
B. Demographic Information: about your institution

For classification purposes we need to know something about your role in your institution.

Q1 What is your workplace's name?

Q2 What is your division's name?

Q3 How many fraud cases have you ever audited or transferred to the courts for trial?

no more than 2

2 to 5

6 to 10

more than 10

Thank you very much for completing this questionnaire.

5.11 subsidiary companies.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.12 parent companies.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.13 affiliated companies.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.14 foundations.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.15 corrupt tax officers.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.16 corrupt government auditors.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.17 corrupt state and local officials.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6. Most fraud prosecutions fail because:									
6.1 the evidence is insufficient.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.2 a key witness fails to attend the trial.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.3 a witness or witnesses fail to provide proof.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.4 an attempt is made to intimidate the court.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.5 an attempt is made to bribe the court.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.6 the case takes too long (e.g. more than six months).	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.7 the defendant is ill before the trial starts or becomes ill during the course of the trial	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.8 the defendant leaves the jurisdiction before the trial starts or during the course of the trial	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
6.9 the defendant dies before the trial starts or during the course of the trial	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree

4.2	senior management is perceived to be acting in an unethical manner.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.3	there are unclear messages about what is personally acceptable.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.4	there is a lack of adequate control procedures for preventing fraud.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.5	colleagues lack of commitment to report fraud.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.6	there is lack in use of technologies of crime prevention.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.7	there are overly aggressive organisational targets.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.8	there is an understaffing problem.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.9	the style of management is over-authoritarian.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.10	there is a poor conflict resolution process.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.11	there is a lack of open internal communications	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.12	there are no penalties for committing fraud	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4.13	there is no reward for good work results.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5	Commission of fraud can involve:									
5.1	suppliers.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.2	customers.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.3	colleagues.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.4	bosses.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.5	internal auditors.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.6	external auditors (public accounting firm).	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.7	audit committees.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.8	directors.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.9	commissioners.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
5.10	shareholders.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree

3	<p>2.19 too much trust in employees who are in finance handling positions.</p> <p>When either committing fraud or covering it up, motivated offenders can also collude with:</p> <p>3.1 suppliers.</p> <p>3.2 customers.</p> <p>3.3 colleagues.</p> <p>3.4 bosses.</p> <p>3.5 internal auditors.</p> <p>3.6 external auditors (public accounting firm).</p> <p>3.7 audit committees.</p> <p>3.8 directors.</p> <p>3.9 commissioners.</p> <p>3.10 shareholders.</p> <p>3.11 subsidiary companies.</p> <p>3.12 parent companies.</p> <p>3.13 affiliated companies.</p> <p>3.14 foundations which have connections with their activities.</p> <p>3.15 corrupt tax officers.</p> <p>3.16 corrupt government auditors.</p> <p>3.17 corrupt state and local officials.</p>	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
4	<p>A potentially defraudable organisation will fail to protect itself from fraud because:</p> <p>4.1 the head of the organisation is perceived to be acting in an unethical manner.</p>	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree

1.10	"I am not really stealing. I work hard and deserve it".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.11	"The company can afford it".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.12	"Fraudulent behaviour is worth the risks".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.13	"It is only temporary until the financial situation improves".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2	Motivated offenders will commit fraud if there are any opportunities such as:									
2.1	weak or incapable guardians (e.g. auditors).	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.2	lack of capable guardians (e.g. auditors).	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.3	absence of capable guardians (e.g. auditors).	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.4	absence of whistle blowers.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.5	absence of complaints or protests.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.6	a perception of a lenient sentence if convicted.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.7	a potential delay in decision making and action.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.8	a lack of awareness of wrongdoing.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.9	a lack of segregation of duties.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.10	failure to be informed about organisation rules.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.11	failure to be informed about the consequences of perpetrating fraud.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.12	rapid turnover of employees.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.13	constantly operating under financial crisis conditions.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.14	a lack of an audit trail	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.15	ineffective supervision.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.16	a lack of transaction authorizations.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.17	poor accounting records.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
2.18	a lack of physical control over assets.	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree

Appendix 3 Questionnaire: All Forms of Fraud Risk Associations⁹

A. We would like your view on a set of statements relating to all forms of fraud findings, report, and prosecutions which were transferred to the courts. Please read each statement carefully and then circle one number from the seven alternatives which best describes your degree of agreement or disagreement with the statement. Please remember there are no correct or best answers. I would like your opinion to each of the following questions:

		For example: People will often try to justify fraudulent behavior.								
		Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1	Rationalisations used by fraud perpetrators are:									
1.1	"The organization owes to me".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.2	"I am only borrowing the money and will pay it back".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.3	"Nobody will get hurt".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.4	"I deserve more".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.5	"It's for a good purpose".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.6	"Something has to be sacrificed".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.7	"I am underpaid".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.8	"I am not appreciated".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree
1.9	"Everybody else is doing it".	Disagree:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	:Agree

⁹ The Southern Cross University (SCU) Human Research Ethics Committee (HREC) granted ethics approval with special conditions for the questionnaire study and the approval number is ECN-07-52, of 15 May 2007.

Appendix 2

Mathematical equations for the post-hoc model

$$V45 = F1 + e1$$

$$V47 = *F1 + *F2 + e2$$

$$V48 = *F1 + e3$$

$$V49 = *F1 + e4$$

$$V21 = F2 + e5$$

$$V23 = *F2 + *F4 + e6$$

$$V28 = *F2 + e7$$

$$V29 = *F2 + e8$$

$$V59 = F3 + *F4 + e9$$

$$V61 = *F3 + e10$$

$$V62 = *F3 + *F6 + e11$$

$$V63 = *F3 + e12$$

$$V73 = F5 + *F1 + *F2 + e13$$

$$V77 = *F5 + e14$$

$$V78 = *F5 + e15$$

$$V80 = *F5 + e16$$

$$V88 = F4 + e17$$

$$V90 = *F4 + e18$$

$$V91 = *F4 + e19$$

$$V92 = *F4 + *F5 + e20$$

$$V101 = F6 + e21$$

$$V102 = *F6 + e22$$

$$V105 = *F6 + *F2 + *F5 + e23$$

$$F1 = * F5 + D1$$

$$F2 = * F1 + D2$$

$$F3 = * F1 + D3$$

$$F4 = *F1 + *F3 + *F6 + D4$$

$$F6 = * F3 + *F5$$

The variable and factor names are shown in Table 1.

Appendix 1

The types of samples drawn by 136 prior fraud studies from 1950 to 2008

	Authors		Samples			
	(Organisation)	Year	Auditors and forensic experts	Police interrogators	Prosecutors, and judges	Others
106	Hansen et al	1996	Yes			Yes
107	Buckhoff & Hansen	2002	Yes			
108	Heiman-Hoffman et al.	1996	Yes			
109	McMullen & Raghunandan	1996				Yes
110	Moyes & Hasan	1996	Yes			
111	Welch et al.	1996	Yes			
112	Zimbelman	1996	Yes			
113	Hoffman et al.	1996	Yes			
114	Jamal et al.	1995	Yes			
115	Persons	1995				Yes
116	Bernardi	1994	Yes			
117	Calderon & Green	1994				Yes
118	Hackenbrack	1993	Yes			
119	Ponemon	1993	Yes			
120	Hackenbrack	1992	Yes			
121	Matsumura & Tucker	1992				Yes
122	Baucus & Near	1991				Yes
123	McKeown et al.	1991	Yes			Yes
124	Johnson et al.	1991	Yes			
125	Mercer	1990				Yes
126	Pincus	1990	Yes			
127	Loebbecke et al.	1989	Yes			Yes
128	Pincus	1989	Yes			
129	Dalton & Kesner	1988				Yes
130	Holt	1987	Yes			Yes
131	Albrecht & Romney	1986	Yes			Yes
132	Wheeler et al.	1982			Yes	Yes
133	Joyce & Biddle	1981 a	Yes			
134	Joyce & Biddle	1981 b	Yes			
135	Romney et al.	1980 b	Yes			Yes
136	Cressey	1950				Yes

Appendix 1

The types of samples drawn by 136 prior fraud studies from 1950 to 2008

	Authors (Organisation)	Year	Samples			
			Auditors and forensic experts	Police interrogators	Prosecutors, and judges	Others
71	Saksena	2001				Yes
72	Shailer et al.	2001	Yes			
73	Shelton et al.	2001	Yes			
74	Ziegenfuss	2001	Yes			
75	Apostolou et al.	2000	Yes			
76	Bell & Carcello	2000	Yes			Yes
77	Braun	2000	Yes			
78	Erickson et al.	2006				Yes
79	Knapp & Knapp	2001	Yes			Yes
80	Koornhof & Plessis	2000				Yes
81	Strand et al.	2000				Yes
82	Agrawal et al.	1999				Yes
83	Beneish	1999				Yes
84	COSO	1999				Yes
85	Karpoff et al.	1999			Yes	Yes
86	Pincus et al.	1999	Yes			
87	Spurlock & Ehlen	1999				Yes
88	Wiedman	1999				Yes
89	Zimbelman & Waller	1999				Yes
90	Anderson et al.	1998	Yes		Yes	
91	DeZoort & Lee	1998	Yes			
92	Schultz & Hooks	1998				Yes
93	Summers & Sweeney	1998				Yes
94	Basu & Wright	1997	Yes			
95	Bernardi	1997	Yes			
96	Bloomfield	1997				Yes
97	Boatsman et al.	1997	Yes			
98	Eining et al.	1997	Yes			
99	Gerety & Lehn	1997				Yes
100	Hoffman & Patton	1997	Yes			
101	Zimbelman	1997	Yes			
102	Zimbelman & Hoffman	1997	Yes			
103	Beasley	1996				Yes
104	Bernardi & Pincus	1996	Yes			
105	Dechow, et al.	1996				Yes

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The types of samples drawn by 136 prior fraud studies from 1950 to 2008

	Authors		Samples			
	(Organisation)	Year	Auditors and forensic experts	Police interrogators	Prosecutors, and judges	Others
36	Pillsbury	2005				Yes
37	Reed & Pence	2005				Yes
38	Smith et al.	2005	Yes			
39	ACFE	2004				Yes
40	Asare & Wright	2004				Yes
41	Choo & Tan	2004	Yes			
42	D'Aquila	2004	Yes			
43	Durtschi et al.	2004				Yes
44	Fraser & Lin	2004				Yes
45	Kaminski et al.	2004				Yes
46	Sacks	2004	Yes			
47	Sanches & Trewin	2004	Yes		Yes	Yes
48	Wilk & Zimbelman	2004	Yes			
49	Glover et al.	2003	Yes			
50	Graham & Bedard	2003	Yes			
51	Gramling & Myers	2003	Yes			
52	KPMG	2006				Yes
53	Makkawi & Schick	2003	Yes			
54	Moyes & Baker	2003	Yes			
55	Pricewaterhouse Coopers	2007				Yes
56	Rose & Rose	2003	Yes			
57	Smith	2003		Yes	Yes	Yes
58	Specht & Sandlin	2003	Yes			
59	Burn & Stanley	2002	Yes			
60	Crawford & Stein	2004	Yes			
61	Derrig & Zicko	2002				Yes
62	Holmes et al.	2002	Yes			
63	Krambia-Kapardis	2002	a Yes	Yes		Yes
64	Krambia-Kapardis	2002	b Yes			Yes
65	Viaene et al.	2002				Yes
66	Wu et al.	2002	Yes			
67	Apostolou et al.	2001	a Yes			
68	Apostolou et al.	2001	b Yes			
69	Burgess & Pacini	2001				Yes
70	Majid et al.	2001	Yes			

pendix 1

The types of samples drawn by 136 prior fraud studies from 1950 to 2008

	Authors (Organisation)	Year	Samples			
			Auditors and forensic experts	Police interrogators	Prosecutors, and judges	Others
1	Bamber et al.	2008	Yes			
2	Coram et al.	2008	Yes			
3	Gold-Nöteberg et al.	2008	Yes			
4	Holtfreter et al.	2008				Yes
5	Rae & Subramaniam	2008				Yes
6	Blay et al.	2007	Yes			
7	Brazel et al.	2007	Yes			
8	Carpenter	2007	Yes			
9	Carpenter & Reimers	2008	Yes			
10	Carpenter et al.	2007	Yes			
11	Chen et al.	2007				Yes
12	Cuganesan & Lacey	2007	Yes			
13	Hoffman & Zimbelman	2008	Yes			
14	Lockwood	2007				Yes
15	Tillman & Indergaard	2007	Yes			Yes
16	Berry & Merritt	2006	Yes			
17	Bierstaker et al.	2006	Yes			
18	Brazel et al.	2006				Yes
19	Coburn	2006				Yes
20	Cormier & Lapointe-Antunes	2006	Yes			
21	Erickson et al.	2006				Yes
22	Fukukawa et al.	2006	Yes			
23	Kranacher	2006	Yes			
24	Mustafa & Meier	2006				Yes
25	Skousen & Wright	2006				Yes
26	Stack & Kposowa	2006				Yes
27	Webber et al.	2006	Yes			
28	Wright et al.	2006	Yes			
29	Agrawal & Chadha	2005				Yes
30	Alleyne & Howard	2005	Yes			
31	Bedard et al.	2005	Yes			
32	Carpenter & Reimers	2005				Yes
33	Marczewski & Akers	2005	Yes			
34	Mock & Turner	2005	Yes			
35	Payne & Ramsay	2005	Yes			

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questionnaire for inclusion in a report (and potentially international refereed publication as well), and to ensure that any questions that have been based on English language publications are given the same meaning when translated into Arabic.

4.0 Conclusion

This research note outlines research that could be conducted in an Islamic environment. The note has introduced the research objective, eight research questions and three models based on the findings of Sitorus and Scott (2008) in an Indonesian context, that could be further examined in other countries. The note has also identified a more robust scientific research methodology suited to this type of research that can be used to examine the multiple potential relationships amongst fraud risk factors and their measures.

The justification for the research, key definitions and classifications, potential limitations and assumptions including the issue of sample size and coverage of the ethical aspects, have been provided, to identify the reasons for conducting studies of fraud risk factors and auditing standards using structural modelling procedures in different contexts.

The research note has proposed the use of both qualitative and quantitative research methodologies prior to using structural equations modelling in order to conduct the final aspects of the research and to evaluate the drivers of fraudulent activity. The results from this analysis will be of assistance to the authorities and auditing standard setters from the Arabian Peninsula and around the world, many of whom have been facing the issue of identifying all forms of fraud and corrupt practices and of reforming auditing practices.

The research note is intended as a plea to other fraud and auditing researchers either to develop and/or to test their own fraudulent behavioural models. Or, to base their model(s) on that of Sitorus and Scott (2008) as a replication study to evaluate the model in a different cultural and national context, and to move the research forward towards the development of a global model.

5.0 Recommendation

This research note introduced a new fraud risk management model for use by Indonesian institutions using two randomly split half-samples each of 122 cases. The use of more cases including multi-group models has been recommended for structural modelling procedures (e.g., Mulaik, 2008) and therefore additional research fieldwork including a questionnaire study (Appendix 3) canvassing Islamic financial organisation members (in the Arabian Peninsula, for instance) and non-members, and that uses larger sample sizes, is suggested.

The author also recommends that other researchers around the globe including researchers from the Arabian Peninsula should re-evaluate the fraud risk factors used by the accounting profession or audit organisations and should use different contexts to explore the additional fraud risk factors identified and examined in this note.

SEM (or latent variable modeling) is a combination of confirmatory factor analysis and regression analysis. It tests an hypothesised set of relationships between latent variables (factors). The method is a very powerful way of examining a host of inter-related effects and was chosen because it can provide researchers with an ability simultaneously to evaluate the measurement of the various constructs and their inter-relationships.

Using SEM, the interrelated multiple equations that form the third hypothesised complex model in Figure 2 can be examined (for the mathematical equations used to examine this model, see Appendix 2). For more information on the process of structural equations modelling (SEM), see Hair et al. (2006).

Additionally, a common limitation on the use of SEM is the size of the sample (8) required in order to validate a proposed model, when using different groups of data. That is why in this research note, we also call for a collaborative study in different contexts that can yield a sufficiently large dataset to allow for a comparative analysis from the Islamic environment (see section 5.0).

3.2 Instrument development

The ethics aspect

An ethics aspect may be required to be taken into account in several countries and therefore researchers may need to use an anonymous questionnaire with voluntary participants. In Australia, an anonymous questionnaire is generally required for this type of research since it is considered to be ethically acceptable as is identified in the (Australian) National Statement (NS) 1.11 on Ethical Conduct in Research Involving Humans (Australian Government National Health and Medical Research Council, Australian Research Council and Australian Vice Chancellors' Committee, 2007). According to the Australian Research Council and Australian Vice-Chancellors' Committee (2007), there is a requirement that "... institutions should respect the ... cultural sensitivities of the participants ..." (p.13).

Environmental factors

In the research that was carried out and is reported in the Sitorus and Scott (2008) paper, all of the data was obtained from participants in a single country, using areas with a single culture so that the national and cultural characteristics were held constant.

In this research note, we call for future research fieldwork, especially from a collaborative study, that will add data from an Arabian Peninsula context. This will allow for differences that might be a result of different nationalities to be evaluated.

Control of the translation of the questionnaire and covering documentation

Independent experts may be used to vet a translation of a set of theoretical fraud risk questionnaire documents from English to Arabic and to ensure that the variables/questions can be uniformly and globally interpreted. Even if a researcher were to be, for example, from Bahrain and to be working in Arabic, a translational step might be necessary in order to produce an English version of the

8 Churchill (1979) recommended collecting additional data in order to rule out the possibility that the findings were due to "chance".

introduced paths linking the factors and their indicators. The first two models were based on the studies of Cressey's trust violation model in an American environment (the Illinois State Penitentiary at Joliet) and of Krambia-Kapardis's fraud detection model based on fraud major cases from an Australian (Victorian) police institution. Thus, a potential structural equations model developed for an Arabian Peninsula context, can also be used to identify any variations in fraudulent behaviour in both Arabian and non-Arabian Peninsula contexts.

As can be seen in Table 1, there were now only six fraud risk factors and their indicators. The construct of personal behaviour was dropped due to the low level of variance extracted that was found when using the Indonesian data (Sitorus & Scott, 2008). However, this did not rule out the possibility that this construct could be significant in another context.

Additionally, using different respondents from different environments will provide an opportunity for other researchers to re-examine either the personal behaviour construct or other potential significant constructs that might need to be varied for different environments.

3.1 Scientific research methodologies

In search of a more appropriate scientific research methodology

When examining organisational fraud, researchers have used a variety of techniques, both qualitative and quantitative. There have been ongoing calls for more robust statistical methodologies to be used to examine fraud risk factors (e.g., Michael and Adler, 1971 (7). First, Cressey (1973) opined that: "... one who gambles will not necessarily violate a position ..., but a person who gambles (an indirect effect) might construe a financial problem arising from gambling as non-shareable problem (a direct effect)' (p.146). The identification of potential direct and indirect effects is effectively a call for the use of a more advanced multivariate statistical methodology such as structural equations modelling which can examine all direct, indirect, and total effects.

Secondly, Steane and Cockerell (2005) developed a fraud risk model using a case study approach. At a similar time, Zahra et al. (2005) "... were surprised by the limited and unsystematic empirical research on this complex topic and the various variables ..." (p. 822). The need to examine the complex issues is also a call for the use of structural equations modelling.

Structural equations modelling

According to Rabe-Hesketh et al. (2004), "... the advent of comprehensive methodologies for structural equation modelling ... (p. 167)" was developed by Joreskog as can be read in his 1973 paper, and software such as LISREL became available in 1989. Since that time a number of programs for conducting structural equations modelling (SEM), have been developed with the most popular probably being LISREL, AMOS, EQS and M+.

7 At this time, the development of structural equations modelling was still in its infancy and was only known to a few social science researchers. However, the development of this method has continued over time with the evolution of higher power computers and the provision of statistical software so that this methodology can now be used to examine complex conceptual theory questions leading to its growing use in a range of areas of social science (Savalei & Bentler, 2006).

For an explanation of the codes in Figure 2, see Table 1.

Table 1- The explanation of codes in Figure 2

Fraud Risk Factors	Fraud Risk Indicators
Rationalisation (F2)	"No body will get hurt" (v21); "It is for a good purpose" (v23); "I am not really stealing" (v28); or "The company can afford it (v29)".
Opportunity (F1)	Lack of an audit (v45), physical controls (v49), and transaction authorisations (v47), or poor accounting records (v48).
Collusion (F3)	Motivated offenders can also collude with individuals such as commissioners (v59) or parent companies (v62), subsidiary companies (v61), or affiliated companies (v63).
Organisational Orientation (Organisation) (F5)	Lack in use of technologies of fraud prevention (v73), no reward for good work results (v80), poor conflict resolution (v77), or lack of open internal communications (v78).
Justice avoidance (Justice) (F6)	An attempt is made to intimidate (v101) or to bribe the court or justice institutions (v102); the defendant leaves the jurisdiction before the trial starts or during the course of the trial (v105).
Commission of fraud (Commission) (F4)	Commission involves individuals such as directors (v88) or parent companies (v92), shareholders (v90), or subsidiary companies (v91).

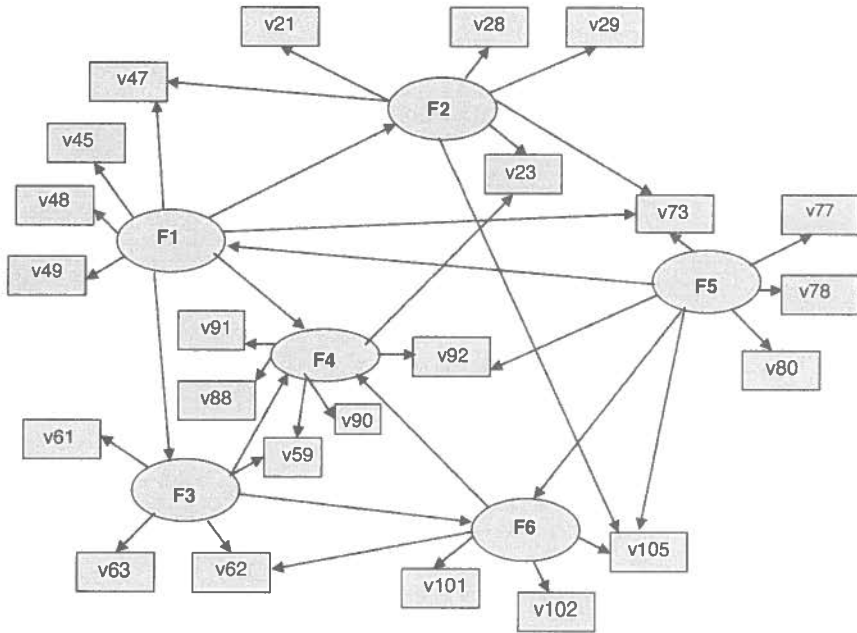
Source: Sitorus and Scott (2008)

As can be seen in (b) scenario 2 of Figure 2, rationalisation was not suggested as being a precursor to fraud being perpetrated; however, a fraudster, as can be seen in (a) scenario 1 of Figure 2, may also use his/her rationalisation for a fraudulent act (Cressey, 1950, 1973).

Because of the poor fit of the two models and because the path between rationalisation and the fraud commission was insignificant (Sitorus & Scott, 2008), a post-hoc model (also shown in Figure 2) has been identified from the exploration of the second scenario. Cause-effect details of the models can be found in Sitorus & Scott (2008). The mathematical equations for the third model are shown in Appendix 2.

Figure 2 therefore shows the post-hoc model that could be re-examined in an Islamic environment both for its context and possibly for broader contexts relating to a range of countries around the world.

As can be seen in Figure 2, the modified model derived from the responses from Indonesian respondents was more complex than the two initial models because of the additional



(c) The post-hoc model

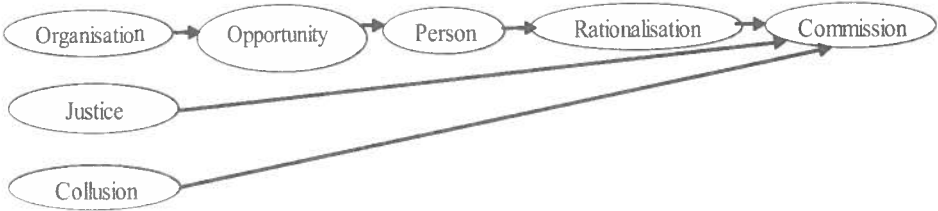
Source: Sitorus and Scott (2008)

Figure 2 The hypothesised models

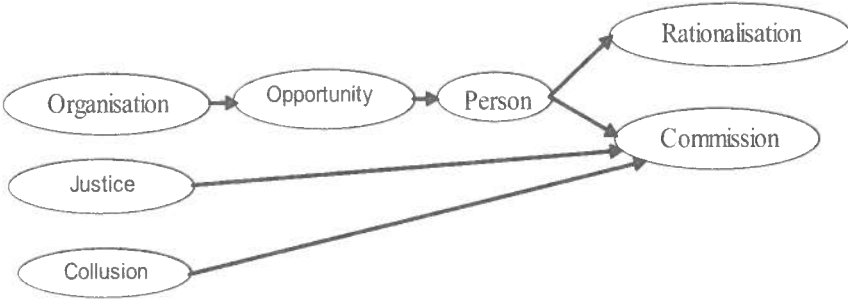
structural modelling procedures (6) in a specific data environment (for example, in Islamic institutions using Arabian Peninsula data or in a global model drawn from worldwide data).

3.0 Three hypothesised models

The following two initial theoretical models (see Figure 2) were developed from the literature.



(a) Scenario 1, the first hypothesised model



(b) Scenario 2, the second hypothesised model

6 Some structural equations model (SEM) builders have recommended employing a number of scientific research procedures from exploratory factor analysis (EFA) to confirmatory factor analysis (CFA) and from CFA to SEM (e.g., Burt, 1973, 1976; James et al., 1982; Herting & Costner, 1985; Anderson & Gerbing, 1988, 1992; Jöreskog, 1993; Jöreskog & Sörbom, 1993; Medsker et al., 1994; Hurley et al., 1997).

To investigate how fraudsters can perpetrate and cover-up fraudulent acts and what factors directly or indirectly affect the commission of fraud.

This section firstly lists two research questions that may also suit in different environments such as for example, the Arabian Peninsula. Secondly, an investigatory process may be utilised using structural equations modelling software to examine the goodness of fit of a final model after the examination of the three models. The results from the examination of the set of research questions can be used to develop the three models and the badness of fit of the models may give direction for the development of a better model.

2.2 Research questions

In this research note, the authors recommend focussing on the following two research questions (1) that can be used to broaden fraud risk factors and used to develop a reflective model (2) of fraud symptoms.

2.2.1 Research question 1

The first research question is as follows.

Are the examples of fraud risk factors provided by the auditing standard setters of value to the independent auditor?

2.2.2 Research question 2

The second research question is as follows.

Are there other significant fraud risk factors that may occur in Islamic institutions?

By using a significant model identified from a set of broader fraud risk factors, the questions can also be used to address a more robust prescription for managing fraud symptoms (3) derived from a review of a broader range of literature (4) data (5) and the results of the preliminary and final stages of

1 These questions were raised by the Public Company Accounting Oversight Board (PCAOB) Standing Advisory Group Meeting (2004) so as to develop a new consideration of fraud risk factors and related auditing standards by the year 2009.

2 A reflective model means that in an association between a factor (construct) and its indicator variables, the measured variables will be the dependent variables (e.g., Nunnally, 1978). Bollen & Lennox (1991) have identified that this type of model is very commonly found in the case of social science constructs such as fraudulent behaviour intentions, and hence are to be expected in the case of fraud symptoms.

3 In relation to the fraud prescriptions, previous studies have suggested focussing on the identified non-shareable problems (Cressey, 1950, 1973), crime (Hough et al., 1980), corporate governance, professional regulatory procedures and the technologies of fraud prevention (Graycar, 2000), and ethical culture and leadership (Steane & Cockerell, 2005).

4 A number of related multidisciplinary theories that should be examined in regard to this fraud research issue are trust violation, asymmetric information, accounting fraud, planned behaviour, social identity theory, professional identity, moral development, monitoring, organisational identity, reputation, image and adaptation, law enforcement, and conspiracy.

5 The authors have provided a research instrument for use in the Arabian Peninsula and to collect worldwide data for collaborative research to be used to develop and to examine a global model of fraud symptoms (see Appendix 3).

1.3 Fraud risk factors

International fraud auditing standards (ISA 240) that have been adopted by the accounting profession in many countries have been influenced by the findings and conclusions of Cressey (1950) who undertook his research fieldwork in an American context between April 1949 and September 1949 by interviewing American trust violators. Cressey's work was carried out more than 50 years ago and Wells (2007) has opined that these days Cressey's model may not meet all conditions.

On the other hand, in an Indonesian context, using structural equations models, Sitorus and Scott (2008) found that fraud risk factors not only arise from the Cressey factors but also from the factors of collusion, justice avoidance, and organisational orientation. Moreover, the relationships could be complex and interrelated, and should be, therefore, be studied using a more scientific research methodology that can permit the simultaneous examination of multiple relationships amongst the factors and their indicators or measures.

Proposing alternative fraud risk factors

Loft et al. (2006) have suggested that the accounting profession and audit organisations should also take into account any substantial current academic accounting and auditing research. In order to provide such an input, the authors conducted a comprehensive investigation to identify the drivers of all forms of fraud (for a similar approach see a study by Krambia-Kapardis, 1999, 2001, 2002).

The need to explore possible alternative fraud risk factors was also identified in the writings of Michael and Adler (1971). They said that individuals might need to be classified according to contextual factors. In other words, the findings of Cressey might have been different if he were to have investigated non-American participants in an Arabian Peninsula environment. Another factor that should also be taken into account is the variations in the environment that can take place over time. Hence, there is a necessity to carry out 21st century research in order to accommodate the conditions that are encountered in the modern world.

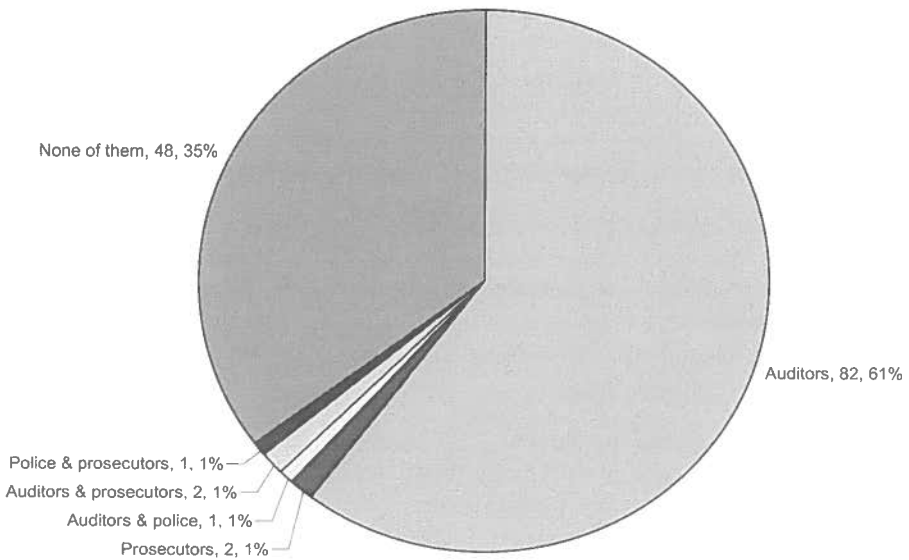
The message from recent major fraud scandals

Recent major fraud scandals, such as those involving companies such as Enron, WorldCom, Kmart, Tyco, Merrill Lynch, Qwest, Xerox, ASEA-Brown Boveri, Swiss Air, Global Crossing, Adelphia, Xerox, Merck, HIH and public accounting firms like Arthur Andersen, have shown that an auditing self-regulator should be aware of the need to constantly work at redeveloping, and where necessary, reforming even the best auditing practices. This aspect has also been identified by a number of writers such as, for example, Jones (2002), George (2002), Katsoris (2002), David (2003), Doost (2003, 2004), and George (2007).

2.0 Research objective and research questions

2.1 Research objective

Corporate scandals have become damaging phenomena. Consequently, a (research) investigation in the area of fraud prevention, deterrence, and detection is warranted and the following broad research objective has been identified:



Source: Author

Figure 1
The types of samples drawn by 136 prior fraud studies from 1950 to 2008

Welch et al. (1996) and Holmes et al. (2002) used a sample drawn from members of the Certified Fraud Examiners (ACFE) some of whom would be expected to be from audit and justice institutions. However, ACFE is only one of the institutions containing fraud experts and the sample did not therefore represent the opinions that could have been derived from other justice institution areas, such as police interrogators and prosecutors. Therefore, this research note proposes the use of fraud experts who are part of the broad area of auditors consisting of auditor supervisors, auditor managers or partners, auditor leaders of their institutions or departments, fraud auditors, fraud experts, (forensic) accountants, investigating auditors, government auditors, external (independent) auditors, and internal auditors. In many countries, when the justice officers have referred a large number of fraud and corruption cases to the courts and to arbitration, such data may be also available.

Fourthly, in the literature there has been a lack of the use of more robust scientific research methodologies in order to investigate all forms of fraud. The integrated fraud risk factors that are identified for the proposed research were derived from multiple disciplinary theories and from practical problems of law enforcement and lend themselves to high level statistical analysis.

1.0 Background to the research

1.1 Fraud definition and classification

"Fraud can encompass any (white collar) crime (intentionally committed) for gain which uses deception ..., but all deceptions ... aren't fraud (because) there must be damage" (Wells, 1997, p. 4). Fraud, including white collar crime (Sutherland, 1941), does not only relate to accounting fraud (fraudulent statement) and misappropriation of assets (International Standards on Auditing [ISA] 240 [Redrafted], paragraph 3), but also to corrupt practices, comprised of conflict of interest (purchase schemes and other types), bribery (including kickbacks and other types), illegal gratuities, and economic extortion. For details see Wells (1997, 2005, 2007) and Fraud examiners manual (2003).

1.2 Need for the research

There are four reasons for conducting fraud risk management research in an Arabian Peninsula context. Firstly, the research outputs will be able to be used by the accounting profession and auditing organisations, to improve their appreciation of fraud risk factors, auditing standards, auditing planning and auditing programs (Graham and Bedard, 2003; Mock and Turner, 2005; Dye, 2007). Moreover, research that has been undertaken in the appropriate environment (Michael and Adler, 1971) will be better placed to convince the authorities to take the research recommendations into account.

Secondly, fraud and corrupt practices are costly (Louis, 1995; Richardson, 2005; Olken, 2007). Many individuals and firms across the globe have been involved in corrupt practices (World Bank, 2008). Steane and Cockerell (2005) and Brown (2006) have called for a need for institutional changes aimed at eliminating fraud. Therefore, the idea of institutional change should also be put into context.

Integrated fraud risk models that are assessed in different environments, may also identify different aspects of the problem that should also be taken into account in setting up a global fraud auditing standard. The best fitting model and its assessment of the impact of a range of factors, can be used as a source of information that can be applied by authorities, and the auditing self-regulator, when developing a strategic direction aimed at promoting institutional change.

Thirdly, in the literature, there is a lack of studies of fraud risk factors that use information that has been derived from respondents who are senior people in the audit and justice institutions and departments and their assisting auditors, police interrogators and prosecutors. From Figure 1, it can be seen that the preponderance of the types of respondents used in 136 prior fraud studies carried out from 1950 to 2008 have been auditors (82 studies, 61%). Therefore, the respondents would not have been able to comment on a more holistic (institutional) environment such as could have been captured from the opinions of fraud prosecutors and police interrogators (justice environment) in regard to fraud risk factors, determined from fraud reports that they will have processed for the courts. For further information, see Appendix 1.

”عوامل مخاطر الاحتيال ومعايير التدقيق“ دعوة إلى إعادة تطبيق هذا البحث الميداني على البيئة الإسلامية

تومبال سيتوروس *

أ. د. دونالد سكوت *

ملخص

يحدث الاحتيال المحاسبي والعديد من أشكال الاحتيال والفساد في الشركات في مختلف دول العالم. وبناءً عليه لا بد من وجود الاستراتيجيات البديلة والتي تعتمد على نتائج الأبحاث المتعلقة بحالات الاحتيال والتي تؤدي إلى التقليل من حدوث مختلف أشكال الغش و الاحتيال.

يتناول هذا البحث عوامل مخاطر الاحتيال بمختلف أشكالها وعلاقتها بمعايير التدقيق وكذلك نماذج سلوك الاحتيال، ويهدف هذا البحث إلى تحديد أسلوب علمي يمكن استخدامه بشكل عملي لفحص عوامل مخاطر الاحتيال وأشكاله المختلفة في الشركات.

ويوصي الباحث أن يتم إعادة إجراء أبحاث ميدانية مستقبلية مشابهة للدراسة الحالية ولكن بتطبيقها على البيئة الإسلامية ليتم توسيع مدى تطبيق النموذج المقترح في الدراسة الحالية في مختلف دول العالم، وعرض البحث الدراسات السابقة المتعلقة بموضوع الدراسة وتم تحديد مشكلة الدراسة والفرضيات ومنهجية الدراسة وفي ختام البحث قام الباحث بوضع التوصيات اللازمة.

الكلمات المفتاحية: عوامل مخاطر الاحتيال، العوامل القرينة، المعادلات المنهجية للنموذج، معايير التدقيق وواضعي المعايير.

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Fraud risk factors and auditing standards: A call for the replication of empirical research in an Islamic environment

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ABSTRACT

Accounting fraud and many other forms of fraud and corruption are occurring around the globe. Alternative strategies that are based on sound research-based findings from different situations are needed if there is to be a systematic reduction in the occurrence of these forms of fraud.

This research note introduces a topical research issue in the area of fraud risk factors and auditing standards in relation to different forms of fraud, and models of fraudulent behaviour, and identifies a more scientific approach that can be used to empirically examine these issues. It also calls for the future replication of this empirical research in an Islamic environment to extend the relevance of the developed model to a broader context.

This research note outlines the background to this research issue, research problems and hypotheses, justification for the research, definitions, a proposed scientifically based research methodology and recommendations.

Key words: fraud risk factors, contextual factors, structural equations modelling, auditing standards and standard setters.

Data availability: for the complete research instrument, data, and a potentially collaborative study, contact the first author.

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