

FRAUD RISK JUDGMENT MEASUREMENT SCALE DEVELOPMENT

Lufti Julian^{*}, Razana Juhaida Johari^{**}, Jamaliah Said^{***},
Ludovicus Sensi Wondabio^{*}

^{*} Faculty of Economics and Business, Universitas Indonesia, Depok, West Java, Indonesia

^{**} Corresponding author, Faculty of Accountancy & Accounting Research Institute, Universiti Teknologi Mara, Shah Alam, Malaysia
Contact details: Faculty of Accountancy & Accounting Research Institute, Universiti Teknologi Mara, Jalan Ilmu 1/1, 40450 Shah Alam, Selangor, Malaysia

^{***} Accounting Research Institute & Faculty of Accountancy, Universiti Teknologi Mara, Shah Alam, Malaysia



Abstract

How to cite this paper: Julian, L., Johari, R. J., Said, J., & Wondabio, L. S. (2022). Fraud risk judgment measurement scale development [Special issue]. *Journal of Governance & Regulation*, 11(1), 303–311. <https://doi.org/10.22495/jgrv11i1siart10>

Copyright © 2022 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).
<https://creativecommons.org/licenses/by/4.0/>

ISSN Print: 2220-9352
ISSN Online: 2306-6784

Received: 28.10.2021
Accepted: 25.02.2022

JEL Classification: M42, M14, M48
DOI: 10.22495/jgrv11i1siart10

Recently, many financial scandals and frauds have been published in mass media. It has resulted in ruining the public trust in the internal auditor profession as the third line of defense since the public perceived frauds detection and prevention as the internal auditors' responsibility (DeZoort & Harrison, 2018). The internal auditors' fraud risk judgment performance has been questioned. There are many scales to measure fraud risk judgment; however, they are mostly related to financial-statement-related frauds with external auditors as the targeted respondents and still lack those to measure fraud risk judgment of internal auditors. This paper aims to propose the scale for measuring the performance of internal auditors' fraud risk judgment. Since there are many internal auditors without accounting background, the fraud case should be developed to be more general, instead of financial-statement-related frauds. The study followed the best practice step by step in developing a scale proposed by Boateng, Neilands, Frongillo, Melgar-Quiñonez, and Young (2018). It involved 5 experts in developing and validating the items, 106 respondents in the exploratory factor analysis (EFA) and 202 respondents in the confirmatory factor analysis (CFA). All the required indicators in the steps were acceptable; therefore, we can conclude that the scale is valid and reliable. The scale was developed based on the fraud triangle theory; hopefully, it can contribute to providing alternative fraud risk judgment measurement for internal auditors.

Keywords: Internal Auditing, Fraud Risk Judgment, Scale Development, Fraud Triangle, Exploratory Factor Analysis, Confirmatory Factor Analysis

Authors' individual contribution: Conceptualization — L.J.; Methodology — L.J. and R.J.J.; Resources — L.J. and L.S.W.; Formal Analysis — L.J. and R.J.J.; Writing — Original Draft — L.J. and J.S.; Writing — Review & Editing — L.J. and R.J.J.; Supervision — R.J.J. and L.S.W.; Project Administration — J.S.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: The Authors are grateful to Ministry of Higher Education for HICoE research funding, Accounting Research Institute and Faculty of Accountancy, Universiti Teknologi Mara Shah Alam, Malaysia and Faculty of Economics and Business, Universitas Indonesia, Indonesia, for all supports and resources.

1. INTRODUCTION

The daily presence in companies has led internal auditors to have better advantages in detecting and preventing frauds. Consequently, fraud detection and prevention have been perceived as the responsibility of the internal auditors (DeZoort & Harrison, 2018). The publication of financial scandals of large companies in the mass media has resulted in the effectiveness of the internal audit function being questioned. Poor performances of internal auditors in making fraud risk judgments led to considering them unable to detect and prevent fraud. It ended in reputational damages and unnecessary financial losses. Therefore, it is vital to measure the internal auditors' fraud risk judgments. This paper aims to develop the fraud risk judgment performance measurement for internal auditors.

Recently, various fraud risk judgment measurement scales have been proposed (Eulerich, Theis, Lao, & Ramon, 2018; Simon, Smith, & Zimbelman, 2018; Schafer & Schafer, 2019). Some scales used various cases to describe the situations of fraud risk and some scales used a set of statements of fraud red flags in Likert-scales form. Mostly, the cases and the red flags used were related to financial statements; since the respondents were external auditors (Simon et al., 2018; Schafer & Schafer, 2019; Verwey & Asare, 2021) or internal auditors who have accounting education background (Carpenter, Reimers, & Fretwell, 2011; Boyle, DeZoort, & Hermanson, 2015a). Likewise, sets of red flags as fraud risk factors that were utilized to predict the likelihood of fraud were mostly related to the fraud risk condition taken from ISA 240 that impact financial statement presentation (Fullerton & Durtschi, 2004; Boyle, DeZoort, & Hermanson, 2015b; Mohd-Sanusi, Khalid, & Mahir, 2015; Eulerich et al., 2018). However, currently, the internal auditing profession is no longer dominated by accountants and there are a lot of internal auditors without accounting background; therefore, the case needs to be a more general fraud case instead of a financial-statement-related fraud case. Moreover, at the moment, the role of information technology is vital to businesses, thus the case should be more related to the IT environment. Since this kind of scale is still lacking, it is necessary to develop the fraud risk judgment scale using a questionnaire survey in the IT-related environment. This paper confirmed that the proposed scale has acceptable validity and reliability through the process of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Hopefully, it can contribute to providing an alternative scale to measure fraud risk judgment performance of internal auditors without accounting background.

This paper consists of five sections. Section 1 is an introduction to the study, Section 2 reviews the relevant literature, Section 3 describes the detailed methodology. The next Section 4 elaborates on the result and discussion of the study. Finally, the conclusion is presented in Section 5.

2. LITERATURE REVIEW

In this study, fraud risk judgment refers to a predetermined course of action taken in response to an entity's vulnerability to an individual capable of combining all three aspects of the fraud triangle. Auditors will undoubtedly make judgments throughout the audit process and during each audit assignment. When auditors make judgments, they are likely to be severely inefficient in their response to fraud risk, resulting in low fraud detection rates (Trompeter, Carpenter, Desai, Jones, & Riley, 2013).

Tschakert, Needles, and Holtzblatt (2016) argued that by sharpening auditors' in evaluating red flags, internal auditors can more effectively address fraud threats and safeguard firm assets. In line with the findings, some previous studies assessed fraud risk judgments using the accuracy with which they identified a set of red flags as predictors of fraud occurrences (Fullerton & Durtschi, 2004; Schafer & Schafer, 2019; Boyle et al., 2015b), while others used a variety of fraud-related cases (Vance, 2017; Simon et al., 2018; Carpenter et al., 2011). To increase their sensitivity to fraud, internal auditors divided the judgment about fraud risk into opportunity, pressure, and rationalization (Mohd-Sanusi et al., 2015), as well as likelihood and magnitude (Mohd-Sanusi et al., 2015; Simon et al., 2018).

This paper used the *fraud triangle* (Cressey, 1950) as an underpinning theory. The theory stipulates three characteristics of a fraudster: *pressure*, *opportunity* and *rationalization*. Wolfe and Hermanson (2004) enhanced the theory by augmenting *capability* as the fourth characteristic and labeled it as the fraud diamond theory. On the contrary, Dorminey, Fleming, Kranacher, and Riley (2012) viewed that the *capability* is only a refinement of the *opportunity* characteristic and should be considered a part of it. Identifying the combination of the characteristics was significantly effective in detecting and preventing fraud (Homer, 2020; Nakashima, 2017).

Fraud risk judgment is defined as an idea, opinion, or estimate about the vulnerability that an organization faces from individuals capable of combining all three elements of the fraud triangle and translating them into action to modify the initial audit plan. It tacitly uses the theory of fraud diamond which combines pressure, opportunity, rationalization, and capability as the elements of fraud. Fraud usually occurs with several red flags that precede it. The red flags can lead auditors to uncover fraud; therefore, the ability to identify red flags shows the ability to uncover frauds (Horne, Venter, & Lochner, 2018; Baader & Krcmar, 2018). Decomposing fraud risk judgment into the fraudsters' characteristics is deemed to increase the judgment quality (Huang, Lin, Chiu, & Yen, 2017; Nakashima, 2017; Homer, 2020). By decomposing the fraud risk judgment, auditors become more sensitive to fraud cues (Fortvingler & Szivós, 2016; Mock, Srivastava, & Wright, 2017). Therefore, the fraud risk judgments were assessed by identifying the red flags that decomposed into the fraudsters' characteristics.

3. METHODOLOGY

3.1. Population and sample

The population of this survey consisted of the in-house internal auditor practitioners who were registered at the Institute of Internal Auditors Indonesia and worked for public and private organizations in Indonesia. By adopting a judgment sampling method, the sample was chosen based on specific criteria to meet the objectives of the study, i.e., the respondents with a minimum of three years in service and currently still active as in-house internal auditors in West Java, Indonesia.

3.2. Data collection

In developing the scale, this study follows the iterative steps suggested by Boateng, Neilands, Frongillo, Melgar-Quinonez, and Young (2018) that consisted of three phases: 1) item development phase, 2) scale development phase, and 3) scale evaluation phase.

Firstly, for Phase 1 (items development), five experts who have at least 15 years of experience as internal auditors, were interviewed. Whereas for Phase 2 (scale development), a pilot test was conducted, and 106 respondents were collected for the exploratory factor analysis. Finally, for Phase 3 (scale validation), a total of 600 self-administered e-questionnaires were distributed to internal auditor practitioners. 208 surveys were completed and returned, but only 202 (33.67 percent) were found to be legitimate for further research due to outliers. According to Hair, Hult, Ringle, and Sarstedt, (2017), the required minimum sample size for this study is just 68 (Hair et al., 2017); consequently, the 202-sample acquired was deemed suitable and appropriate.

4. RESULT AND DISCUSSION

4.1. The results of Phase 1 (items development)

The generation of items was accomplished using a combination of both inductive and deductive methods (Boateng et al., 2018). The inductive method was performed in the discussions with 5 expert panels to capture insights on the most essential fraud risk factors in their daily practices. The panel members were the practitioners who have at least 15 years of internal auditors' working experience.

At the same time, the deductive method was utilized by reviewing the literature, such as IAASB (2013), IAASB (2009), Fullerton and Durtschi (2004), Omar and Din (2010), Bierstaker, Brody, and Pacini (2006), ACFE (2018), ACFE (2020) and others. The fraud risk judgment should not be separated from the context. It can be illustrated in a mini case (see Appendix). Items without context can only be used to assess inherent risks. Therefore, the panel suggested the use of a mini case to describe the context of internal control design and effectiveness that allowed the respondents to make a judgment on hypothetical residual fraud risk.

The internal control contexts were related to information technology general control (ITGC). The results of the items generation were exhibited in Table 1. Initially, 13 items were proposed to be processed further with EFA. The proposed items were generated using the fraud diamond theory since it is deemed to be more effective for fraud risk assessment than the fraud triangle-based assessment (Boyle et al., 2015b; Santoso & Surenggono, 2018). However, based on the result of exploratory factor analysis, the fraud triangle theory should be utilized (please refer to subsection 4.2.).

Table 1. Proposed items statements

No	Items	Mean
PRE01	Do you agree to modify the audit plan or increase the audit time budget because of key personnel's difficulties in paying his credit card bills?	3.60
PRE02	Do you agree to modify the audit plan or increase the audit time budget because of key personnel's need for significant funds for healing/recovering her mother from cancer?	3.20
PRE03	Do you agree to modify the audit plan or increase the audit time budget because of key personnel's collection of several Harley Davidson luxury motorcycles?	3.80
OPP01	Do you agree to modify the audit plan or increase the audit time budget because of no documentation of software development filed in the library?	3.00
OPP02	Do you agree to modify the audit plan or increase the audit time budget because of the deactivation of the payment system log book?	4.00
OPP03	Do you agree to modify the audit plan or increase the audit time budget because of the ineffective application of mandatory leave?	3.40
OPP04	Do you agree to modify the audit plan or increase the audit time budget because of the frequent occurrence of password sharing?	4.00
RAT01	Do you agree to modify the audit plan or increase the audit time budget because of the appointment of a "fresh graduate" as a chief financial officer (CFO)?	2.60
RAT02	Do you agree to modify the audit plan or increase the audit time budget because of the relatively low salary?	3.00
RAT03	Do you agree to modify the audit plan or increase the audit time budget because no employee performance appraisal is implemented?	3.80
CAP01	Do you agree to modify the audit plan or increase the audit time budget because of Eko's role as a "super user" of the payment system?	4.00
CAP02	Do you agree to modify the audit plan or increase the audit time budget because of the very high dependence of the CFO on Mia with her new role to access and change the price or rate per unit database?	4.00
CAP03	Do you agree to modify the audit plan or increase the audit time budget because the CFO often overrides the company's payment policy to make payments outside the standard schedule?	3.20

The following stage was the content validation to ensure that the items contained in the measurement were relevant to the fraud risk judgment (Boateng et al., 2018). In the second round of the discussion, the panel validated the item statements by assessing their relevance to the fraud risk judgment measurement in a Likert scale form. The Likert scales used were very irrelevant (1), irrelevant (2), relevant (3), and very relevant (4). The statistical means of the panel's assessment results are depicted in Table 1. Any values below 2.50 (if any) should be removed from the list since they are irrelevant to the fraud risk judgment assessment. The panel was in agreement that all items are relevant and should not be removed from the list. Likewise, the panel also considered that the items were practical and able to reflect the fraud risk judgment in the daily practices of internal auditing. The Fleiss Kappa inter-rater value was applied to assess the validity of the items in

the constructs (Boateng et al., 2018). The Fleiss Kappa for 5 raters, 4 categories and 13 items was 0.65. It can be concluded that the strength of agreement of the panel was substantial (Landis & Koch, 1977).

4.2. The results of Phase 2 (scale development)

The pre-test of the scale is performed by five academicians and ten internal auditors' practitioners. In the pre-test stage, the scale would be easier to understand if the same questions were combined, instead of repeated in all items. The following stage was administered with a purpose of a data collection of pilot testing; henceforth, 106 respondents were used for the analysis. The demographic profile of them is shown in Table 2.

Table 2. Demographics of respondents in the pilot study (n = 106)

Item	Overall (n = 106)		
	Frequency	Percentage	
Gender	Male	77	72.6
	Female	29	27.4
Age	30 years or below	10	09.4
	31-40 years	36	34.0
	41-50 years	34	32.1
	Over 50 years	26	24.5
	Chief audit executive	22	20.8
Job position	Senior manager/Manager	22	20.8
	Assistant manager/Senior	26	24.4
	Auditor	36	34.0
	3-7 years	38	35.8
Years of experience as an auditor	8-11 years	32	30.2
	12-15 years	17	16.0
	Over 15 years	19	18.0
	Accountant	63	59.4
Education background	Non-accountant	43	40.6

Initially, it becomes the dimension of the scale; however, based on the result of the EFA, there were only three dimensions: *opportunity*, *pressure*, and *rationalization* as illustrated in subsection 2.2. The capability dimension was merged with opportunity due to the same domain measurement. Dorminey et al. (2012) supported it, they argued that the capability should be treated as the opportunity element refinement.

Items reduction and factors extraction were conducted using the exploratory factor analysis. Firstly, to assess whether the data have a sufficient inter-correlation degree among the items for further processing with the EFA, Bartlett's test of sphericity must be signed at a p-value lower than 0.05 and the Kaiser-Meyer-Olkin (KMO) test for the measure of sampling adequacy (MSA) has to be higher than 0.500 (Hair, Black, Babin, & Anderson, 2018). The results of Bartlett's test were significant at a p-value = 0.000 and the KMO-MSA was 0.847. Both were in the acceptable range (as shown in Table 3). Moreover, each items' MSA ranged from 0.692 to 0.942, which were also in the acceptable range. Thus, the results indicated that the EFA was appropriate for further data analysis.

Table 3. KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy	Bartlett's test of sphericity		
	Approx. Chi-square	Df	Sig.
0.843	1090.585	78	0.000

Based on the extraction sum of squared loading, it was indicated that only two factors were involved as shown in Table 4. However, the fraud triangle theory said that at least three factors have to be involved; therefore, this study was forced to have three factors: *opportunity*, *pressure* and *rationalization*. From the rotation result shown in Table 5, the four items (CAP03, OPP01, OPP03, and RAT01) should be dropped due to low factor loadings. Hair et al. (2018) suggested that any factor loadings below 0.55 should be eliminated. Thus, the results of the EFA were the *opportunity* factor (consisted of four items: CAP01, CAP02, OPP02, and OPP04), the *pressure* factor (consisted of three items: PRE01, PRE02, and PRE03) and the *rationalization* factor (consisted of RAT01 and RAT02).

Table 4. Extraction sum of squared loading (total variance explained)

Factor	Extraction sums of squared loadings			Rotation sums of squared loadings
	Total	% of variance	Cummulative %	Total
1	5.027	55.860	55.860	4.546
2	1.485	16.497	72.357	2.846
3	0.764	8.484	80.841	3.226

Table 5. Factor loading

	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>
PRE01	0.093	0.826	-0.101
PRE02	-0.332	0.899	0.240
PRE03	0.088	0.797	-0.084
OPP01	0.451	0.430	-0.122
OPP02	0.948	0.030	-0.044
OPP03	0.531	0.071	0.122
OPP04	0.843	-0.053	0.117
CAP01	0.983	-0.073	-0.027
CAP02	0.910	0.008	0.000
CAP03	0.446	0.028	0.135
RAT01	0.165	0.462	0.009
RAT02	0.008	0.054	0.889
RAT03	0.284	-0.065	0.763

4.3. The results of the Phase 3 (scale evaluation)

The scale evaluation aims to test the reliability and validity of the scale at different times and different datasets. A new survey was administered, and

208 responses were collected, but only 202 responses were valid for further analysis using a CFA. The respondents' demographic profile is depicted in Table 6.

Table 6. Respondents' demographic profile

<i>Item</i>		<i>Overall (n = 202)</i>	
		<i>Frequency</i>	<i>Percentage</i>
<i>Gender</i>	Male	140	69.3
	Female	62	30.7
<i>Age</i>	30 years or below	26	12.9
	31-40 years	70	34.6
	41-50 years	62	30.7
	Over 50 years	44	21.8
<i>Job position</i>	Chief audit executive	38	18.8
	Senior manager/Manager	54	26.8
	Assistant manager/Senior	76	37.6
	Auditor	34	16.8
<i>Years of experience as an auditor</i>	3-7 years	76	37.6
	8-11 years	55	27.3
	12-15 years	33	16.3
	Over 15 years	38	18.8
<i>Education background</i>	Accountant	117	57.9
	Non-accountant	85	42.1

Dimensionality tests were conducted by assessing the absolute fit, the incremental fit and parsimonious fit. The goodness of fit index (GFI) should produce a value higher than 0.90 in order to gain the absolute fit or the Chi-square/df should be lower than 5 (Hair et al., 2018). At the same time, the incremental fit was assessed using comparative fit index (CFI) and normed fit index (NFI) which should be higher than 0.90 (Hair et al., 2018). The parsimonious fit was assessed using PGFI, PNFI and PCFI all of which should be higher than 0.50 (Hooper, Coughlan, & Mullen, 2008). Table 7 depicts the result of dimensionality tests that confirmed that the model fit was not an issue.

Table 7. Result of dimensionality tests

<i>No</i>	<i>Description</i>	<i>Assessment results</i>	<i>Conclusion</i>
1	Absolute fit	GFI = 0.913; Chi-square/df = 4.637	Fit
2	Incremental fit	CFI = 0.942; NFI = 0.928	Fit
3	Parsimonious fit	PGFI = 0.556; PNFI = 0.515; PCFI = 0.523	Fit

Reliability is the consistency degree obtained when the scale is repeated in identical circumstances. It can be assessed using Cronbach's alpha (CA) and composite reliability (CR). The acceptable levels were 0.700 for CA and 0.708 for CR. As shown in Table 8, the CA of the fraud risk judgment (FRJ) scale was 0.799 and the CR was 0.882, which are in the acceptable range. In the first order, the CR and the CA of the factors (opportunity, pressure and rationalization) were higher than minimum acceptable values. Therefore, the scale has no reliability issues. The convergent validity test aims to assess the extent to which a scale indeed measures the intended evaluated construct. Hair et al. (2018) suggested that the minimum acceptable level of the items can be at least 50% of the variance of the latent construct (the average variance extracted (AVE)) should be higher than 0.500) and the factor loading should be higher than 0.708 (Hair et al., 2018). As shown in Table 8, all factor loading and the AVEs are higher than the acceptable level for the first and second orders. Thus, the convergent validity is not an issue for the scale.

Table 8. Reliability assessment

Description	Loading	CR	CA	AVE
<i>Second order</i>				
FRJ		0.882	0.799	0.714
Opportunity	0.910			
Pressure	0.786			
Rationalization	0.834			
<i>First order</i>				
Opportunity		0.915	0.874	0.729
CAP01	0.761			
CAP02	0.860			
OPP02	0.931			
OPP04	0.856			
Pressure		0.909	0.851	0.770
PRE01	0.868			
PRE02	0.884			
PRE03	0.881			
Rationalization		0.952	0.900	0.909
RAT02	0.954			
RAT03	0.953			

The discriminant validity was achieved when the items dedicatedly measure a concept of construct without a potential overlap. Table 9 shows that there is no correlation between the factors since all the ratios are lower than 0.85 as suggested by Kline (2016). Table 10 shows that the cross loadings are much lower than the factor loading. These two tables indicate that there is no discriminant validity issue in the scale.

Table 9. Discriminant validity analyses: Heterotrait-Monotrait (HTMT) criterion results

HTMT	Opportunity	Pressure	Rationalization
Opportunity			
Pressure	0.642		
Rationalization	0.778	0.520	

Table 10. Cross loading

Items	Opportunity	Pressure	Rationalization
CAP01	0.761	0.551	0.413
CAP02	0.860	0.497	0.689
OPP02	0.931	0.474	0.615
OPP04	0.856	0.392	0.635
PRE01	0.556	0.868	0.405
PRE02	0.351	0.884	0.403
PRE03	0.542	0.881	0.391
RAT02	0.651	0.463	0.954
RAT03	0.672	0.406	0.953

Empirically, the scale has been statistically proven to have acceptable reliability. Even though, there is a shifting in the underpinning theory. Initially, the scale decomposed the fraud risk judgment into fraudsters' characteristics based on the fraud diamond theory, since the theory was an enhancement of the fraud triangle and deemed to be more effective to assess fraud risk judgment (Boyle et al., 2015b; Santoso & Surenggono, 2018). However, the exploratory factors analysis results suggested using the decomposition based on the fraud triangle theory. This suggestion was in line with Dorminey et al. (2012) who indicated that the capability was only a refinement of the opportunity; therefore, the fraud triangle-based decomposition is still applicable. The use of the fraud triangle-based decomposition was also supported by Nakashima (2017), Huang et al. (2017), and Homer (2020).

5. CONCLUSION

This study was conducted to fulfill the need for measuring the performance of internal auditors in making fraud risk judgments. Currently, the measurements of fraud risk-related judgment involve financial statements analysis on which judgments are made since previous studies mostly targeted external auditors as their respondents and few of them targeted internal auditors. Indeed, previously the internal auditor profession was dominated by accountants, but now it is no longer the case. The internal auditor profession has involved many auditors from various disciplines other than accountants. Therefore, the need for more general fraud risk judgment becomes urgent. A measurement scale that is not based on financial statement analysis is expected to be a contribution in providing an alternative measure of fraud risk judgment for internal auditors, especially those who do not have an accountant background.

This study involved the expert panel and the past related literature in developing the items. Then, the proposed items were purified by statistical EFA and lastly they were validated by the CFA. Based on the process passed, it can be concluded that the proposed measurement scale, as shown in Appendix, has adequate validity and reliability to be used to measure fraud risk judgment. There are some limitations to this study. Firstly, the measurement scale does not consider the element of integrity in measuring potential fraud. The integrity can be reflected in the form of ethical value (Said, Alam, Ramli, & Rafidi, 2017) or religiosity (Said, Alam, Karim, & Johari, 2018) which is proposed as the fourth component of the fraud theory. Another limitation is that limited information was available to make decisions or judgments due to conciseness reasons. These limitations provide opportunities for future studies. The studies which consider the integrity element assessment need to be developed. Moreover, the case which contains comprehensive information in the real circumstances of the auditors who make judgment is also needed to develop.

REFERENCES

1. Association of Certified Fraud Examiners (ACFE). (2018). *Report to the nations: 2018 global study on occupational fraud and abuse*. Retrieved from <https://s3-us-west-2.amazonaws.com/acfe-public/2018-report-to-the-nations.pdf>
2. Association of Certified Fraud Examiners (ACFE). (2020). *Survei fraud Indonesia 2019*. Retrieved from <https://acfe-indonesia.or.id/wp-content/uploads/2021/02/SURVEI-FRAUD-INDONESIA-2019.pdf>
3. Baader, G., & Krcmar, H. (2018). Reducing false positives in fraud detection: Combining the red flag approach with process mining. *International Journal of Accounting Information Systems*, 31, 1-16. <https://doi.org/10.1016/j.accinf.2018.03.004>
4. Bierstaker, J. L., Brody, R. G., & Pacini, C. (2006). Accountants' perceptions regarding fraud detection and prevention methods. *Managerial Auditing Journal*, 21(5), 520-535. <https://doi.org/10.1108/02686900610667283>
5. Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quinonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, 6, 1-18. <https://doi.org/10.3389/fpubh.2018.00149>
6. Boyle, D. M., DeZoort, F. T., & Hermanson, D. R. (2015a). The effects of internal audit report type and reporting relationship on internal auditors' risk judgments. *Accounting Horizons*, 29(3), 695-718. <https://doi.org/10.2308/acch-51110>
7. Boyle, D. M., DeZoort, F. T., & Hermanson, D. R. (2015b). The effect of alternative fraud model use on auditors' fraud risk judgments. *Journal of Accounting and Public Policy*, 34(6), 578-596. <https://doi.org/10.1016/j.jaccpubpol.2015.05.006>
8. Carpenter, T. D., Reimers, J. L., & Fretwell, P. Z. (2011). Internal auditors' fraud judgments: The benefits of brainstorming in groups. *Auditing: A Journal of Practice & Theory*, 30(3), 211-224. <https://doi.org/10.2308/ajpt-10054>
9. Cressey, D. R. (1950). The criminal violation of financial trust. *American Sociological Review*, 15(6), 738-743. <https://doi.org/10.2307/2086606>
10. DeZoort, F. T., & Harrison, P. D. (2018). Understanding auditors' sense of responsibility for detecting fraud within organizations. *Journal of Business Ethics*, 149(4), 857-874. <https://doi.org/10.1007/s10551-016-3064-3>
11. Dorminey, J., Fleming, A. S., Kranacher, M.-J., & Riley, R. A., Jr. (2012). The evolution of fraud theory. *Issues in Accounting Education*, 27(2), 555-579. <https://doi.org/10.2308/iace-50131>
12. Eulerich, M., Theis, J. C., Lao, J., & Ramon, M. (2018). Do fine feathers make a fine bird? The influence of attractiveness on fraud-risk judgments by internal auditors. *International Journal of Auditing*, 22(3), 332-344. <https://doi.org/10.1111/ijau.12137>
13. Fortvingler, J., & Szívós, L. (2016). Different approaches to fraud risk assessment and their implications on audit planning. *Periodica Polytechnica Social and Management Sciences*, 24(2), 102-112. <https://doi.org/10.3311/PPso.8436>
14. Fullerton, R., & Durtschi, C. (2004). *The effect of professional skepticism on the fraud detection skills of internal auditors*. <https://doi.org/10.2139/ssrn.617062>
15. Hair, J. F., Jr, Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate data analysis* (8th ed.). Hampshire, the UK: Cengage.
16. Hair, J. F., Jr, Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Los Angeles, CA: Sage Publications.
17. Homer, E. M. (2020). Testing the fraud triangle: A systematic review. *Journal of Financial Crime*, 27(1), 172-187. <https://doi.org/10.1108/JFC-12-2018-0136>
18. Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53-60. Retrieved from <https://academic-publishing.org/index.php/ejbrm/article/view/1224>
19. Horne, J., Venter, J., & Lochner, H. (2018). The red flag system as the gatekeeper in tender fraud prevention and detection of misrepresentation. *International Journal of African Renaissance Studies*, 13(1), 129-143. <https://doi.org/10.1080/18186874.2018.1478655>
20. Huang, S. Y., Lin, C.-C., Chiu, A.-A., & Yen, D. C. (2017). Fraud detection using fraud triangle risk factors. *Information Systems Frontiers*, 19(6), 1343-1356. <https://doi.org/10.1007/s10796-016-9647-9>
21. International Auditing and Assurance Standards Board (IAASB). (2009). *International standard on auditing 240: The auditor's responsibilities relating to fraud in an audit of financial statements*. Retrieved from <https://www.ifac.org/system/files/downloads/a012-2010-iaasb-handbook-isa-240.pdf>
22. International Auditing and Assurance Standards Board (IAASB). (2013). *International standard on auditing 315: Identifying and assessing the risks of material misstatement through understanding the entity and its environment* (Rev. ed). Retrieved from <https://www.ifac.org/system/files/publications/files/A046%202012%20IAASB%20Handbook%20ISA%20315%20%28Revised%29.pdf>
23. Kline, R. B. (2016). *Principle and practices of structural equation modelling: Methodology in the social sciences* (4th ed.) New York, NY: The Guilford Press.
24. Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement of categorical data. *Biometrics*, 33(1), 159-174. <https://doi.org/10.2307/2529310>
25. Mock, T. J., Srivastava, R. P., & Wright, A. M. (2017). Fraud risk assessment using the fraud risk model as a decision aid. *Journal of Emerging Technologies in Accounting*, 14(1), 37-56. <https://doi.org/10.2308/jeta-51724>
26. Mohd-Sanusi, Z., Khalid, N. H., & Mahir, A. (2015). An evaluation of clients' fraud reasoning motives in assessing fraud risks: From the perspective of external and internal auditors. *Procedia Economics and Finance*, 31, 2-12. [https://doi.org/10.1016/S2212-5671\(15\)01126-0](https://doi.org/10.1016/S2212-5671(15)01126-0)
27. Nakashima, M. (2017). *Can the fraud triangle predict accounting fraud?: Evidence from Japan* (Working Paper, Chiba University of Commerce). Retrieved from https://www.rieb.kobe-u.ac.jp/tjar/conference/8th/CC2_MasumiNAKASHIMA.pdf
28. Omar, N. B., & Din, H. F. M. (2010). Fraud diamond risk indicator: An assessment of its importance and usage. In *Proceedings of the 2010 International Conference on Science and Social Research* (pp. 607-612). <https://doi.org/10.1109/CSSR.2010.5773853>

29. Said, J., Alam, M. M., Karim, Z. A., & Johari, R. J. (2018). Integrating religiosity into fraud triangle theory: Findings on Malaysian police officers. *Journal of Criminological Research, Policy and Practice*, 4(2), 111-123. <https://doi.org/10.1108/JCRPP-09-2017-0027>
30. Said, J., Alam, M. M., Ramli, M., & Rafidi, M. (2017). Integrating ethical values into fraud triangle theory in assessing employee fraud: Evidence from the Malaysian banking industry. *Journal of International Studies*, 10(2), 170-184. <https://doi.org/10.14254/2071-8330.2017/10-2/13>
31. Santoso, N. T., & Surenggono. (2018). Predicting financial statement fraud with fraud diamond model of manufacturing companies listed in Indonesia. In R. Said, N. Z. Mohd Sidek, Z. Azhar, & K. A. Kamarudin (Eds.), *State-of-the-art theories and empirical evidence* (pp. 151-163). https://doi.org/10.1007/978-981-10-6926-0_9
32. Schafer, B. A., & Schafer, J. K. (2019). Interpersonal affect, accountability and experience in auditor fraud risk judgments and the processing of fraud cues. In *Advances in accounting behavioral research* (Vol. 22, pp. 43-65). <https://doi.org/10.1108/S1475-148820190000022004>
33. Simon, C. A., Smith, J. L., & Zimbelman, M. F. (2018). The influence of judgment decomposition on auditors' fraud risk assessments: Some trade-offs. *The Accounting Review*, 93(5), 273-291. <https://doi.org/10.2308/accr-52024>
34. Trompeter, G. M., Carpenter, T. D., Desai, N., Jones, K. L., & Riley, R. A., Jr. (2013). A synthesis of fraud-related research. *Auditing: A Journal of Practice & Theory*, 32(1), 287-321. <https://doi.org/10.2308/ajpt-50360>
35. Tschakert, N., Needles, B. E., Jr., & Holtzblatt, M. A. (2016). The red flags of fraud: Internal auditors' knowledge of the business makes them ideal candidates to detect unethical behaviors. *Internal Auditor*, 73(5). Retrieved from <https://iaonline.theiia.org/2016/pages/the-red-flags-of-fraud.aspx>
36. Vance, C. E. (2017, March 21). *The effects of the presence of fraud and auditor certification considering professional skepticism on fraud risk assessment performance*. Retrieved from Shepherd University website: <https://www.shepherd.edu/frf-vance-s17/>
37. Verwey, I. G. F., & Asare, S. K. (2021). The joint effect of ethical idealism and trait skepticism on auditors' fraud detection. *Journal of Business Ethics*. <https://doi.org/10.1007/s10551-020-04718-8>
38. Wolfe, D. T., & Hermanson, D. R. (2004). The fraud diamond: Considering the four elements of fraud. *CPA Journal*, 74(12), 38-42. Retrieved from <https://digitalcommons.kennesaw.edu/facpubs/1537/>

APPENDIX: THE MINI CASE

Based on the information in the case below, please click on the circle provided that represents the level of *agree* or *disagree* on the questions using the following scale: Strongly disagree (1); Do not agree (2); Slightly disagree (3); Somewhat agree (4); Agree (5); Strongly agree (6).

The case of PT Rasuna Bahagia

As the chief audit executive (CAE) of PT Rasuna Bahagia, this year, you are planning to conduct regular internal audits of the payment process in the Finance Department. The last audit was conducted two years ago, with results of "internal control was effective" and "no fraud risk was detected".

Current key employees in the Finance Department are:

1. Joel Sugiono, chief financial officer (CFO), who joined last year. Joel is a fresh graduate and the son of one of the majority shareholders. Joel often shopped for expensive branded fashion items online, so he had a hard time paying his credit card bills.

2. Mia Sari, chief accountant. The 2nd person in the department after Joel. She has joined the department for 25 years.

3. Melati Ningsih, cashier, female, 40 years old and unmarried. Joined the department 8 months ago. She lives with her mother who has cancer and needs huge funds for recovery.

4. Eko Thomas, registrar of payable accounts. Transferred to the department 15 months ago, previously he was 14 years in the IT Department. Eko is 46 years old, has a hobby of collecting several Harley Davidson luxury motorcycles. Eko is a person who codes payment system software programs and maintains accounting databases. Since being transferred to the Department of Finance, now he is the operator of the system he created. Therefore, he becomes a "super user". The reason behind his transfer to the Finance Department is that Eko is the most familiar with the software, no one else knows and there is no documentation/library regarding the software development.

Based on the preliminary audit survey, the following new information was obtained:

- Eko prepared the payment register, Mia did the first review and approval, then Joel did the second review and approval to pay. All document reviews and approvals have been done in a paperless system. Then, the cashier makes a money transfer order based on the payment register that has been validated by Mia and Joel.

- Since last year, at Mia's request, Eko deactivated the log book on the payment system so that "when you did what" was not recorded in the system. The reason is that no one needs the report.

- Since Joel joined, Mia has been very busy. Joel really depends on her. Mia mastered every detail of the job as she had been in the Department for a long time. To facilitate her duties as a reviewer, Mia asks Eko to change her access role so that Mia can change the unit price database (rate) to be able to immediately fix it if other departments provide rates that are not in accordance with the contract.

- Employee turnover in the Finance Department is the highest in the company. Many new employees join less than within a year. The salary is considered too small when compared to the salaries of employees in other departments. There is no performance evaluation applied and this year's salary increase equal to last year's inflation rate is applied equally to all employees of the company.

You also get a schedule to meet Joel Sugiono. Based on the interview with the CFO, you get the following information:

- Internal control runs well. The segregation of duties has been implemented. The maker, examiner, rechecker and approval have been well defined, so the risk of fraud is very small.

- All personnel in the Finance Department have excellent integrity and it is impossible for them to commit unethical behavior on purpose.

Nino Irman, the husband of Mia Sari, is the owner of PT Bersih Jaya, a cleaning service company that has been providing services to PT Rasuna Bahagia for more than 7 years. Mia Sari also acts as finance director at her husband's company. There are no regulations that prohibit this transaction. The amount of the cleaning service bill from PT Bersih Jaya depends on the number of cleaning staff provided, the number of hours worked including overtime of cleaning staff and the hourly rate per person. Every month the bill for cleaning services must be reviewed and approved by PT Rasuna Bahagia as the employer, the party who must review and approve is Mia Sari.

Joel often shares his password with Eko to delegate payment authorization. After Joel returned to the office he changed his password again.

Please answer questions No. 1 to 9 using the following format:

	<i>Do you agree to allocate more time or modify the audit program to detect possible fraud because</i>	<i>Strongly disagree</i>		<i>Strongly agree</i>			
	<i>..... ?</i>	1	2	3	4	5	6
1	There is a key personnel who has troubles in paying his credit card bill.	1	2	3	4	5	6
2	There is a key personnel who needs big funds for the healing/recovery of her mother from cancer.	1	2	3	4	5	6
3	There is a key personnel who collects some Harley Davidson luxury motorcycles.	1	2	3	4	5	6
4	Management deactivates the log book on the payment system.	1	2	3	4	5	6
5	Very high dependence of the CFO on Mia with a new access role in changing the unit price/rate data base.	1	2	3	4	5	6
6	Relatively low salary.	1	2	3	4	5	6
7	No employee performance appraisal is implemented.	1	2	3	4	5	6
8	Eko's role as a "super user" of the payment system.	1	2	3	4	5	6
9	Password sharing often happens.	1	2	3	4	5	6