015) identified several effective fraud detections and prevention mechanisms, such as operational audits, enhanced audit committees, improved internal control, implementation of fraud-reporting policies, staff rotations, anti-fraud hotlines, and forensic accountants. The study also identified anti-fraud and whistleblowing policies, random audits, fraud awareness programs, training, fraud reviews, fraud examination departments, penalties, and disciplinary actions against fraudulence as vital contributors to fraud detection and prevention.

Prior studies revealed that adoption of ethical codes may lack credibility in fraud-reporting, particularly when the codes were unethically implemented with ambiguous fraud policy-reporting practices (Andrade et al., 2017; Houdek, 2020). In this regard, Lee and Fargher (2013) viewed the establishment of hotlines to be costly. The findings revealed that organizations considered the economic costs and benefits of whistleblowing mechanisms. Although a stronger corporate governance led to higher whistleblowing disclosures, the system did not strengthen ethical codes. Soltes (2020) undertook a study on the installation of whistleblowing hotlines for individuals to report alleged misconducts in approximately 250 firms and revealed that one-fifth of the firms experienced reporting issues (disconnected phone lines and rejected emails). Approximately 10% of the firms failed to provide prompt responses. This study also highlighted disparities between integration of initiatives on paper and actual practices.

Private and public organizations reflect growing concern on misrepresented financial statements and asset misappropriations, thus prompting the utilization of various fraud detection and prevention techniques to reduce direct and indirect costs of fraudulence. As such, fraud detection and prevention techniques

include (but are not limited to) anti-fraud policies, hotlines, employees' reference checks, fraud reviews, vendors' contract reviews, analytical reviews, password protection, firewalls, data mining, data analyses, and discovery samplings (Bierstaker et al., 2006; Othman et al., 2015; Chen et al., 2019; Sujana & Saputra, 2020). It is also noteworthy to mention that fraud-free public and private organizations were found heavily reliant on intangible prevention methods, such as ethical codes of conduct or fraud-reporting policies (PwC, 2018).

The institutional theory illustrated a viable approach to the underlying tenets of successful fraud prevention and detection techniques in private and public organizations. According to DiMaggio and Powell (1991), human activities developed institutions and vice versa. Nevertheless, institutions did not necessarily emerge from conscious human designs. For example, Scott (1995) emphasized that the integration of institutions with cognitive, normative, and regulative constructs achieved stability and meaningful social behaviors. Furthermore, Moll et al. (2006) highlighted that institutional perceptions were built on the premise that organizations follow wider social values for legitimacy. The values consequently affirmed the relevance of activities and practices constituting organizational work and would apply to other organizations operating in similar contexts. Also, organizations would conform to norms that alluded to appropriate performance and internal structures and procedures (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). In contrast, Hirsch and Berriss (2009) argued that institutionalized rules were rarely complied to and were often contradictory. Organizations typically comprise various constituent groups fronting different interests and targets, thus leading to inconsistencies. Hence, the proposition of de-coupling indicated that the formal structure of an organization and workable blueprints of organizational activities barely reflected the real-life activities. Under such circumstances, Meyer and Rowan (1977) concluded that the outcome generally resulted in frequent non-compliance of rules, various unimplemented decisions, or unprecedented consequences in the event of implementation.

Such consequences included problematic or inefficient technological implementations and altered evaluation and inspection systems into vague, impractical, or impossible statutes for

coordination. In reflecting the argument within the fraud detection and prevention context, the resultant ambiguities did not promote the establishment and execution of absolute detection and preventive measures. Hirsch and Bermis (2009) highlighted that organizations rarely achieved internal institutional elements and were subjected to institutional pressure from external factors. In alleviating external institutional pressure, organizations opted to justify the technical activities by de-coupling structural elements from other activities, thus adversely affecting dexterity (Meyer & Rowan, 1977).

2. Research Methodology

This research paper presented an exploratory case study on fraud detection and prevention within the particular social, economic, and cultural environment of Saudi Arabia. An inquiry approach through questionnaires were used for data-gathering purposes. The questionnaires were structured to investigate the perceptions of accountants, internal and external auditors

from the Saudi public and private sectors. The study samples were selected randomly from 6 public and 14 private Saudi organizations.

The study primarily adopted a questionnaire used by Othman et al. (2015) to adequately outline critical information for the study objectives. The close-ended and structured questionnaires consisted of 43 items that were divided into 4 sections: Section A requested respondents to answer questions on fraud awareness, Section B concerned respondents' knowledge of fraud detection and prevention techniques in their organizations, Section C involved technological usage in fraud detection and prevention, and Section D pertained to respondents' demographic profile. As all respondents spoke Arabic, the questionnaire was translated from English to Arabic and subsequently evaluated by a certified translator.

Although 50 participants were deemed sufficient for this study, 100 participants were targeted. Out of 200 distributed questionnaires, 83 were returned but only 60 were valid, hence denoting a 30% response rate. All the potential

Tab. 1: Demographic profile

Description		N = 60	Percentage
Gender	Male	55	91.7
	Female	5	8.3
Age group	<30 years old	9	15
	31–40 years old	26	43.3
	41–50 years old	17	28.3
	51–60 years old	8	13.3
Academic qualifications	Diploma	8	13.3
	Bachelor's degree	24	40.0
	Professional	2	3.3
	Master's degree	22	36.7
	PhD	4	6.7
Experience	<5 years	9	15.0
	6–10 years	10	16.7
	11–15 years	15	25.0
	>16 years	26	43.3
Sector	Public sector	22	36.7
	Private sector	38	63.3

Source: own

participants were pre-defined, accessible, reliable, and approachable through appropriate channels to increase response reliability and minimize risks involving self-selection and non-probability sampling. The questionnaires did not include a wide range of participants as survey participation was voluntary (Lavrakas, 2008).

3. Data Analysis & Discussion

3.1 Demographics

The respondents consisted of 55 males (91.7%) and 5 females (8.3%). The low percentage of female participants is reminiscent of the low rate (below 20%) of female participation in Saudi private and public organizations. The age group ranging between 31 and 40 years old represented the highest average age group (43.3%), followed by 41 and 50 years old (28.3%), less than 30 years old (15%), and 51 and 60 years old (13.3%).

As per academic qualifications, most of the respondents (40%) were undergraduate degree holders, followed by graduate degree holders (36.7%), diploma holders (13.3%), and doctorate holders (6.7%). Regarding work experience, the majority of respondents had over 16 years of work experience (43.3%), followed by work experience between 11 and 15 years (25%). The majority of respondents held senior or executive positions, with 16.7% having six to 10 years of experience at the management and professional levels, while 15% had less than 5 years of experience at the management and professional levels. Concerning sectors, 63% of the respondents represented the private sector, whereas 36.7% represented the public sector.

Tab. 1 illustrates a summarized demographic profile of the study's respondents.

3.2 Inferential Analysis Distribution of Scores between Public and Private Sectors' Employees

The study further ventured to investigate any significant differences in the distributions of scores between public and private sectors' employees on the 3 primary variables of interests (fraud awareness, fraud detection and prevention methods, and fraud detection technology usage). The approach involved applying a null hypothesis on the score-distributions across the 2 employees' categories as follows:

H_0 : *There are no significant differences in the distribution of public and private sectors' employees' scores on fraud awareness, fraud detection & prevention methods, and fraud detection technology usage.*

Following Tab. 2, the Shapiro-Wilk test (1965) ($p < 0.05$) reported that public and private sectors' employees' scores were not normally distributed on the 3 main variables of interest (fraud awareness, fraud detection and prevention methods, and fraud detection technology usage).

Tab. 3 presents the null hypotheses results on the distribution of 3 main variables (fraud awareness, detection and prevention methods, and fraud detection technology usage) across the public and private sectors' employees' categories. The distributions of fraud awareness and fraud detection technology usage were

Tab. 2: Normality tests

	Sector	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Fraud awareness	Public	0.207	22	0.015	0.891	22	0.020
	Private	0.101	38	0.200*	0.978	38	0.661
Detection methods	Public	0.118	22	0.200*	0.948	22	0.291
	Private	0.104	38	0.200*	0.882	38	0.001
Fraud detection technology usage	Public	0.185	22	0.048	0.806	22	0.001
	Private	0.126	38	0.133	0.922	38	0.011

Source: own

Note: *This is a lower bound of the true significance;

^aLilliefors significance correction.

Tab. 3: Mann-Whitney test

Null hypothesis	Test	Sig.	Decision
The distribution of awareness is the same across categories of sector.	Independent-samples Mann-Whitney U test	0.423	Retain the null hypothesis
The distribution of prevention and detection methods is the same across categories of sector.	Independent-samples Mann-Whitney U test	0.000	Reject the null hypothesis
The distribution of fraud detection technology usage is the same across categories of sector.	Independent-samples Mann-Whitney U test	0.400	Retain the null hypothesis

Source: own

insignificant at the level of 0.423 and 0.400, respectively, and retained the null hypotheses. The results implied no significant differences between the public and private sectors' employees' scores on fraud awareness and fraud detection technology usage. Interestingly, the results pointed to a variation in the distribution of fraud detection and prevention methods between the employees' categories.

As a result, further analysis will be performed jointly across the public and private sectors' employees.

3.3 Fraud Awareness

In addressing the first study objective, Section A of the survey questionnaire comprised 10 items designed to identify fraud awareness among private and public sectors employees.

Tab. 4: Fraud awareness

Code	Items	Strongly disagree	Disagree	Slightly agree	Agree	Strongly agree	Mean	SD
FA1	I expect fraud to increase in my organization in the future.	6 (10%)	13 (21.7%)	27 (45%)	6 (10%)	8 (13.3%)	2.95	1.13
FA2	My organization has been a victim of fraud.	11 (18.3%)	20 (33.3%)	15 (25%)	9 (15%)	5 (8.3%)	2.61	1.19
FA3	In the event of fraud, I will report the incident to the responsible party.	5 (8.3%)	3 (5%)	2 (3.3%)	13 (21.7%)	37 (61.7%)	4.23	1.25
FA4	All the employees including the top management are responsible for fraud detection.	5 (8.3%)	4 (6.7%)	5 (8.3%)	16 (26.7%)	30 (50%)	4.03	1.27
FA5	Internal auditors play a critical role in detecting fraud.	2 (3.3%)	0 (0%)	7 (11.7%)	19 (31.7%)	32 (53.3%)	4.31	0.93
FA6	Fraud is frequently detected during the audit process.	2 (3.3%)	0 (0%)	7 (11.7%)	19 (31.7%)	32 (53.3%)	4.31	0.93
FA7	We are always under pressure to satisfy certain demands beyond our authority.	4 (6.7%)	6 (10%)	12 (20%)	22 (36.7%)	16 (26.7%)	3.67	1.17
FA8	Fraud detection techniques in my organization have improved in the past 3 years.	2 (3.3%)	9 (15%)	13 (21.7%)	21 (35%)	15 (25%)	3.63	1.12
FA9	I have regularly attended training on fraud prevention.	6 (10%)	17 (28.3%)	14 (23.3%)	13 (21.7%)	10 (16.7%)	3.07	1.26
FA10	My organization conduct audit committee meetings more than once a year.	2 (3.3%)	5 (8.3%)	14 (23.3%)	21 (35%)	18 (30%)	3.80	1.07

Source: own

The descriptive analysis in Tab. 4 reveals the frequencies, means, and standard deviations for the results of each item.

Specifically, the majority of mean scores in the section ranged from 3.63 to 4.31. For example, the responses of seven items (FA3 to FA8 and FA10) were between 'agree' and 'strongly agree'. Hence, the respondents were highly aware of fraud and reporting venues. In contrast, 3 items (FA1, FA2, and FA9) had mean scores ranging between 2.61 to 3.07 and represented the opposing side of the scale between 'disagree' and 'slightly agree'.

In evaluating fraud awareness among Saudi private and public sectors' employees, respondents were asked whether their organizations were victims of fraud (FA2) and whether organizational fraudulence would eventually increase (FA1). The results showed that 45% of the respondents slightly agreed, 10% agreed, and 13.3% strongly agreed that organizational fraudulence would eventually increase (FA1). When asked whether the respondents' organizations were victims of fraud, 52% of the respondents accumulatively disagreed with the statement. Contrarily, the remaining 48.3% accumulatively believed that their organizations were victims of fraud. Specifically, 25% slightly agreed, 15% agreed, and 8.3% strongly agreed. The anomaly might have contributed to the lowest mean score for item FA2. Additionally, the results were indicative of respondents' wariness in decision-making. As elaborated by Farooqi et al. (2017), ambiguous moral expectations affected employees' reporting behaviors.

The majority of responses for items FA3, FA4, FA5, FA6, FA7, FA8, and FA10 on fraud awareness demonstrated high means. Regardless, the responses to item FA9 on regular anti-fraud training showed a low mean score ($M = 3.07$). Upon receiving regular training, 38.3% of the respondents disagreed on regular fraud prevention training, whereas 61.7% agreed on the same matter. The findings above could indicate that respondents were highly aware of the general guidelines involving fraud awareness. Nevertheless, the responses on whether their organizations were victims of fraud or provided regular fraud prevention training were distinctly split between 'disagree' and 'slightly agree'.

Such findings might indicate that some Saudi organizations in both sectors did not

provide regular fraud prevention training in line with Othman et al. (2015) and Chin et al. (2019). Both studies cited sporadic training on fraud prevention and detection in the public and private sectors. Notably, Halbouni et al. (2017) reported that employee training programs significantly influenced fraud prevention and detection in the United Arab Emirates (UAE). Regarding employees who were pressured into fulfilling certain demands beyond their given authorities (F7), most respondents (83%) agreed on encountering such pressure. The outcome was significant in considering the earlier finding, wherein 38.3% of the respondents did not undergo regular training for protection and were coerced to bypass authorities to satisfy work demands.

Given the combination of both factors, it was highly probable that employees followed instructions from superiors without due consideration of appropriateness. Respondents without regular training were deprived of the necessary knowledge and skills for fraud detection, typically de-coupling the "separation between external image (pretentious compliance) and actual structures and procedures" (Meyer & Rowan, 1977; Hoque, 2006) following the institutional theory.

3.4 Fraud Detection and Prevention Methods

The second study objective examined the existence of fraud detection and prevention methods in public and private Saudi organizations. Accountants and auditors were asked on the extent to which certain fraud prevention and detection techniques were utilized. A list of 24 fraud-related items in Section B explicitly denoted fraud techniques and software. Tab. 5 exhibited the mean scores for the 24 items ranging from 3.58 to 4.47 and was ranked from most frequently used to least frequently used.

The findings revealed that most of the mean scores were favorably high. For example, inventory observations scored $M = 4.47$, cash reviews scored $M = 4.43$, fraud-reporting policy implementations scored $M = 4.37$, auditing for fraud detection scored $M = 4.35$, internal control reviews and improvement scored $M = 4.33$, and operational audits scored $M = 4.32$. The high mean scores suggested that the items were common mechanisms in public and private Saudi organizations to detect and prevent fraud. Furthermore, the results indicated a high

mean score ($M = 4.20$) on the elevated role of audit committees and senior managements ($M = 4.33$) in fraud detection and prevention.

The findings indicated that accountants and auditors played a significant role in both sectors despite the lack of regular training as previously highlighted. The findings also corresponded to Chin et al. (2019), whereby internal audits

(anti-fraud or operational audits) and rigorous and sound internal control mechanisms enabled better fraud detection and prevention. Moreover, Andrade et al. (2017) observed that codes of ethics or conduct provided workers with a formal idea of expected behaviors. The codes provided standards on employees' actions within the corporate community.

Tab. 5: Fraud detection and prevention methods – Part 1

Code	Items	Strongly disagree	Disagree	Slightly agree	Agree	Strongly agree	Mean	SD
	My organization always:							
FDT1	-implements a corporate code of conduct/ethics policy	0 (0%)	3 (5%)	13 (21.7%)	22 (36.7%)	22 (36.7%)	4.05	0.89
FDT2	-reviews and improves internal control	0 (0%)	4 (6.7%)	2 (3.3%)	24 (40%)	30 (50%)	4.33	0.84
FDT3	-conducts reference checks on employees	0 (0%)	3 (5%)	5 (8.3%)	28 (46.7%)	24 (40%)	4.22	0.80
FDT4	-reviews employment contracts	0 (0%)	4 (6.7%)	8 (13.3%)	23 (38.3%)	25 (41.7%)	4.15	0.89
FDT5	-conducts anti-fraud auditing	0 (0%)	4 (6.7%)	5 (8.3%)	17 (28.3%)	34 (56.7%)	4.35	0.89
FDT6	-implements a fraud-reporting policy	1 (1.7%)	2 (3.3%)	8 (13.3%)	12 (20%)	37 (61.7%)	4.37	0.95
FDT7	-implements anti-fraud hotlines	1 (1.7%)	3 (5%)	5 (8.3%)	14 (23.3%)	37 (61.7%)	4.38	0.95
FDT8	-implements a whistleblowing policy	2 (3.3%)	4 (6.7%)	4 (6.7%)	12 (20%)	38 (63.3%)	4.33	1.08
FDT9	-conducts operational audits	1 (1.7%)	2 (3.3%)	5 (8.3%)	21 (35%)	31 (51.7%)	4.32	0.89
FDT10	-employs forensic accountant services	3 (5%)	6 (10%)	4 (6.7%)	20 (33.3%)	27 (45%)	4.03	1.17
FDT11	-conducts fraud prevention and detection training	1 (1.7%)	4 (6.7%)	3 (5%)	11 (18.3%)	41 (68.3%)	4.45	0.98
FDT12	-conducts ethics training	2 (3.3%)	3 (5%)	6 (10%)	14 (23.3%)	35 (58.3%)	4.28	1.06
FDT13	-installs surveillance equipment	2 (3.3%)	4 (6.7%)	15 (25%)	18 (30%)	21 (35%)	3.87	1.08
FDT14	-increases the attention of senior management	0 (0%)	4 (6.7%)	5 (8.3%)	18 (30%)	33 (55%)	4.33	0.89
FDT15	- implements codes of conduct against suppliers/contractors	3 (5%)	3 (5%)	8 (13.3%)	15 (25%)	31 (51.7%)	4.13	1.14
FDT16	-increases the role of audit committees	2 (3.3%)	2 (3.3%)	10 (16.7%)	14 (23.3%)	32 (53.3%)	4.20	1.05
FDT17	-engages in electronic surveillance	4 (6.7%)	5 (8.3%)	19 (31.7%)	16 (26.7%)	16 (26.7%)	3.58	1.17
FDT18	-implements staff rotation policy	1 (1.7%)	6 (10%)	12 (20%)	18 (30%)	23 (38.3%)	3.93	1.07

Tab. 5: Fraud detection and prevention methods – Part 2

Code	Items	Strongly disagree	Disagree	Slightly agree	Agree	Strongly agree	Mean	SD
	My organization always:							
FDT19	-establishes the security department	3 (5%)	5 (8.3%)	12 (20%)	19 (31.7%)	21 (35%)	3.83	1.15
FDT20	-implements employee counselling program	3 (5%)	3 (5%)	4 (6.7%)	18 (30%)	32 (53.3%)	4.22	1.11
FDT21	-conducts cash reviews	0 (0%)	3 (5%)	3 (5%)	19 (31.7%)	35 (58.3%)	4.43	0.81
FDT22	-conducts inventory observation	0 (0%)	3 (5%)	2 (3.3%)	19 (31.7%)	36 (60%)	4.47	0.79
FDT23	-performs bank reconciliations	0 (0%)	3 (5%)	9 (15%)	18 (30%)	30 (50%)	4.25	0.89
FDT24	-engages an ethics officer	1 (1.7%)	4 (6.7%)	7 (11.7%)	17 (28.3%)	31 (51.7%)	4.22	1.01

Source: own

Following the results in Tab. 5, implementing fraud hotlines ($M = 4.38$) and the whistleblowing policy ($M = 4.33$) indicated high mean scores. Such high mean scores on both items indicated the common usage of the mechanisms in both Saudi sectors based on the anti-fraud regulations established in 2017. Regardless, such findings were not adequately bolstered by the Saudi legal system and legal protections for whistleblowers (PwC, 2012). Hence, employees still feared unemployment due to inadequate legal protections.

Gottschalk (2020) iterated that when fraudulence involved a high-profile individual, whistleblowing could be particularly detrimental. Likewise, the use of anti-fraud hotlines was also limited in both Saudi sectors. Few corporations provided facilities for staff to report unethical practices among colleagues or superiors. Following the commitment of the Saudi government in battling corruption from 2017, a government-sponsored hotline was established for both sectors to report suspected fraudulent activities. Nevertheless, appropriate remedial procedures based on the reported acts were vague and was exacerbated by the absence of legal provisions to protect whistleblowers.

The results in Tab. 5 indicates that installing surveillance equipment scored a mean of $M = 3.87$, establishing a security department scored $M = 3.83$, and engaging in electronic surveillance scored $M = 3.58$. The results

reflected that those items were among the least used fraud detection methods in both sectors. The most notable score concerned the mean of employing forensic accounting ($M = 4.03$). Despite a high mean, the score declined towards a lower range following the average mean score ($M = 4.19$) for all items. Therefore, the results allude to the effective role of forensic accountants in fraud detection and prevention by utilizing multidimensional skills involving audits, laws, and valuable investigative techniques. As forensic accounting is still a relatively new discipline in the Saudi accounting environment, no authorities or charters championed the field except superficially under SOCPA.

The premise was aptly demonstrated in Sahdan et al. (2020), whereby respondents acknowledged the significant threat of organizational fraud in size and complexity. However, the adoption of fraud detection and prevention methods suffered from the lack of committed champions. It was concluded that fraud detection and prevention methods could potentially fulfil the need to uncover fraudsters. Nonetheless, the adoption was hampered by a lack of awareness and inherent apprehensions (some degree of unwillingness to adopt fraud detection and prevention methods and financial constraints). Interestingly, the low mean score of staff rotation policy ($M = 3.93$) implicated that the absence of a strong rotation policy might diminish the quality of fraud detection techniques.

3.5 Fraud Detection Technology Usage

The third study objective addressed technological usage involving fraud detection and prevention in public and private Saudi organizations. Section C comprised 9 items on fraud detection technology in both sectors. Following Tab. 6, the results presented a high mean score ranging from 4.0 to 4.35 and represented high technological investments towards fraud detection in the Saudi private and public organizations. Specifically, 5 items recorded the highest mean scores: password protection ($M = 4.42$), firewalls ($M = 4.35$), filtering software ($M = 4.35$), performing continuous audits ($M = 4.35$), and virus protection ($M = 4.28$). The findings corresponded to Bierstaker et al. (2006), thus affirming that technologies including firewalls and password protection were the most effective methods used in fraud detection and prevention technologies.

The remaining 4 items depicted the mean scores of $M = 4.20$ for data mining analysis, $M = 4.10$ for discovery sampling, $M = 4.10$ for digital analysis, and $M = 4.05$ for calculating financial ratios. Overall, the high mean scores indicated high technological investments by

Saudi public and private organizations to counter fraudulence.

Conclusion

This study explored and gauged the degree of fraud awareness among Saudi employees in both the public and private sectors, while concurrently assessing the perceptions of accountants and auditors (internal and external) on the effectiveness of the current fraud detection and prevention initiatives implemented in Saudi Arabia. The study indicated a high awareness level of fraud among public and private sectors' employees. The results also implied that accountants and auditors were also highly aware of the general fraud awareness guidelines, subsequent responsibilities, and reporting venues.

Regardless, and interestingly, most respondents predicted a potential increase in organizational fraud despite being employed in fraud-free companies. Driven by this contradiction, the study found out that public and private Saudi organizations had not provided regular fraud prevention and detection training to their employees. Significantly, training is acknowledged as capable of enhancing the

Tab. 6: Fraud detection technology usage

Code	Items	Strongly disagree	Disagree	Slightly agree	Agree	Strongly agree	Mean	SD
	My organization:							
FT1	-employs discovery sampling	2 (3.3%)	4 (6.7%)	7 (11.7%)	20 (33.3%)	27 (45%)	4.10	1.07
FT2	-performs data mining analysis	1 (1.7%)	0 (0%)	11 (18.3%)	22 (36.7%)	26 (43.3%)	4.20	0.86
FT3	-conduct digital analysis	0 (0%)	5 (8.3%)	8 (13.3%)	23 (38.3%)	24 (40%)	4.10	0.93
FT4	-performs continuous auditing	2 (3.3%)	1 (1.7%)	3 (5%)	22 (36.7%)	32 (53.3%)	4.35	0.92
FT5	-calculates financial ratios	2 (3.3%)	3 (5%)	11 (18.3%)	18 (30%)	26 (43.3%)	4.05	1.06
FT6	-implements virus protection	4 (6.7%)	3 (5%)	3 (5%)	12 (20%)	38 (63.3%)	4.28	1.19
FT7	-implements password protection	2 (3.3%)	3 (5%)	4 (6.7%)	10 (16.7%)	41 (68.3%)	4.42	1.05
FT8	-implements firewalls	3 (5%)	1 (1.7%)	5 (8.3%)	14 (23.3%)	37 (61.7%)	4.35	1.05
FT9	-implements filtering software	2 (3.3%)	2 (3.3%)	4 (6.7%)	17 (28.3%)	35 (58.3%)	4.35	0.99

Source: own

knowledge of internal auditors and accountants and provided them with the appropriate skillsets in handling fraud-related issues, particularly when most respondents agreed that the pressure to bypass authorities to satisfy work demands was present.

In integrating both factors, this study observed that it was highly probable for employees to follow instructions from superiors without being aware of the legality or appropriateness of the actions. In other words, employees would confront a constant dilemma without proper training. Following the Institutional Theory of Normative Isomorphism, public and private Saudi organizations were well adapted to fraud awareness regarding the structures and procedures “advocated by particular dominant professions, professional bodies, and consultants” (Hoque, 2006). Regardless, regular employees’ training was not duly considered thus indicating de-coupling.

In pursuing the second objective of the study to identify fraud detection and prevention methods by public and private Saudi organizations, the study found common availability of procedures to review and improve internal controls, implementing fraud-reporting policies, plus expanding audit committees and senior managements’ responsibilities in detecting and preventing fraud. The findings supported that accountants and auditors significantly influence fraud detection and prevention in public and private Saudi organizations. This corresponded with Apostolou and Crumbley’s (2008) reiteration that the integration of internal audits (fraud or operational audits) and rigorous and sound internal control mechanisms effectively detected and prevented fraud. Notably, anti-fraud hotlines and whistleblowing were commonly implemented by Saudi public and private Saudi organizations following the regulations established in 2017. Nonetheless, such features were not adequately supported by the Saudi legal system due to the ambiguous availability of legal protections for whistleblowers. Nevertheless, the legal anomalies were not entirely attributable to the Institutional Theory of Mimetic Isomorphism. Public and private Saudi organizations rarely replicated one another in legitimizing the implementation of hotlines or having clear policies for protecting whistleblowers.

As the anomalies could not be attributed to external forces (government policies or regulations), fraud policies only reside in SAMA

guidelines (SAMA, 2008) to oversee Saudi banks, finance and insurance companies. Ironically, the guidelines failed to include any requirements for establishing hotlines or whistleblowing policies for companies. Moreover, hotlines and policies were not even referred to, required, or recommended under the revised Saudi corporate governance regulations (SAMA, 2017). Notably, the newly-established Saudi National Anti-Corruption Commission (Nazaha) in 2011 claimed that laws protecting whistleblowers would eventually be issued (Alghamdi, 2019). The study also noted the sparse utilization of forensic accounting as a mechanism to detect and prevent fraud among Saudi public and private organizations. In the Saudi accounting-regime’s context, forensic accounting is still lacking authority and is still superficially placed under SOCPA.

Corresponding to the third objective regarding fraud detection technology usage implemented by Saudi public and private organizations, the study found high investments in anti-fraud technologies by both sectors’ examined. Specifically, 5 items recorded the highest mean scores: password protection, firewalls, filtering software, performing continuous audits, and virus protection. The findings corresponded to Bierstaker et al. (2006), reaffirming firewalls and password protection as the most effective methods in anti-fraud technology. The study also noted data mining analysis, discovery sampling, digital analyses, and financial ratio calculations were among the most commonly-used technological detection techniques by Saudi public and private organizations.

The outcomes of this study provided crucial insights into the various aspects pertinent to fraud detection and prevention in Saudi Arabia, viz-a-viz hardware, infrastructure, and human resources in pursuit to establish a society unencumbered by fraudulent elements. Importantly, the findings boosted the significance of educating and training Saudi employees from both sectors to manage fraud and succeed in attempts to overcome corruption in both private and public sectors. The study also revealed the Saudi authorities’ concerted efforts to manage fraud and corruption. This study conclusively pointed to the need for a national objective requiring the installation of appropriate anti-fraud mechanisms through an adequately trained workforce.

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