FORENSIC ACCOUNTING: FRAUD DETECTION SKILLS FOR EXTERNAL AUDITORS

Fadilah S., Maemunah M., Nurrahmawati, Lim T.N., Sundary R.I. [*]

Abstract: The purpose of this study is to identify the influence of forensic accounting skills, consisting of the auditing skills; investigative knowledge and skills; legal knowledge; communication skills; psychological, criminological and victimological skills; accounting skills; and ICT-related skills of external auditors, on their ability to detect fraud. A survey was administered with a quantitative approach, with a population comprising accountants working in public accounting offices classified as Big Four firms. 370 external auditors were selected as samples for the study. To collect the data needed, questionnaires, in-depth interviews and documents from the accounting offices were employed. In addition, to analyze the data, multiple regression analysis was implemented. The results show that some forensic accounting skills, namely auditing skills; communication skills; psychological, criminological and victimological skills; and ICT-related skills are influential in fraud detection, while other skills, that is investigative skills, legal skills, and accounting skills do not have an influence. It is proven that some of the skills provide more benefit after the fraud has been detected.

Introduction

One of the tasks of auditors is to detect fraud, which is defined as false content or information included in financial reports purposely (Tang and Karim, 2018). Fraud is becoming a serious issue, since there have been countless corruption cases around the world, both in developed and developing countries. Serious efforts have been made to cope with the issue in the country, since it leads to the loss of several factors (Hassink et al., 2010). In other countries, cases of fraud are usually asset misappropriation, corruption and false financial reports (Nor and Rameli, 2013; Rorwana et al, 2015; Topcu, 2019). Unfortunately, accountants and auditors have difficulties in detecting fraud (Krambia-Kapardis, 2002). As fraud causes high financial loss, corruption eradication action is increasing (Muse et al., 2015). In this regard, accountants and auditors are professions with great possibilities to detect fraud. However, their attempts to do this are still limited, which is partly due to their lack of forensic accounting skills (Salleh and Aziz, 2014).Therefore, good

---
[*] **Sri Fadilah** PhD**, Mey Maemunah** MSc.**, Nurrahmawati** PhD**, Tomy Nusa Lim** MSc.**, and Rini Irianti Sundary** PhD**.** Accounting Departement, Economic and Business Faculty, Universitas Islam Bandung
✉ corresponding author: srifadilah03@gmail.com
✉ mey_maemunah@yahoo.com

POLISH JOURNAL OF MANAGEMENT STUDIES
Fadilah S., Maemunah M., Nurrahmawati, Lim T.N., Sundary R.I.

2019
Vol.20 No.1

forensic accounting skills for accountants and auditors to detect fraud are indispensable (Towler et al., 2018). Fraud in financial reports is commonly used to reach company objectives (Barnes et al., 2016).. In this context, fraud has also been widely detected in several countries with a variety of reasons or modes (Alleyne et al., 2010; Hegazy et al., 2017).

For auditors, both accounting and auditing skills are needed for their profession, and should be considered basic skills (Purpura and Purpura, 2019), since fraud is closely related to the accounting cycle and auditing process. In addition, to be able to detect fraud, other important skills are also required, one of which is communication skills (Smith, 2005), which are needed to deal with audit objects, fraudsters and victims. Moreover, investigative skills are needed to ensure that fraud is actually taking place. Auditors investigate documents as evidence of fraud (Salleh and Aziz, 2014), with legal skills or expertise necessary to analyse the legal risks of a case (Huang et al., 2008). Moreover, auditors also need to have criminological and psychological skills to understand crimes, psychological conditions, and methods of crime prevention (Othman et al., 2015). Finally, to keep up with developments in science and technology, auditors need to have adequate skills related to information and communication technology. This study comprehensively investigates the forensic accounting skills needed to detect fraud effectively. It includes all the important skills in forensic auditing, namely auditing skills, knowledge and skills with regard to investigation and law, communication skills, psychological and criminological skills, accounting skills, and ICT skills involved in detecting fraud either partially or simultaneously. In short, the study aims to provide empirical proof of the forensic accounting skills required by external auditors to detect fraud.

Forensic Accounting

The main theories supporting the basic premise of the research are those of attribution and cognitive disonation. The theory of attribution is related to determination of the causes and modes of people's behaviour. Moreover, the theory is used to judge behaviour from opposing points of view (Weiner, 2010). The theory can be useful for finding basic constraints to becoming a forensic auditor. Knowing the constraints of forensic auditing will open more doors to the detection of white collar crime within the government (Zhou and Ki, 2018). The theory of cognitive dissonance states that humans basically like consistency, indicating that they are actually against everything they disagree with (Harmon-Jones, 2012). Cognitive dissonance is caused by cognitive elements related to one another (M, 2015).These indications are a great help for external auditors to detect fraud.

Forensic accounting is a combination of accounting and auditing skills in detecting fraud for the sake of legal interests consisting of argumentative reports. In addition, it also relates to the implementation of financial skills and investigative mentalities to unfinished issues related to evidence (Huber, 2013). Forensic accountants should also possess the skills necessary for detecting fraud (Bhasin, 2015; Gbegi, 2014),

2019
Vol.20 No.1

POLISH JOURNAL OF MANAGEMENT STUDIES
Fadilah S., Maemunah M., Nurrahmawati, Lim T.N., Sundary R.I.

some of which are those related to auditing, investigation, law and regulations, communication, criminology, psychology, victimology, accounting, and ICT. It has been found that accomplishments in the economic sector are commonly followed by new forms of fraud. Fraud is often defined as an action of acquiring as much profit as possible through unexpected lies and other disguised illegal actions which often harm others (Zamzami et al., 2016) . The components of fraud detection have been regulated in SAS-ASB No.99 (Noland and Washer, 2016). Fraud detection depends very much on the type of fraud. Financial fraud is also sometimes called accounting fraud. In this study, fraud relates specifically to accounting fraud, which is commonly caused by accidental errors in financial reports which could change decisions being made (LeiLisic et al., 2015). Types of accounting fraud include (a) errors in data collection and analysis which become the foundation of financial reports; (b) false accounting estimates deriving from incorrect interpretation; and (c) errors in accounting principle implementation in relation to sums, classification and data presentation (Pamungkas et al., 2018). Furthermore, to ensure that fraud exists, several criteria need to be met, namely (a) manipulation, falsification and alteration of accounting notes or other supporting documents as the basis of financial reports; (b) intentional misinterpretation or omission of important information and transactions; and (c) misapplication of the principles of accounting. Other ways to identify fraud are also by auditing the managerial members, relating them to external parties; understanding the organisational behaviour; and mastering and understanding the financial reports and operational company characteristics, together withthe roles of both internal and external auditors (Yu and Yu, 2011). Therefore, external auditors should be equipped with a variety of important and necessary skills to be able to detect fraud.

Hypothesis Development

Targeting maximum profit leads company management to do anything necessary. However, cases of fraud in companies make investors lose their trust. This is due to the fact that the auditors have better understanding of the conditions of the audited company. In this regard, fraud detection should be based on understanding the characteristics and frequency of fraud (Digabriele, 2008). In addition, auditors' skills and knowledge related to investigation are required in order tofind evidence. The principles of forensic investigation are very useful in detecting fraud, particularly in providing evidence (Mohd-Sanusi et al., 2015).To further adjust the evidence into existing regulations, other skills necessary for external auditors are legal skills,with which they match the evidence with the rules and legal basis (Lokanan, 2019). After establishing good proof and matching the legal basis, auditors should also communicate well with the different parties involved in the process of fraud detection. Good communication leads to effective detection of fraud (Throckmorton et al., 2015)and gives them easier access leading to it. Not only do auditors need to have the aforementioned set of skills, they are also required to have good skills and knowledge of criminology and psychology in

POLISH JOURNAL OF MANAGEMENT STUDIES
Fadilah S., Maemunah M., Nurrahmawati, Lim T.N., Sundary R.I.

2019
Vol.20 No.1

order to identify crimes comprehensively (Ghasemi et al., 2011). Criminology and psychology give them knowledge of the nature of a crime. Finally, ICT skills are another important tool in forensic accounting in this digital era (Lin et al., 2003). Therefore, how the influence of auditing skills, knowledge and skills of investigation, knowledge of law and regulations, communication skills, criminological and psychological skills, accounting knowledge and ICT knowledge and skills to the abilityof fraud detection partially and simultaneously (Hussain et al., 2019).

Research Method

The study employed a quantitative survey to identify the forensic accounting ability of external auditors to detect fraud. The auditors came from the Big Four public accounting firms, namely Price Waterhouse Coopers, Ernst & Young, Deloitte and Klynveld Peat Marwick Goerdeler (KPMG). The number of auditors comprising the sample was 370 out of the total of 4,800 auditors in Indonesia. Of these 370, only 195 returned the questionnaire. In choosing the sample, the random sampling technique was selected, since it has been proven to be able to acquire random and clear samples. Furthermore, the method used to select the sample applied Slovin's formula, since this is easier to implement when using the random sampling technique. To collect the data, the study employed statistical computation, questionnaires, interviews and document analysis. In the statistical computation, the first step was validity and reliability tests. The validity test was conducted by correlating the score of each item withthe total score, and interpreting the correlational coefficient resulting from the score of each item, which needed to be equal to or greaterthan 0.361. In addition, areliability test was conducted using the internal consistency method with Cronbach's Alpha technique. This was followed by a classical assumption test, which is presented in Table 1.

Table 1: Results of the Classical Assumption Test

No	Type of Assumption Test	Parameter	Sig	Conclusion
1	Normality	Kolmogorov Smirnov	0.334	Normally distributed
2	Heteroscedasticity	Abresid	0.499	Heteroscedasticity free
3	Multicollinearity	VIF/Tolerance	(1.3 s/d 1.805) / (0.554 s/d 0.717)	Multicollinearity free

The data normality distribution score using Kolmogorov-Smirnov was 0.945, indicating that the data were normally distributed, since the figurewas higher than 0.05. This was also in line with the result of the heteroscedasticity test, which was also higher than 0.05, indicating that the instrument was free of heteroscedasticity. Finally, it was shown that all the variables were free of multicollinearity, since the tolerance value is > 0.1 and that of the VIF is <10.

The quantitative data were in the form of an ordinal scale; therefore, this scale was elevated using the successive internal method to be able to apply multiple regression analysis using the equation of multiple linear regression. Before the data were analysed, a classical assumption test was performed. However, out of the common four steps, only three (normality test, heteroscedasticity test and multicollinearity test) types of test were performed. The other (autocollinearity test) was not used, since the data were not a time series. The multiple regression model was then applied in the following test steps:

a. Partial significance test (T-test)
This test was used to answer one of the research questions and the following partial hypotheses:
Ho: $b_1 = 0$, meaning that the independent variable partially does not influence the dependent variable
Ha: $b_1 \neq 0$, meaning that the independent variable partially influences the dependent variable with the following decision making criteria:
If the probability is < 0.05, then Ho is accepted
If the probability is > 0.05, then Ha is accepted

b. Simultaneous test (F-test)
This test was used to answer one of the research questions and the hypotheses simultaneously, as follows.
Ho: $b_1 = 0$, meaning that the independent variable simultaneously does not influence the dependent variable
Ha: $b_1 \neq 0$, meaning that the independent variable simultaneously influences the dependent variable with the following decision making criteria:
If the probability is < 0.05, then Ho is accepted
If the probability is > 0.05, then Ha is accepted

c. Determinant coefficient
This test was used to measure the proportion or percentage of the contribution of the independent variables and their impacts onthe various increases and decreasesinthe dependent variable. To confirm the data acquired from the questionnaire, in-depth interviews were conducted at the Big Four public accounting firm One or two interviewers were involved from the researcher team,together withone or two managing directors of the sister companies in each interview session. Each session lasted for two to two and a half hours. Document study was the finalinstrument used to collect secondary data related to fraud and forensic accounting skills. The documents retrieved in this study were printed ones in the auditors' profiles,withsome online documents accessed from https://www.transparency.org/news/feature/corruption_perceptions_index_2016 on 2 April 2017 and a report by ACFE on Global Fraud Story.

POLISH JOURNAL OF MANAGEMENT STUDIES
Fadilah S., Maemunah M., Nurrahmawati, Lim T.N., Sundary R.I.

2019
Vol.20 No.1

Results and Discussion

As mentioned earlier, one of the statistical computations administered in the study was hypothesis testing, the results of which are presented in Table 2.

Table 2: Results of Hypothesis Testing

Forensic Accounting Skills	Hypo-thesis	Unstandar-dized B	Prob. Sig		Decision
			Sig	**Sig-cal (1-*tail*)**	
Constant	-	5.743	-	-	-
Auditing skills	H_1 (+)	0.278	0.05	0.000	H_1 accepted
Knowledge and skills ofinvestigation	H_2 (+)	0.110	0.05	0.206	H_2 rejected
Knowledge of law and regulations	H_3 (+)	0.209	0.05	0.065	H_3 rejected
Communication skills	H_4 (+)	-0.297	0.05	0.030	H_4 accepted
Knowledge of psychology, criminology and victimology	H_5 (+)	0,436	0.05	0.001	H_5 accepted
General knowledge of accounting	H_6 (+)	0.267	0.05	0.067	H_6 rejected
Knowledge and skills of ICT	H_7 (+)	0.491	0.05	0.000	H_7 accepted
R^2			-	0.460	
Adj R^2			-	0.439	
F test			0.05	0.015	accepted

The results of the calculations in Table 4 are acquired from the following equation:

$$Y = 5.743 + 0.278X_1 + 0.110X_2 + 0.209X_3 - 0.297X_4 + 0.436X_5 + 0.267X_6 + 0.491X_7$$

Table 4 also shows that the value of $R^2$is 0.439, meaning that 43.9% of the variable Y (skills of detecting fraud) can be explained by variable X (auditing skills, knowledge and skills of investigation, knowledge of law and regulations, communication skills, knowledge of psychology, criminology and victimology, general knowledge of accounting, and knowledge and skills of ICT). In addition, the rest 56.1 and is explained by other independent variables excluded from this study. To establish whether the regression model fits this study, we conducted an F-test, whose results can be seen in Table 4. The result of the test is lower than 5%, indicating that H_0 is accepted, and that the seven skills simultaneously impact on the skills of fraud detection. In addition, a partial test was also conductedto observewhether the seven skills had impacts on fraud detection skills respectively. The complete testing was as follows.

a. H_1 testing
This type of hypothesis testing proved that the significance probability = 0.000 (< 5%), meaning that **H_0 is rejected and H_1 is accepted**. This implies that there is a positive correlation between auditing skills, investigative knowledge and skills to detect fraud.

b. H_2 testing

This testing resulted in asignificance probability of 0.206, which is higher than 5%. Therefore, **H_0 is accepted and H_2 is rejected**, meaning that there is no positive influence of knowledge and skills on investigation offraud detection.

c. H_3 testing

The significance probability value of this test was 0.065 (>5%), meaning that **$H_0$is accepted and H_3 is rejected**. This therefore implies that there is no positive impact of knowledge of law and regulationsonthe skills of fraud detection.

d. H_4 testing

The significance level value of this testing was 0.030 (> 5%), meaning that **H_0 is rejected and H_4 is accepted**. This implies that there is a partial positive influence of communication skills onthe skills of fraud detection.

e. H_5 testing

The signifiance probability value of this testing was 0.001 (<5%), meaning **that H_0 is rejected and H_5 is accepted**. This implies that there is a partial positive influence of knowledge of psychology, criminology and victimology.

f. H_6 testing

The significance probability value of this testing was 0.067 (>5%), meaning that **H_0 is accepted and H_6 is rejected**. This implies that there is no partial positive influence of general knowledge of law and regulationsonthe skills of fraud detection.

g. H_7 testing

The significance probability level of this testing was 0.000 (<5%), meaning that **H_0 is rejected and H_7 is accepted**. This implies that there is a partial positive influence of ICT knowledge and skills on the skills of fraud detection.

Based on the results of the series of the hypothesis testing administered in the study, it can be inferred that. External auditors' auditing skills are **influential** in their skills of fraud detection. This is in line with a previous study by Arboleda et al. (2018)**,** which foundthat auditing standards, which are included in auditing skills, are important elements of detecting the symptoms of fraud, such as financial statements, misappropriation and corruption. Suchstandards are the auditors' professional responsibility. In performingtheir tasks, auditors should fully understand the internal control, procedures, control, evidence and worksheet checking which support their auditing processes and auditing opinion-giving (Huang et al., 2008**;** Nurhayati, 2016).

The study has found that the knowledge and skills of investigation are **not influential** in fraud detection skills. This result does not support the previously stated hypothesis. The skills are commonly in relation to documentation as auditing traces as evidence of suspected fraud. This type of skill should support auditors' fraud detection (Huang et al., 2008)**.**However, based on the findingsof the

interviews, the respondents stated that their investigative skills are used after fraud has been detected. This idea is in line with a study highlighting that investigative knowledge and skills are used not to detect fraud, but instead to makecorrections and give feedback after fraud has been detected (Turner, 2014). In fact, investigative knowledge and skills can actually be used to "open up" a case pre-fraud detection. Another skill which has been proven to be **not influential** in detecting fraud is knowledge of law and regulations. However, this skill or knowledge is a very important and useful tool for external auditors to be able to analyse the legal risks of a certain case, as fraud detection is often considered to be in the field of law (Durtschi and Pacini, 2004) and most people presumethat law consists of a series of consequences of fraud (Cordis and Lambert, 2017). Auditors in The Big Four offices do not appear to implement the idea that knowledge of law and regulations can be used to detect fraud. As with investigative skills, this type of skill is used after fraud has been detected, since they share the opinion that law leads to the consequences of fraud.

The study has found that communication skills are **influential** in fraud detection skills. This is basically one of the most important skills to master, since external auditors should communicate with groups of people (Smith et al., 2017**;** MacTavish, 2018). All of the interviewed repondents gavethe same answer, that communication skills are used in pre- and post-fraud detection. First, they have to make investigations by communicating with people directly and indirectly involved in a certain case suspected to be fraud. The same applies when fraud has been detected; external auditors should conductgood communication,considering thepsychological conditions of thosethey need to talk to (Abdullahi and Mansor, 2018).

Skills related to criminology and psychology have beenproven to be **influential** in fraud detection skills. In line with the hypothesis tested in this study, these skills will be a good device to identify crimes and their cause and effect relationship, how people commit crimes, and the triggers of crimes (Bhasin, 2015**;** Murphy and Dacin, 2011)**.**In short, good knowledge and skills of victimology, criminology and psychology will be useful in establishing the nature of crimes.

The accounting skills of external auditors have beenproven to be **notinfluential** in the skills of fraud detection. This is in contradiction with the tested hypothesis, since the skills are related to financial data processing, reviews, transaction tests, and accuracy level tests on periodic reports made by the company management (Kumari Tiwari and Debnath, 2017; Bressler, 2019). When interviewed, most of the respondents working as external auditors in The Big Four disagreed that auditing skills are useful indetecting fraud due to the unsuitability of the skills in most of the cases of fraud, such as manufacturing processes or other production.

It has been found in this study that the knowledge and skills of ICT of the external auditors are **influential** in their fraud detection skills. The presence and the use of ICT are inevitable in this era. Therefore, company management should create information systems which are trustworthy, relevant, ontime, complete,

understandable, and scientifically tested. Nowadays, almost all companies in Indonesia have implemented ICT-based or computerized systems (Lacasa and Fernández-Gracia, 2019).The use of good systems will enable auditors to reveal fraud, particularly now that they can use digital forensics, an application to identify, analyse and test data (Ghasemi et al., 2011).

The forensic accounting skills of external auditors have beenproven to be **influential** in their skills of detecting fraud. This result agrees with the tested hypothesis in this study. In general, forensic accounting skills should be mastered by forestic accountants. However, we believe that these skills are also important for external auditors, so that they will be able to identify the triggers and symptoms of fraud.

Summary

Based on the results of the study, it can be concluded that some of the forensic accounting skills are influential infraud detection, while others are not. This is due to the fact that some of the skills have more impact when fraud has been detected, not in the process of detecting it. It is expected that the results will have a major impact on professional external auditors, by enhancing their quality of forensic accounting skills. For further research, it is recommended that more questionnaires are distributed and expanded to offices outside The Big Four.

References

(ACFE), A.O.C.F.E. (2016). *Report to The Nations on Occupational Fraud and Abuse, 2016 Global Fraud Story*.

Abdullahi, R., Mansor, N. (2018). Fraud prevention initiatives in the Nigerian public sector: understanding the relationship of fraud incidences and the elements of fraud triangle theory. *Journal of Financial Crime*.

Alleyne, P., Persaud, N., Alleyne, P., Greenidge, D., & Sealy, P. (2010). Perceived effectiveness of fraud detection audit procedures in a stock and warehousing cycle: Additional evidence from Barbados. *Managerial Auditing Journal*, *25*(6), 553-568.

Arboleda, F.J.M., Guzman-Luna, J.A., & Torres, I.-D. (2018). Fraud detection-oriented operators in a data warehouse based on forensic accounting techniques. *Computer Fraud & Security*, *2018*(10), 13-19.

Barnes, J.N., Lewis T.B., & Boneck R.S. (2006). New Tactics in fighting financial crime: moving beyond the fraud triangle. *Journal Of Legal Ethical and Regulator Issues*, *19*(1), 86-95.

Bhasin, M. (2015). AnEmpirical Investigation of the Relevant Skills of Forensic Accountants: Experience of a Developing Economy. *SSRN Electronic Journal*.

Bressler, L. (2019). The role of forensic a Importance of ole of forensic accountants in fraud investigations: Importance of attorney and judge's perceptions. *Journal of Financial and Accountancy*, *56*, 79-88.

Brooks L, Gill S, W.-O.-W.B. (2019). Corporate social responsibility risk and auditor-client retention. *International Journal of Auditing*, *23*(1), 95-111.

Carnes, K.C., Gierlasinski, N.J (2001). Forensic accounting skills: will supply finally catch up to demand? *Managerial-Auditing-Journal*, *16*(6), 378-382.

Cetindamar, D. (2018). Designed by law: Purpose, accountability, and transparency at benefit corporations. *Cogent Business and Management*, *5*(1).

Cordis, A.S., Lambert, E.M. (2017). Whistleblower laws and corporate fraud: Evidence from the United States. *AccountingForum*, *41*(4), 289-299.

Digabriele, J.A. (2008). An Empirical Investigation of the Relevant Skills of Forensic Accountants. *Journal of Education for Business*, *83*(6), 331-338.

Durtschi, C., Pacini, C. (2004). *The Effective Use of Benford's Law to Assist in Detecting Fraud in Accounting Data*. Retrieved from https://www.researchgate.net/publication/241401706

Enofe, A.O, Okpako, P.O & Atube, E.N. (2013). The Impact of Forensic Accountingon Fraud Detection In *European Journal of Business and Management www.iiste.org ISSN* (Vol.5). Retrieved from www.iiste.

Ghasemi, M., Shafeiepour, V., Aslani, M., & Barvayeh, E. (2011). The impact of Information Technology (IT) on modern accounting systems. *Procedia - Social and Behavioral Sciences*, *28*, 112-116.

Glancy, F.H., Yadav, S.B. (2011). A computational model for financial reporting fraud detection. *Decision Support Systems*, *50*(3), 595-601.

Harmon-Jones, E. (2012). Cognitive Dissonance Theory. *Encyclopedia of Human Behavior*, 543-549.

Hassink, H., Meuwissen, R., & Bollen, L. (2010). Fraud detection, redress and reporting by auditors. *Managerial Auditing Journal*, *25*(9), 861-881.

Hegazy, S., Sangster, A., & Kotb, A. (2017). Mapping forensic accounting in the UK. *Journal of International Accounting, Auditing and Taxation*, *28*.

Humpherys, S.L., Moffitt, K.C., Burns, M.B., Burgoon, J.K., & Felix, W.F. (2011). Detection of financial statement fraud and feature selection using data mining techniques. *Decision Support Systems*, *50*(3), 585-594.

Hussain, H.I., Kamarudin, F., Thaker, H.M.T. & Salem, M.A. (2019) Artificial Neural Network to Model Managerial Timing Decision: Non-Linear Evidence of Deviation from Target Leverage. *International Journal of Computational Intelligence Systems, 12 (2)*, 1282-1294.

Khan, A.W., Abdul Subha, Q. (2019). Impact of board diversity and audit on firm performance. *Cogent Business & Management*, 1-16.

Krambia-Kapardis, M. (2002). A fraud detection model: A must for auditors. *Journal of Financial Regulation and Compliance Volume?10*(3).

Krambia-Kapardis, M. (2003). Fraud victimisation of companies: the Cyprus experience. *Journal of Financial Crime*, *10*(2), 184-191.

Kranacher M.J., Stern, L. (2004). Enhancing Fraud Detection through Education. *The CPA Journal*, *11*(4), 601-618.

Kumari Tiwari, R., Debnath, J. (2017). Forensic accounting: a blend of knowledge. *Journal of Financial Regulation and Compliance*, *25*(1), 73-85.

Lacasa, L., Fernández-Gracia, J. (2019). Election Forensics: Quantitative methods for electoral fraud detection. *Forensic Science International*, *294*, 19-22.

Lin, J.W., Hwang, M.I. & Becker, J.D. (2003). A fuzzy neural network for assessing the risk of fraudulent financial reporting. *Managerial Auditing Journal*, *18*(8), 657-665.

LeiLisic L., Silveri, S. & Song, Y.K. (2015). The impact of information complexity on audit failures from corporate fraud: Individual auditor level analysis. *Journal of Business Research*, *68*(6), 1186-1195.

Lokanan, M.E. (2019). A fraud investigation plan for a false accounting and theft case. *Journal of Financial Crime*.

MacTavish, C. (2018). Audit negotiations. *Managerial Auditing Journal*, *33*(8/9), 658–682.

Major, J.A. Riedinger, D.R. (2002). EFD: A hybrid knowledge/statistical-based system for the detection of fraud. *Journal of Risk and Insurance*, *69*(3), 309-324.

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.

Murray, A., Wood, J.L.S. (2012). Psychopathic personality traits and cognitive dissonance: Individual differences in attitude change. *Journal of Research in Personality*, *46*(5), 525-536.

Muse, O., Popoola, J., Che-Ahmad, A.B., & Samsudin, R.S. (2015). An empirical investigation of fraud risk assessment and knowledge requirement on fraud related problem representation in Nigeria. *Accounting Research Journal*, *28*(1), 10-44.

Noland, T.G., Washer, K.M. (2016). An Analysis Of SAS No. 99 And Its Impact On The Big Fraud In Kentucky. *Journal of Business & Economics Research (JBER)*, *3*(2).

Othman, R., Aris, N.A., Mardziyah, A., Zainan, N., & Amin, N.M. (2015). Fraud Detection and Prevention Methods in the Malaysian Public Sector: Accountants' and Internal Auditors' Perceptions. *Procedia Economics and Finance*, *28*, 59-67.

Pamungkas, B., Ibtida, R., & Avrian, C. (2018). Factors influencing audit opinion of the Indonesian municipal governments' financial statements. *Cogent Business and Management*, *5*(1), 1-18.

Purpura, P.P., Purpura, P.P. (2019). Accounting, Accountability, and Auditing. *Security and Loss Prevention*, 337-354.

Rorwana, A., Tengeh, R.K., & Musikavanhu,T.B. (2015). A Fraud Prevention Policy:Its Relevance and Implication at a University of Technology in South Africa. *Journal of Governance and Regulation*, *4*.

Salleh, K., Aziz, R.A. (2014). Traits, Skills and Ethical Values of Public Sector Forensic Accountants: An Empirical Investigation. *Procedia - Social and Behavioral Sciences*, *145*, 361-370.

Segovia, J., Arnold, V., & Sutton, S.G. (2009). *Do principles-vs.rules-based standards have a differential impact on U.S.auditors' decisions?*

Smith, G. (2005). Communication skills are critical for internal auditors. *Managerial Auditing Journal*, *20*(5), 513-519.

Smith, K.J., Emerson, D.J., & Everly, G.S. (2017). *Stress Arousal and Burnout as Mediators of Role Stress in Public Accounting*.

Tang, J., Karim, K.E. (2018). Big Data information governance by accountants. *International Journal of Accounting, 34*(3), 153-170.

Throckmorton, C.S., Mayew, W.J., Venkatachalam, M., & Collins, L.M. (2015). Financial fraud detection using vocal, linguistic and financial cues. *Decision Support Systems*, *74*, 78-87.

Topcu, A.G.G. (2019). Impact of Accounting Information System (AIS) on Fraud Detection . *Management and Political Sciences Review*, *1*(1), 81-92.

Towler, A., White, D., Ballantyne, K., Searston, R.A., Martire, K.A., & Kemp, R.I. (2018, June). Are Forensic Scientists Experts? *Journal of Applied Research in Memory and Cognition*, *7,* 199-208.

Tumwebaze, Z., Mukyala, V., Ssekiziyivu, B., Tirisa, C.B., & Tumwebonire, A. (2018). Corporate governance, internal audit function and accountability in statutory corporations. *Cogent Business and Management*, *5*(1), 1-13.

Turner, M.J. (2014). *An Investigation of Big Five Personality and Propensity to Commit White-Collar Crime*, 57-94.

Weiner, B. (2010). Attribution Theory. *International Encyclopedia of Education*, 558–563.

Yu, F., Yu, X. (2011). Corporate Lobbying and Fraud Detection. *SSRN Electronic Journal*, *46*(6), 1865-1891.

Zamzami, F., Nusa, N.D., Timur, R.P. (2016). The effectiveness of fraud prevention and detection methods at universities in Indonesia. *International Journal of Economics and Financial Issue*, *6*(3), 66-69.

Zhou, Z., Ki, E.-J. (2018). Does severity matter?: An investigation of crisis severity from defensive attribution theory perspective. *Public Relations Review*, *44*(4), 610–618.

Zwijze-Koning, K.H., de Jong, M.D.T. (2009). Auditing management practices in schools. *International Journal of Educational Management*, *23*(3), 227-236.

RACHUNKOWOŚĆ FORENSYCZNA: UMIEJĘTNOŚCI WYKRYWANIA NADUŻYĆ FINANSOWYCH DLA ZEWNĘTRZNI AUDYTORZY

Streszczenie: Celem tego badania jest identyfikacja wpływu umiejętności rachunkowych w zakresie medycyny sądowej, na które składają się umiejętności kontrolne; wiedza i umiejętności śledcze; wiedza prawnicza; zdolności do porozumiewania się, psychologiczny, umiejętności kryminologiczne i wiktymologiczne; umiejętności rachunkowe; oraz związane z ICT oraz umiejętności zewnętrznych audytorów, w zakresie ich zdolność do wykrywania oszustw. Ankieta została przeprowadzona metodą ilościową, z populacją obejmującą księgowych pracujących w publicznych biurach rachunkowych, ktore są sklasyfikowane, jako firmy z Wielkiej Czwórki. Trzystu siedemdziesięciu zewnętrznych audytorów zostało wybranych do próby badawczej. Aby zebrać potrzebne dane, zastosowano wywiady i dokumenty z biur rachunkowych. Ponadto w celu analizy danych przeprowadzono analizę regresji wielokrotnej. Wyniki pokazują, że niektóre umiejętności rachunkowości sądowej, a mianowicie umiejętności kontrolne; zdolności do porozumiewania się; umiejętności psychologiczne, kryminologiczne oraz wiktymologiczne; a także z zakresu ICT mają wpływ na wykrywanie oszustw, podczas gdy inne umiejętności, tj. umiejętności dochodzeniowe, umiejętności prawne i umiejętności księgowe nie mają wpływu. Udowodniono, że niektóre umiejętności zapewniają więcej korzyści po wykryciu oszustwa.

Słowa kluczowe: oszustwa, rachunkowość, kryminalistyka

法务会计:欺诈检测技巧 外部审计师

摘要:本研究的目的是确定法务会计技能(包括审计技能)的影响;调查知识和技能;法律知识;沟通技巧;心理,犯罪学和受害者技能;会计技能;以及外部审计师与ICT相关的技能,以发现欺诈行为。调查是采用定量方法进行的,人口中包括在四大公司的公共会计事务所工作的会计师。选择了370名外部审核员作为研究样本。为了收集所需的数据,我们使用了会计事务所的调查表,深入访谈和文件。另外,为了分析数据,实施了多元回归分析。结果表明,一些法务会计技能,即审计技能;沟通技巧;心理,犯罪学和受害者技能;与ICT相关的技能对欺诈检测有影响,而其他技能(即调查技能,法律技能和会计技能)则没有影响。事实证明,检测到欺诈后,某些技能可以提供更多好处

关键词:欺诈,会计和法证