The Impact of the Internal Control System on the Detection and Prevention of Fraud in the Public Sector in Morocco

Htoutou Hasna¹, Hasnaoui Rachid²

¹ PhD student, Ibn Tofail University, Faculty of Economics and Management (FEG), Kénitra, Morocco ² Research Professor, Ibn Tofail University, Faculty of Economics and Management (FEG), Kénitra, Morocco

Abstract:- The aim of this research is to study the impact of the internal control system on the detection and prevention of fraud in the Moroccan public sector, particularly in public establishments. The authors carried out a quantitative study using a questionnaire addressed to a sample of civil servants from 12 public establishments across Morocco; exploiting the PLS method, the results of the study show that the internal control system has a positive and significant impact on the detection and prevention of fraud. In addition, each component of internal control according to Committee of Sponsoring Organizations of the Treadway Commission (COSO) 2013 has a positive and significant effect on fraud detection and prevention.

Keywords: Internal Control, Detection, Prevention, Fraud, COSO Components

1. Introduction

In Roman mythology, Mercury, the god of commerce, was also the god of thieves (Le Maux & al, (2013).

In recent years, fraud has become an increasingly worrying problem for many entities; just like the private sector, the public sector is affected by this scourge which can take many forms (corruption, falsification of documents, embezzlement...) and which can have economic and social consequences, with the loss of investors and resources and the endangerment of the serenity and stability of the nation.

In 2021, Morocco scored 39/100 in the Corruption Perceptions Index (National Authority for Probity, Prevention, and the Fight against Corruption), ranking ninth in the Arab world, followed by twelve countries, and twelfth in Africa.

At national level, opinion polls - carried out by the INPPLC as part of the confidence index for the year 2021 - confirm that 95% of respondents consider that corruption is widespread in Morocco. And in terms of prosecutions, the authority affirms that, according to the public prosecutor's report, the hotline dedicated to denouncing acts of corruption received 15743 calls during 2020, 164 arrests of suspects in flagrante delicto (bribes ranging from 50MAD to 300000MAD) and the sectors concerned are public authority, police, gendarmerie, water and forests, health, justice, equipment and transport... with regard to financial crime, the report confirms that the number of complaints and reports received by the Financial Crimes Department reached 606, including 367 in 2020 and 239 in 2019.

In this context, fraud prevention should be the responsibility of the entire organization. Rigorous controls are needed to reduce the potential for fraud. For this reason, the introduction of proactive fraud detection measures would give all staff the opportunity to help reduce fraud and, at the same time, increase the perception of detection, thus preventing future fraud.

Every organization designs an internal control system, a security system that enables it to take full control and avoid errors. It therefore seems crucial to examine the impact of an internal control system on fraud detection and prevention in the public sector.

This research plans to evaluate the effect of an internal control system on the detection and prevention of fraud according to Committee Of Sponsoring Organizations of the Treadway Commission (COSO) FRAMEWORK 2013 in public establishments in Morocco (case of the Regional Academies of Education Training).

This paper is structured in three parts; first, we discuss the concepts of fraud and internal control, then a literature review and the methodology adopted, and finally, the main results drawn from this research.

2. Concepts and definitions

A. Fraud

the word "fraud" originates from the latin word "fraus," which means "deceit" or "deception." it entered the English language around the 14th century, derived from old French "fraude" and ultimately from latin. the term has retained its meaning of intentional deception or trickery to gain unfair or unlawful advantage. The Institute of Internal Auditors (IIA) defines fraud as any illegal act characterized by deception, concealment, or breach of trust without violence or threat of violence. In a broader sense, fraud can cover all gains obtained by criminality, which uses error as its principal modus operandi (Wells, 2011).

For Houaiss (2007), fraud is "any deceptive or misleading act, in bad faith, with the intention of injuring or deceiving others, or of not fulfilling a given duty". For the Association of Certified Fraud Examiners (ACFE), a fraudster is one who lies to deprive a person or organization of their money or property.

Corporate fraud covers a series of illicit actions and conducts carried out consciously and premeditatedly by members of management that take place as part of a process, aimed at serving own interests and with the intention of harming third parties (Costa and Wood Jr, 2012).

According to the CNCC, fraud is an intentional act committed by one or more managers, persons constituting the company's government, employees or third parties, involving fraudulent maneuvers with the aim of obtaining an undue or illegal advantage, resulting in the alteration of accounts. For Coenen (2008), fraud is the intentional disregard of a system and an attempt to violate that system for personal gain; and most corporate systems are not set up to detect and prevent fraud.

Jamal, Johnson, and Beryman (1995) note that corporate fraud occurs when fraudsters identify an opportunity, make successive decisions aimed at obtaining illicit benefits, and manage the staging to conceal these decisions and their effects.

Donald Cressey carried out a study in which he put forward the following hypothesis: the combination of three factors can encourage a person's natural propensity for fraud: need or pressure, opportunity, and rationalization:

The pressure (or need) is linked to the cause of the fraud, i.e., a stressful need, often financial, which incites the subject to commit the fraud.

Opportunity refers to the possibility of committing the act of fraud, in other words, the fraudster could commit the act of fraud once he has a position of confidence and knowledge of internal control weaknesses. Cressey (1953) states that the existence of opportunity in addition to need would increase the risk of fraud.

Rationalization is the subjective justification of the act: the fraudster rationalizes his conduct and considers his act to be acceptable and justifiable behavior in response to a need (pressure).

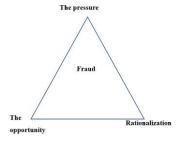


Fig. 1 The fraud triangle (Cressey 1950)

The fraud triangle, developed by Cressey (1950), is a model that explains the factors that drive (white-collar) men to commit fraudulent acts.

Opportunity refers to the perception that there is a flaw in the internal control system and that the act of fraud cannot be detected; it can be described as a situation where poor internal control in the organization can be manipulated by the employee to commit, conceal, and avoid punishment (K. Rae & N. Subramaniam, 2008). Opportunity is considered the factor that most influences the act of fraud, for example, if the subject has financial pressure (component of the fraud triangle) but no opportunity, fraud cannot occur. To assess the risk of fraud, opportunity should be understood in the fraud triangle, as it enables a solution to be found through illegitimate means (Dellaportas, 2012).

Factors favoring opportunity include weak internal controls and the absence of disciplinary measures against wrongdoers (Albrecht et al, 2012).

According to KPMG, opportunity in a context of weak internal control is a major factor contributing to accounting fraud.

B. Internal control

The French Institute of audit and internal control (IFACI) defines internal control as a process implemented by the board, management, and employees of an entity, designed to provide reasonable assurance regarding the achievement of objectives related to operations, reporting and compliance (COSO 2013).

Internal control brings together all the resources available to a company: finance, policy, marketing, IT, human relations, etc., with a view to achieving its (strategic and operational) objectives as "securely" as possible (Cohen, 2012).

According to COSO 1992, the mission of internal control is to:

- Carrying out and optimizing operations.
- Reliability of Financial information.
- Compliance with applicable laws and regulations.

The COSO framework defines five components of internal control, which make it possible to describe and analyze the internal controls in place within an organization:

- The control environment: this is an intangible factor. Yet it is the foundation of all other components of internal control, providing discipline and structure and encompassing both technical competence and ethical commitment.
- Risk assessment: the process of identifying risks to the achievement of the organization's objectives, analyzing
 them considering their probability of occurrence and their impact on the achievement of objectives and
 deciding how to respond.
- Control activities ensure that risk responses are effectively implemented, and include policies and procedures, approvals, authorizations, verifications, reconciliations, asset security and segregation of duties.
- Information and communication: Management obtains, produces, and uses relevant, high-quality information, from internal or external sources, to facilitate the operation of the other components of internal control. Communication is the continuous, iterative process by which this information is provided, shared, and obtained.
- Monitoring: Continuous, separate or both continuous and separate evaluations ensure that each of the five components of internal control is in place and functioning.

However, there is no such thing as zero risk, and COSO (2013) describes some of the limitations of the internal control system, for example: internal control cannot prevent human error, incorrect decisions or improperly preset objectives, management's ability to circumvent internal controls, or events external to the organization.

3. Literature review

For Evada Dewta et al (2021), internal control has a positive and significant effect on fraud prevention in public procurement (acquisition of goods and services); Ogund Nedge Joseph et al (2015) demonstrate a positive and significant relationship between an adequate internal control system and fraud prevention and detection in the public sector. Mazurina Mohd et al (2020) believe that the control environment has a significant effect on fraud prevention.

While Herawaty et al, (2020) claim that the internal control system does not affect fraud prevention, the study by Daning Ayu Ningsih et al (2022) asserts that the effectiveness of the internal control system has no effect on fraud in goods and services markets.

As for the effect of each component of the internal control system on fraud detection and prevention, the literature confirms a positive and significant relationship between them; the table below summarizes all the literature studied:

Table 1 literature

Internal control	Literature		
components			
	Valentine et al, 2002: a positive and significant relationship between an ethical environment and the degree of employee involvement		
Control	Daning Ayu Ningsih et al (2022): integrity has no effect and was significant in preventing		
environment	fraud in the procurement of goods and services.		
	Ali, M et al (2020) believe that the control environment has a significant effect on fraud		
	prevention.		
	Nyakarimi et al, 2020: risk assessment mechanisms put in place to evaluate risks have a		
Risk assessment	significant effect on fraud prevention.		
NISK assessment	Ogund Nedge Joseph et al (2015): risk management has a significant positive effect on		
	fraud prevention.		
Control activities	Abiola et al, (2013): There is a strong, positive, and significant relationship between		
Control activities	control activities and fraud detection.		
Information and	There is a linear relationship between each component of internal control and the level of		
communication	fraud (<u>Ha Le, Thi Thu; Tran, Manh Dung</u> , 2018)		
Manitanina	Abiola et al, (2013): There is a strong, positive, and significant relationship between		
Monitoring	monitoring and fraud detection.		

Source: prepared by the authors

The European Anti-Fraud Office (OLAF) (2016) and the International Union for Conservation of Nature (IUCN) (2014) have identified fraud detection and prevention approaches that can be summarized in the existence of internal and external audits and internal control systems, anti-fraud training, whistleblowing (reporting), background checks.

As presented in the theoretical framework, internal control is made up of five components, namely the control environment, risk assessment, control activities, information and communication, and monitoring; thus, the study of the effect of internal control on the detection and prevention of fraud will involve examining the relationship between each component and fraud according to the following research model and hypotheses:

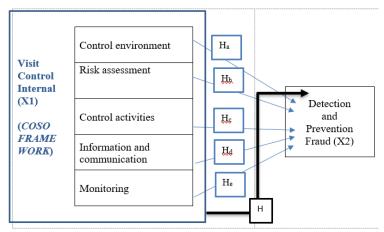


Fig. 2 The search model

Source: prepared by the authors

With:

H1: The internal control system has a positive effect on fraud detection and prevention.

Ha: an environment of ethics and integrity has a positive effect on fraud detection and prevention.

Hb: risk management has a positive effect on fraud detection and prevention;

Hc: control activities have a positive effect on fraud detection and prevention;

Hd: Information and communication have a positive effect on fraud detection and prevention;

He: monitoring has a positive effect on fraud detection and prevention.

4. Research methodology and results

A. Research methodology

To test the above hypotheses, we opted for a quantitative approach; the study targeted public establishments in Morocco, especially AREFs. A 61-question questionnaire is divided into seven sections: the first deals with respondents' socio-professional information; in the second, third, fourth, fifth and sixth sections, respondents are asked to assess the internal control system within the establishment; and the last section examines fraud detection and prevention techniques.

The questionnaire targeted civil servants from the twelve (12) AREFs in Morocco; we were able to receive 70 responses electronically during February 2023.

There are two variables, an explanatory variable X1, internal control, and an explanatory variable X2, fraud detection and prevention: internal control is to be measured through the principles of internal control according to COSO 2013 broken down into the components: control environment, risk management, control activities, information and communication and monitoring; the variable to be explained is measured by fraud prevention and detection methods, inspired by the Guidelines on National Anti-Fraud Strategies , and the IUCN Anti-Fraud Policy such as training and awareness, staff involvement, reporting lines, control techniques...

Questionnaire items are measured using the Likert scale generally used to assess perceptions, attitudes, and opinions. In our questionnaire, we opted for a four-level scale, ranging from 1 to 4. (1: strongly disagree; 2: disagree; 3: I agree; 4: completely agree).

B. Empirical results

The results of the research are presented in three sections: the first concerns the descriptive analysis, and the other two provide an analysis of the data in relation to the study's objectives.

Table 1 summarizes the socio-professional characteristics of the study population:

Table 2 socio-professional data of the population

		n=70	Percentage
Gender	F	7	10,00
Gender	M	63	90,00
	< 5 years	45	64,29
	5-9	7	10,00
Seniority	10-14	2	2,86
Semority	15-19	6	8,57
	20-24	6	8,57
	25 and over	4	5,71
	20-29	1	1,43
Ago	30-39	31	44,29
Age	40-49	31	44,29
	50 and over	7	10,00
	Baccalaureate	2	2,86
	Bac+2	3	4,29
Diploma	PhD	3	4,29
	License	40	57,14
	Master	22	31,43
	Division Manager	1	1,43
Position	Department Manager	12	17,14
	Civil servant with no responsibilities	57	81,43

Source: survey results

In general, of the 70 respondents, (63) 90% are men and (7) 10% are women; the respondents have different levels of qualifications: around 57.14% have a bachelor's degree, 31.43% have a master's degree, 4.29% have a doctorate, while the rest have a bachelor's degree or a bachelor's degree plus 2. As regards the positions held by respondents, 81.43% are civil servants without specific responsibilities, 17.14% are heads of department, while 1.43% of respondents are heads of division.

In terms of experience, most respondents (64%) have less than five years' experience, while around 25% have 15 years or more.

Table 3 analysis of central tendency of responses

Name	Average	Me	Scale min	Scale max
q1,1	2,75	3	1	4
q1,2	2,176	2	1	4
q1,3	2,279	2	1	4
q1,4	2,132	2	1	4
q1,5	2,279	2	1	4
q1,6	2,706	3	1	4
q1,7	3	3	1	4
q1,8	2,397	2	1	4
q1,9	2,221	2	1	4
q1,10	1,882	2	1	4
q1,11	2,176	2	1	4
q1,12	1,676	1	1	4
envir_contr	2,306	2		
q2,1	2	2	1	4
q2,2	2,074	2	1	4

q2,3	1,912	2	1	4
q2,4	2,059	2	1	4
q2,5	2,206	2	1	4
q2,6	2,279	2	1	4
q2,7	2	2	1	4
q2,8	2,235	2	1	4
q2,9	1,926	2	1	4
q2,10	2,044	2	1	4
gest_risk	2,074	2		
q3,1	2,118	2	1	4
q3,2	2,691	3	1	4
q3,3	2,118	2	1	4
q3,4	2,471	2	1	4
q3,5	2,235	2	1	4
q3,6	2,191	2	1	4
q3,7	2,162	2	1	4
q3,8	2,074	2	1	4
q3,9	1,794	2	1	4
Act_control	2,206	2		
q4,1	2,559	3	1	4
q4,2	2,279	2	1	4
q4,3	2,603	3	1	4
q4,4	2,618	3	1	4
q4,5	2,662	3	1	4
q4,6	2,574	3	1	4
inf_com	2,549	3		
q5,1	1,912	2	1	4
q5,2	2,162	2	1	4
q5,3	2	2	1	4
q5,4	1,838	2	1	4
q5,5	1,897	2	1	4
q5,6	1,926	2	1	4
monit	1,956	2		
s_c_i	2,216	2		
qpf,1	2,221	2	1	4
qpf,2	2,838	3	1	4
qpf,3	1,147	1	1	4
qdf,1	2,132	2	1	4
qdf,2	3,206	4	1	4
qdf,3	3,206	3	1	4
qdf,4	2,809	3	1	4
qdf,5	2,118	2	1	4
Fraud_det_prev	2,46	2		
Source, survey tesii	1		1	1

Source: survey results

From the results (table 3), we can see that the averages (greater than 2) indicate a slightly positive trend towards moderate agreement on the studied variables (see appendix1), meaning that the respondents expressed, on average, agreement with the existence of an effective control system and fraud detection and prevention in their establishments; the median (equal to 2) also indicates that the central or typical responses for the variables are also around moderate agreement.

To analyze the data collected, we opted for PLS (Partial Least Squares), a statistical method used to analyze relationships between sets of variables; the choice of this method comes down to the size of the sample, which gives that PLS allows consistent parameter estimation for a small sample size (Chin & Newsted, 1999; Kim & al., 2017).

Table 4. Validity and Reliability

	Cronbach's Alpha	Composite reliability	Composite reliability (rho_c)		ariance (AVE)
	(>0.7)	(rho_a) (>0.7)	(>0.7)	(>0.5)	
Control activity	0,940	0,946	0,949	0,677	
Control environment	0,928	0,933	0,938	0,562	
Risk management	0,943	0,953	0,938	0,660	
Information and communication	0,901	0,913	0,923	0,668	
Monitoring	0,959	0,964	0,967	0,830	
Fraud detection and prevention	0,615	0,733	0,748	0,373	

Source: survey results

Internal consistency reliability can be verified by two measures, namely Cronbach's Alpha and composite reliability (Chin, 1998); these measures vary between 0 and 1, and 0.7 is often considered a good level of reliability. As for construct validity, this is commonly indicated by the Average Variance Extracted (AVE); as a rule, and for adequate convergence, an AVE of at least 0.50 is strongly recommended.

Composite reliability values are ahead of Cronbach's Alpha, which is consistent, and Chin (1998) considers it more relevant.

In summary, the results presented in the table show good reliability and internal consistency for the various dimensions studied. This reinforces confidence in the measurement of control, risk management, communication, and fraud detection aspects. However, it should be noted that the "Fraud detection and prevention" dimension shows slightly lower reliability values, but we can accept the validity of the constructs given that the composite reliability is greater than 0.6 (Fornell & Larcker, 1981).

Once the validity and reliability of the model has been confirmed, we'll move on to checking the dependencies between the variables, the components of the internal control system and fraud detection and prevention.

Hypotheses are tested using the Spearman test. Spearman's correlation measures the relationship between two ordinal variables as in our model; the correlation coefficient is between -1 and +1, with 0 indicating a null relationship between the two variables, a negative value reflecting a negative correlation meaning that when one variable increases the other decreases, while a positive correlation (positive value) indicates that both variables vary in the same direction. These calculations were made using R software.

Table 6 correlation results

	Fraud detection and prevention		Decision
	ρ Spearman's	p-value	
Control environment	0.365	0.002	Ha confirmed
Risk management	0.432	0.000	Hb confirmed
Control activities	0.506	0.000	Hc confirmed
Information and communication	0.271	0.003	Hd confirmed
Monitoring	0.408	0.000	He confirmed
The internal control system	0.443	0.000	H1 confirmed

Source: survey results

(With p-value<0.005: highly significant)

According to the results of the correlation study, all hypotheses would be confirmed, i.e.:

An environment of ethics and integrity has a positive effect on fraud detection and prevention (p-value=0.002<0.005).

Risk management has a positive effect on fraud detection and prevention (p-value=0.000<0.005).

Control activities have a positive effect on fraud detection and prevention (p-value=0.000<0.005).

Information and communication have a significant effect on fraud detection and prevention (0.003<0.005).

Monitoring has a positive effect on fraud detection and prevention (p-value=0.000<0.05).

The internal control system has a positive impact on fraud detection and prevention (p-value=0.000<0.05).

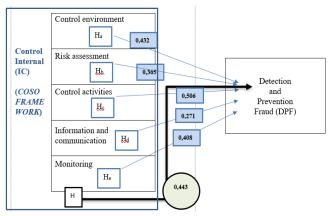


Fig 3 summary of the research model

Source: Compiled by the authors

The results of our study were compared with those of other empirical studies that have investigated the relationship between the internal control system and its components -according to COSO 2013- and the detection and prevention against fraud. Ogunda N.J. et al (2015), Ha Le et al (2018), Nyakarimi et al (2020), Mazurina M. et al (2020), Hadian et al, (2021) and Evada D.et al (2021), found that a control environment based on an organizational culture conducive to risk management and characterized by the competence and ethical commitment of staff, the precise definition of powers and responsibilities and the formalization and communication of procedures, that a risk assessment (identification, analysis and management), that control activities (establishment of policies, procedures, audits, reconciliations), information and communication based on appropriately obtained and shared information, and evaluation of the implementation and operation of internal control components all contribute to fraud detection and prevention.

5. Conclusion

No organization could be immune to fraud; and no matter how hard you try, the risk of fraud exists, and fraud will happen. Reducing the opportunity would limit the acts of fraud. Reducing the opportunity for fraud involves setting up an internal control system and remedying any flaws in this system (lack of control or poorly performed control, easy circumvention of existing controls, extended access rights, etc.).

This study has shown that the internal control system has a positive and significant impact on fraud detection and prevention in regional education and training academies (AREF).

The study has the advantage of matching results obtained in previous studies in different countries. However, the number of respondents was not large enough because of the way the questionnaire was administered (with face-to-face interviews, we could probably collect more responses, by explaining the subject and the questions).

In a future study, we may add other explanatory variables - in addition to the internal control system - such as governance and internal audit, using quantitative (questionnaires) or qualitative (interviews) methods.

Refrences

- [1] Abbasi, A., Albrecht, C., Vance, A., & Hansen, J. (2012). MetaFraud: A Meta-Learning Framework for Detecting Financial Fraud. MIS Quarterly, 36(4), 1293-1327. https://doi.org/10.2307/41703508
- [2] Abiola, I., & Oyewole, A.T. (2013). Internal Control System on Fraud Detection: Nigeria Experience. Journal of Accounting and Finance, 13, 141-152.

- [3] Ali, M., FarhanahAyop, N., Ghani, E. K., & Hasnan, S. (2020). The Effect of Employees' Perceptions on Internal Control System Mechanisms Towards Employee Fraud Prevention. Journal of Critical Reviews, 7(18), 972-986.
- [4] Alain-Gérard Cohen (2012). The new public management. Edition Gualino, p224.
- [5] Chin W., Newsted, P. 1999. Structural Equation Modeling Analysis with Small Samples Using Partial Least Squares, Rick Hoyle (Ed.), Statistical Strategies for Small Sample Research, Sage Publications. 307-341
- [6] Coenen, T. (2008). Essentials of Corporate Fraud. NJ: John Wiley and Sons.
- [7] Cressey, D. R. (1953). Other people's money: a study in the social psychology of embezzlement. Glencoe, IL: the Free Press.
- [8] Daning Ayu Ningsih, Yazid, H., & Ramdhani, D. (2022). Effectiveness of The Audit Program, Integrity and The Government Internal Control System on Prevention of Fraud in The Procurement of Goods and Services. Journal of Applied Business, Taxation and Economics Research, 1(6), 536-552. http://doi.org/10.54408/jabter.v1i6.107
- [9] Fernandes, V. (2012). Why the PLS approach is a method to (re)-discover for management researchers. M@n@gement, 15, 102-123.
- [10] Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39-50.
- [11] Hadian, Niki & Nazhara, Annisa & Vionica, Vina & Avionita, Destiana & Zumar, Alifia & Sinaga, Obsatar. (2021). The Effect of Internal Control On Fraud Detection (Case Study On Several State-Owned Enterprises Banks In Bandung City). Review of International Geographical Education Online, 11 (5), 1060-1064.
- [12] Herawaty, N. and H. Riski (2020). Analysis of internal control of good corporate governance and fraud prevention (study of a regional government of Jambi). Sriwijaya international journal of dynamics economics and business. 4(2), 103-118. DOI: https://doi.org/10.29259/sijdeb.v4i2.103-118
- [13] HOUAISS, A. (2007) Dicionário eletrônico da língua portuguesa. São Paulo: Objetiva.
- [14] IFACI. (2013). COSO 2013 Synthèse Référentiel intégré de contrôle interne version 2013.
- [15] Invention, J., & Oguda, N.J. (2015). Effect of Internal Control on Fraud Detection and Prevention in District Treasuries of Kakamega County.
- [16] IUCN (2014), IUCN anti-Fraud Policy, version 2.0. https://www.iucn.org/sites/default/files/2022-05/the-iucn-anti-fraud-policy.pdf
- [17] JAMAL, K., JOHNSON, P. E., & BERRYMAN, R. G. (1995). Detecting Framing Effects in Financial Statements. Contemporary Accounting Research, 12(1), 85-105.
- [18] KPMG (2016), Global Profiles of Fraudster: Technology Enables and Weak Controls Fuel the Fraud. https://assets.kpmg.com/content/dam/kpmg/pdf/2016/05/profiles-of-the-fraudster.pdf
- [19] Le Maux, J., Smaili, N., & Ben Amar, W. (2013). From fraud in management to fraud management: A review of the literature. Revue française de gestion, 231, 73-85. https://www.cairn.info/revue--2013-2-page-73.htm
- [20] Le, T. T. H., & Tran, M. D. (2018). The effect of internal control on asset misappropriation: The case of Vietnam. Business and Economic Horizons, 14(4), 941-953. http://dx.doi.org/10.15208/beh.2018.64
- [21] OLAF (2016), Guidelines on National Anti-Fraud Strategies. https://ec.europa.eu/sfc/sites/default/files/EN-ORI-General%20Guidelines%20on%20National%20Anti-Fraud%20Strategies%20ARES%282016%296943965.pdf
- [22] Rae, Kirsty & Subramaniam, Nava (2008). Quality of internal control procedures: Antecedents and moderating effect on organizational justice and employee fraud. Managerial Auditing Journal, 23, 104-124. 10.1108/02686900810839820
- [23] Rohana Othman, Nooraslinda Abdul Aris, Ainun Mardziyah, Norhasliza Zainan, Noralina Md Amin (2015). Fraud Detection and Prevention Methods in the Malaysian Public Sector: Accountants' and Internal Auditors' Perceptions. Procedia Economics and Finance, 28, 59-67. https://doi.org/10.1016/S2212-5671(15)01082-5.
- [24] Steven Dellaportas (2013). Conversations with inmate accountants: Motivation, opportunity, and the fraud triangle. Accounting Forum, 37(1), 29-39. https://doi.org/10.1016/j.accfor.2012.09.00
- [25] Tarjo, T., Anggono, A., Mohd Sanusi, Z., & Said, J. (2021). The effect of fraud risk management implementation on fraud prevention. International Journal of Social Science Research, 3(4), 397-404.
- [26] Valentine, Sean & Godkin, Lynn & Lucero, Margaret (2002). Ethical Context, Organizational Commitment, and Person-Organization Fit. Journal of Business Ethics, 41, 349-360. 10.1023/A:1021203017316
- [27] Wells, J.T. (2011). Corporate Fraud Handbook: Prevention and Detection (3rd edition). Hoboken, New Jersey, John Wiley & Sons, Inc.,1-400.

[28] Wood Jr, Thomaz & Costa, Ana (2012). Fraudes corporativas. RAE - Revista de Administração de Empresas, 52, 464-472. 10.1590/S0034-75902012000400008

Appendix1:

Name	Item
q1,1	Management demonstrates the importance of integrity and ethical values through its guidelines, attitudes, and behavior.
q1,2	Management establishes standards of conduct to communicate expectations of integrity and ethical values
	Management establishes processes for assessing performance against the entity's expected standards of conduct and
q1,3	evaluates compliance with those standards.
q1,4	There is a Board of Directors that oversees operations, provides constructive feedback to management, and informs decision-making to ensure that objectives are met and consistent with the entity's integrity and ethical values.
	the Board of Directors contributes to management's plans to correct deficiencies in internal controls and is responsible
q1,5	for overseeing the correction of deficiencies
q1,6	Management establishes an appropriate organizational structure to plan, execute, monitor, and evaluate its ability to achieve its objectives. Lines of authority are clear and defined at all levels, so that communication can flow down,
q1,7	across, up and around. Management assigns responsibilities and delegates authority to key roles throughout the organization
q1,7	Management establishes responsibilities and expectations that are clearly defined in writing and communicated as
q1,8	required
q1,9	Management recruits, develops, and retains competent personnel to achieve the desired objectives, in accordance with standards and procedures.
q1,10	Management defines succession plans to meet the need to replace competent personnel over the long term, as well as
41,10	contingency plans to meet the need to react to sudden changes in personnel.
q1,11	Management holds staff accountable for fulfilling their internal control responsibilities through mechanisms such as performance appraisals and disciplinary measures.
q1,12	Management assesses pressure on staff and reduces or rebalances workload as necessary
envir_contr	Control Environment
q2,1	Management defines specific and measurable objectives for the design of internal control of related risks.
q2,2	Management defines the acceptable level of performance variation in relation to the achievement of objectives
q2,3	Management has a risk analysis process in place and takes account of internal and external risk factors.
q2,4	Management has the power to assess the significance of identified risks and their impact on the achievement of defined objectives.
q2,5	Management takes specific measures to respond to the risk analyzed
	Management considers the types of fraud that can occur (e.g., false invoicing, corruption), as well as other forms of
q2,6	misconduct (such as waste and abuse).
q2,7	Management performs a risk analysis to identify and respond to fraud risks so that they can be effectively mitigated.
q2,8	Management has established procedures for periodically reconciling commitments with the accounts.
q2,9	Management identifies significant changes in internal and external conditions that have already occurred, or are expected to occur, and that could have a significant impact on the internal control system (e.g., regulatory, economic, or technological changes).
q2,10	Management analyzes and responds to identified changes and associated risks to maintain an effective system of internal control.
gest_risk	Risk Management
q3,1	Management designs formal, written policies and procedures that help mitigate risks and achieve objectives.
	Management has adequate and effective procedures for documenting, filing, and maintaining records, as well as
q3,2	controls over the accuracy and completeness of information.
q3,3	The organization designs control activities to ensure appropriate coverage of objectives and risks.
q3,4	Management designs the information system and uses information technology to meet objectives and mitigate risks
q3,5	Management designs control activities over the information technology infrastructure to support the completeness, accuracy, and validity of information processing by information technology.
q3,6	Management designs control activities (e.g., data access rights) for information system security management.
q3,7	Management has put in place processes to select, develop, operate, and maintain its technological infrastructure.
q3,8	Policies document the control activities used within the organization
q3,9	Management periodically reviews the effectiveness of control activities.
Act_control	Control Activities
q4,1	Management obtains relevant data from reliable internal and external sources in a timely manner
q4,2	Management processes the data obtained and uses it to inform the internal control system
q4,3	Management communicates information throughout the entity using established lines of authority, ensuring that communication flows to all levels of the organization (horizontally and vertically).
q4,4	Management chooses the appropriate method for internal communication after considering the relevant factors (audience, nature of the information, etc.).
q4,5	Management communicates with external parties (i.e., beneficiaries, users, external partners, etc.) and obtains quality information from them using established hierarchical structures.
q4,6	Management chooses the appropriate method of external communication after considering relevant factors (audience,
	nature of information, cost, etc.).
inf_com	Information and Communication Management assesses the gurrent state of the internal control system
q5,1	Management assesses the current state of the internal control system Management oversees the internal control system through continuous monitoring and separate periodic assessments
q5,2	(e.g., self-assessments, audits).
	(e.g., sen-assessments, audits).

Tuijin Jishu/Journal of Propulsion Technology

ISSN: 1001-4055 Vol. 44 No. 6 (2023)

q5,3	Management evaluates and documents the results of ongoing monitoring and separate assessments to identify internal control issues.
q5,4	Management and staff identify internal control problems and report them in a timely manner through established reporting structures.
q5,5	Management evaluates and documents internal control problems and determines appropriate corrective measures to remedy deficiencies.
q5,6	Management takes and documents corrective action to remedy internal control deficiencies in a timely manner.
monit	Monitoring
s_c_i	Internal Control System
qpf,1	My organization has already been a victim of fraud
qpf,2	I expect fraud to increase in my organization in the future
qpf,3	All civil servants, including management, are responsible for detecting fraud.
qdf,1	In the event of fraud, I will inform the party responsible.
qdf,2	Internal auditors play an important role in detecting fraud.
qdf,3	Fraud is generally detected during an audit process.
qdf,4	Over the past three years, I have regularly attended training courses to improve my fraud prevention skills.
qdf,5	There is a fraud hotline
Fraud det prev	Fraud prevention and detection