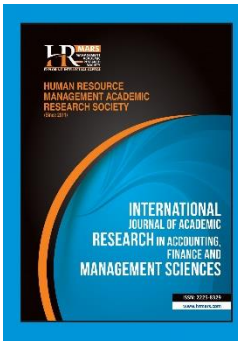

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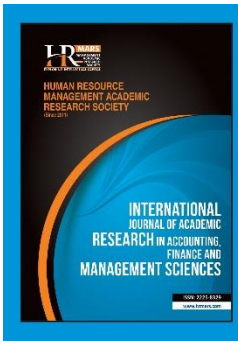
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Developing a Survey Instrument to Study Asset Misappropriation in the Malaysian Public Sector

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Abstract

This article discusses the development of a survey instrument used to study asset misappropriation (AM) in the Malaysian public sector. The paper provides a detailed explanation of the procedures involved in performing the Exploratory Factor Analysis (EFA) to the survey questionnaire for the purpose of confirming the validity and reliability of the instrument. The research differs from prior studies in that it employs Enterprise Risk Management (ERM) as a moderator in assessing the relationship between fraud risk factors and AM. A cross-sectional study was utilised and data was collected using a proportional stratified sampling. A total of 104 questionnaires were distributed to public sector employees of the Accountant General's Department of Malaysia. The respondents represent the top management, professional and managers of the department. Each construct is represented by six to ten items, chosen from related studies. Cronbach's Alpha was calculated to verify the internal validity and reliability of the instrument. The results confirm that the survey questionnaire was appropriate for the intended purpose. The findings of this study benefit future research related to asset misappropriation in the public sector.

Keywords: Exploratory Factor Analysis, Fraud Risk Factors, Enterprise Risk Management, Asset Misappropriations, Malaysian Public Sector.

Introduction

The growing number of recorded fraud cases and the negative effects of frauds on companies' long-term viability continue to draw the attention of various stakeholders and researchers. Frauds are generally classified into three types which are fraudulent financial statement, corruption and asset misappropriations (Association of Certified Fraud Examiners (ACFE), 2020). Asset misappropriation is defined as a theft of organisational assets such as money, supplies or equipment. Apart from fraudulent financial statements and various forms of corruption, asset misappropriation is the most pervasive type of workplace frauds perpetrated by employees. This category of asset misappropriation includes employee embezzlement and stealing of companies' property by outsiders (Pricewaterhouse Coopers, 2018).

The fundamental fraud theory begins with Fraud Triangle Theory (FTT), initiated by Cressey (1953). This theory was later extended to introduce three additional elements which are pressure, opportunity and rationalisation. Following the FTT, the Fraud Diamond Theory (FDT) was subsequently introduced by Wolfe and Hermanson (2004). The FDT added a new element to the FTT and the FDT was further developed by Crowe (2011) into Fraud Pentagon Theory (FPT). The FPT incorporates five elements of frauds which are: (i) perceived pressure; (ii) perceived opportunity; (iii) rationalisation; (iv) capability; and (v) arrogance. These five elements are also known among researchers as fraud risk factors.

As in the private sector, employees in the public sector are also expected to deliver their services competently and efficiently, especially with regards to cost-effectiveness. They must strive to reduce waste, improve managerial and firm performance, and prevent organizational frauds. In any organization, fraud risk should be effectively managed, if not eliminated. Risk management refers to a set of principles, frameworks, and processes for handling risks and the standard defines risk as the outcome of uncertainty in attaining objectives. Enterprise Risk Management (ERM) is a prerequisite to a sustainable competitive advantage. The international standards for risk management are covered under ISO 31000.

In industries such as oil and gas, the risk of work-related accidents has accelerate the growth of ERM to enhance operational excellence (Tasmin et al., 2020). ERM and internal control systems are linked in such a way that the internal control systems must be present in order to manage risks. Risk management principles, ideas, and philosophies should now be given priorities and ERM should be practiced in the public sector to enhance financial management efficiency and mitigate operational risks. However, Abdul Gani et al (2020) reveal that ERM has not yet been systematically implemented in the Malaysian public sector, the framework is far from adequate and the process has not been embedded across different organisations to assist collaboration in risk management.

In relation to fraud risk factors and AM, current studies on frauds mostly focus on corporate governance mechanism such as board commissioner, independent commissioner and institutional ownership and as fraud determinants or as a moderator (Pamungkas et al., 2018; Sawaka et al., 2020). Even though many studies have investigated the Fraud Risk Factors (FRF), only a few have examined AM with ERM in a single study. The current research investigates whether the predicted strength of the relationship between the determinants of AM is influenced by the presence of ERM practices.
Therefore, the purposes of this study are;

- to design a valid and reliable survey instrument to assess fraud risk variables and asset misappropriation by conducting instrument validation in stages using exploratory factor analysis (EFA) and
- the final result of the study or the validated instruments can be used for next study and proceed on Confirmatory Factor Analysis (CFA).

This article proceeds as follows. Section two describes the methodology used in the study while section three and section four explain the EFA procedures for developing the survey instrument. Finally, section five presents the conclusion for the sdy.

Methodology

The sample size for the research was determined based on the practice of previous studies (Bartlett et al., 2001; Krejcie and Morgan, 1970) and a survey questionnaire was used to gather data from the target respondents. The questionnaire was developed by adapting the constructs used in fraud studies which examine the determinants of frauds (e.g., Abdullahi & Mansor, 2018; Kazimean et al., 2018; Koomson et al., 2020). The adaptation of the questionnaire was guided by the objectives of this study, tailored to the public sector working environment and distributed to top management and officers of the Accountant General Department of Malaysia.

The questionnaire comprises of four sections. Section one covers information pertaining to the demographic profiles of the participants (i.e., gender, age, educational level, work experience, management level and managerial hierarchy). Section two relates to FRF (i.e., the independent variables) while section three focuses on AM (i.e., the dependent variable). The final section deals with ERM practice which represents the moderating variable in this study. All constructs used were measured using a 5-point Likert scale.

Prior to conducting the field study, the survey instrument was pilot tested as described by (Malhotra, 2009; Shukla, 2008). The pilot test included a sample respondent that was similar in nature to the final sample. The test was important to ensure the clarity of the statements used to measure the constructs. Specifically, in responding to a self-administered questionnaire, respondents' responses are affected by their interpretation of the written words rather than the interviewer's skill in asking questions (Hair et al., 2010; Zikmund & Babin, 2013). Furthermore, when participants are allowed to record their own responses, their feedback on the length of the questionnaire, the clarity of the questions, the time required to complete all of the questions, and any difficulties encountered while filling out the questionnaire are likely to be reasonable (Zikmund & Babin, 2013).

This paper focuses on phase two which is the pilot test for the development of the survey questionnaire's validation and reliability. The pilot study reduces the risk of errors and allows for modifications before the actual survey were carried out. Any shortcomings in the design of a proposed survey can be addressed before conducting the large final-scope investigation (Viechtbauer et al., 2015). The study's EFA procedures involve the calculation of mean scores and standard deviation. The next sub-section details the descriptive analysis, which contains the mean score and standard deviation for each item used to measure the constructs.

Figures 2.1 presents an overview of data analysis and measurement assessment used in the study.

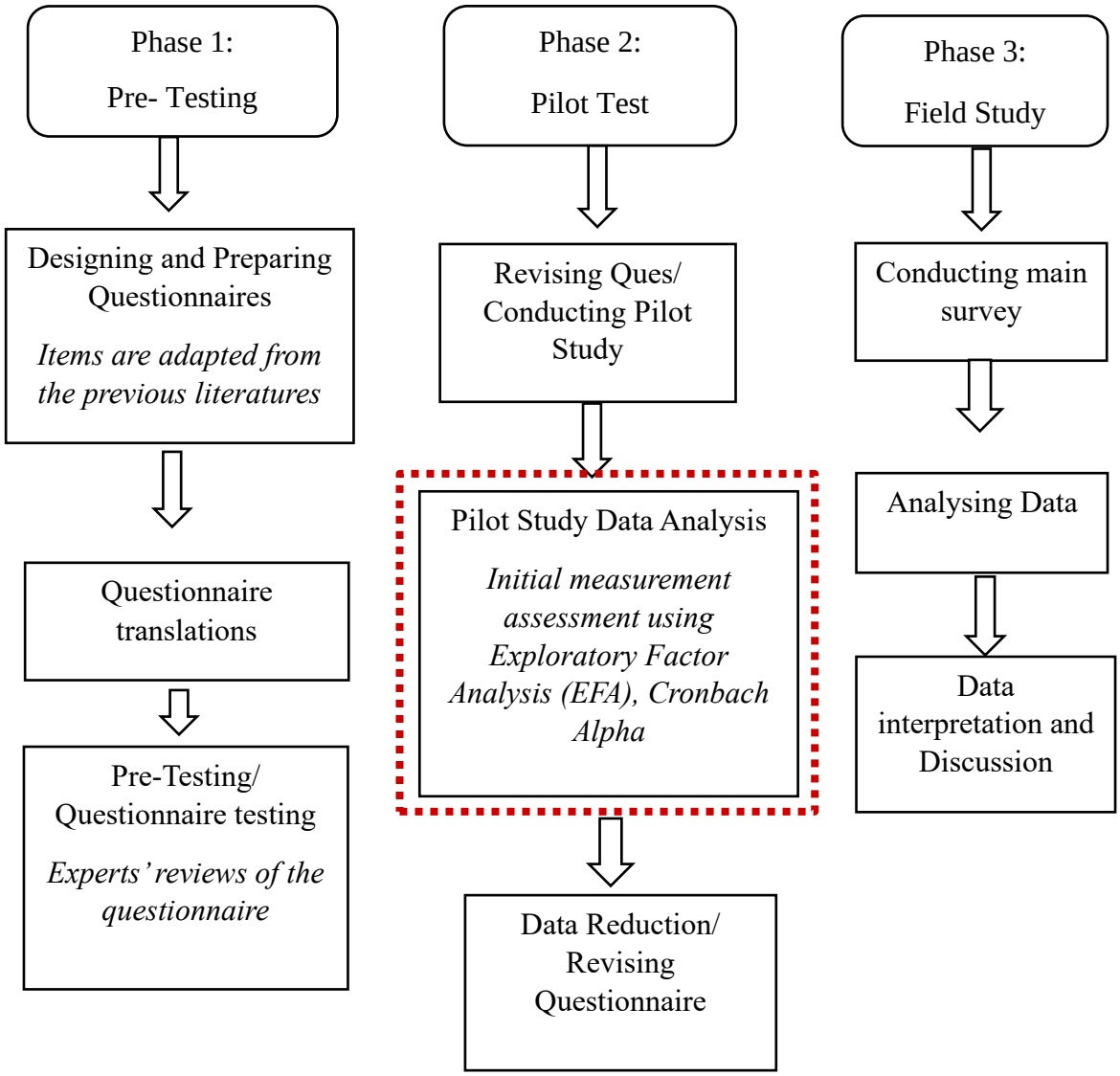


Figure 2.1: Overview of data analysis phase and measurement assessment
Source: Adapted from Bhattacherjee (2012)

The adapted questionnaire was subject to experts' reviews to ensure content validity. Five experts in the field were invited to comment on the questionnaire. Adjustments were made to the survey instrument based on the feedback received from the experts. Briefly, the first expert, an academician questioned whether the statements used to proxy construct B3 (i.e., Rationalisation) such as 'it is ok to borrow funds if you would pay back later', 'my colleagues commit low level frauds and nothing ever happens' and 'taking money from the government is acceptable because I am a taxpayer' carry an assumption that fraud was already committed? The second expert, also an academician suggested to rephrase some statements and minor improvements in the choice of words to enhance clarity without modifying any of the items.

After the questionnaire was verified by the experts and the necessary corrections were performed, the pilot study was performed. For the pilot study, a minimum sample size of 30 is considered sufficient (Perneger et al., 2015). Additionally, Johanson and Brooks (2010) recommend a minimum of 30 representative participants for a pilot study involving the administration of a preliminary survey or the development of a new scale. Nonetheless, a larger sample size is required to empirically refine the measurement, most notably by Exploratory Factor Analysis (EFA). Hair et al. (2010) recommends a sample size of at least 50 observations for the EFA, but prefer 100 or more. For the current research, this phase of the study involved a total of 104 respondents.

The EFA was performed following Alkhawaja et al., 2020; Dehisat & Awang, (2020). This statistical technique assumes that it is possible for any measured variable to be associated with any factor. The method helps to reduce a relatively large set of variables by identifying the underlying structure of the variables. In this study, the EFA was carried out for each individual variable to determine the common factors and the related manifest variables.

The following criteria were used in the EFA to determine which of the construct to maintain: (i) the Kaiser-Meyer-Olkin criterion for sampling adequacy which sets any common factor to have an eigenvalue larger than one, and (ii) the Bartlett's Test of Sphericity which requires a p-value less than 0.05. For an effective factor analysis, the KMO value index which is a numerical value between 0 and 1 is specified to be a minimum of 0.60 (Pallant, 2016; Tabachnick & Fidell, 2007).

The second procedure of the EFA is to evaluate the scree plot to confirm the number of components to be retained. Then, the proportion of variance explained is examined to determine whether a construct is retained. The total variance explained by a construct should be at least 60% (Hair et al., 2010). For a factor to be retained, at least three or more items must have a significant loading of at least 0.6 in addition to sharing similar conceptual meaning. Finally, Cronbach's Alpha is used to validate the internal consistency score of a construct (Alkhawaja et al., 2020; Baistaman et al., 2020; Dehisat & Awang, 2020; Ehido et al., 2020). The EFA procedures for each construct are explained details in the following section.

EFA Procedures for Fraud Risk Factors

This study uses a total of 29 items to assess the Fraud Risk Factors (FRF). FRF refers to five elements of the fraud pentagon theory elements which are perceived pressure, perceived opportunity, rationalisation, capability and arrogance. A 5-point Likert-scale ranging from 1=strongly disagree to 5= strongly agree was adopted.

Perceived Pressure was measured using a 6-items adopted from Abdullahi and Mansor (2018) and Koomson et al., (2020). The items cover internal and external pressures where individuals are pressured either from within or outside their workplace in many ways. Perceived Opportunity was measured using a 9-items which consist of perceptions of the strength of internal controls (opportunity) at the workplace. A poor internal control system allows for increased opportunity for employees to involve in asset misappropriations. Rationalisation is measured by 4 items as used by (Abdullahi and Mansor, 2018; Koomson et al., 2020). The fourth element is capability which is measured by 4 items established by Koomson et al.,

(2020) and finally, arrogance was measured by 6 items, also established by (Koomson et al., 2020).

Table 1 presents the descriptive statistics including the number of items, mean score and Standard Deviation (SD) for each item in the construct, and the overall mean scores. Concurrently, the mean value for every item which measure the degree of importance respondents attach to that item ranged from 3.22 to 3.94. With respect to the determinants of AM, all factors had mean scores of nearly 4 which indicates that perceived pressure, perceived opportunity, rationalisation, capability, and arrogance are important when discussing AM.

The values of the item's SD ranged from 0.701 to 0.934 indicating that the data are clustered tightly around the mean, and reliable. The table shows that the SD for each item is less than 1.5, suggesting consistency of the score distribution (Altman & Bland, 1995). The EFA employs the Principal Component Analysis (PCA) for all of the items in evaluating the construct.

The overall mean of 3.44 for the first construct (i.e., perceived pressure), indicates that respondents agree to a large extent with the statements describing the pressure that motivates individuals to participate in fraudulent behaviour in the workplace. The findings suggest that the sampled respondents faced some level of pressure from family members or co-workers. The statement, "I am fully responsible for financially supporting my family" had the highest mean score of 3.55, followed by the statement, "Occasionally, expenses on necessities must be cut to make sure that my salary is enough to last until the end of the month," which had a score of 3.54.

Apart from external pressures, the study discovered that the statement, "My work needs me to meet employer key performance indicators (KPIs)" had the highest mean score of 3.53. This implies that the majority of employees are pressured to meet stringent deadlines at their various jobs, which creates a great deal of stress for them. As a result, individuals work relentlessly to achieve this goal, as failure to do so frequently results in job loss. In addition, the survey found that most people tend to focus on many things at once, which makes them more stressed.

Next, for the perceived opportunity constructs, the statement, "There are proper records and documentation for all resources" received the highest mean score of 3.99. This is followed by statements, "Policies, procedures, and guidelines are well documented and communicated to employees proactively" and "There is proper supervision over usage of organization's facilities such as telephones and internet connections" with 3.88 mean score.

The results demonstrate that, individual employees believe that there are mechanisms which have been put in place at their workplace to provide reasonable assurance of work done and to detect any wrongdoings by employees. They perceived there are strong internal controls at their workplace. Previous study indicates that, weak of internal control system give them opportunity to commit fraudulent behaviour (Suh et al., 2019).

A mean score of 3.64 for rationalisation indicates that individuals are rational in their actions most of the time. Out of 4 indicators used to measure the construct, the indicator "Colleagues

commit low level frauds and nothing ever happens" had the highest rating of mean score of 3.76. Interestingly, in the Malaysian public sector environment, individual employees rationalised that, there is nothing wrong with the fraudulent behaviour because others are doing it too and nothing ever happened to them. The respondents also agreed that, "It is okay to use funds if you pay them back later" with a mean of 3.70.

The capability construct, with an overall mean score of 3.83 is one of the top scoring constructs in the study. It implies that individuals believe they have unique features that set them apart from their co-workers. An emphasis on client satisfaction typically results in a better reputation for public-sector organisations. The phrases, "My ability to solve the problems of customers/clients makes me trusted by my employer" and "I have the ability to convince other staff to go along with my suggestions" had the highest mean score of 3.86 in the capability construct. These employees earn their employers' trust, which may result in little or no scrutiny of their operations within the company, allowing them to misappropriate assets.

Finally, for the arrogance construct, all indicators had mean scores above the average (i.e., greater than 3.5), indicating that individuals are concerned with their social standing and would like to maintain it. The statement, "Doing something I know is wrong makes me lose my self-respect" shows a mean score of 3.94, suggesting that employees are more likely to engage in moral acts to increase their self-esteem. Again, while the results indicate that respondents care about what others think of them, the majority of them do not allow what others think of them to affect how they feel about themselves. This is demonstrated by the statement, "what others think of me has an effect on what I think about myself ", which has the lowest mean score of 3.82.

Table 1: The Descriptive Statistics for items measuring FRF Construct

Item	Statement	Mean	Std. Deviation
	Perceived Pressure (PP)	**3.44**	
PP1	My work needs me to achieve the company's key performance indicators (e.g., target, achievement, workload, waiting time, audit, time frame and review).	3.53	.934
PP2	I have different tasks that must be done simultaneously	3.37	.837
PP3	I am faced with tension and frustration because due to constant work pressure.	3.22	.824
PP4	Expenses on necessities must be cut off sometimes to ensure that my salary is sufficient until the end of the month.	3.54	.858
PP5	Family expenses are extremely costly, which I cannot afford to pay in some cases.	3.41	.866
PP6	I am fully responsible to support my family financially.	3.55	.811

	Perceived Opportunity (PO)	**3.84**	
PO1	Every transaction has sufficient documentation and approval by an appropriate more senior member of staff.	3.84	.739
PO2	Transactions are recorded within the stipulated time frame.	3.82	.707
PO3	Separation of roles and responsibilities is clear.	3.83	.794
PO4	Proper supervision, monitoring, and review of work are implemented	3.83	.806
PO5	Policies, procedures, and guidelines are well documented and communicated to employees proactively.	3.88	.720
PO6	There are proper records and documentation for all resources.	3.94	.735
PO7	There is proper supervision over usage of organization's facilities such as telephones and internet connections.	3.88	.804
PO8	Physical controls of use of asset are sufficient.	3.84	.765
PO9	There is proper supervision to prevent employees from abusing medical certificates and other employment incentives.	3.68	.741
	Rationalisation (R)	**3.64**	
R1	It is okay to use funds if you payback later.	3.70	.823
R2	Taking money from the government is acceptable because I'm a taxpayer	3.49	.881
R3	They will pay less than what they defraud the organization if they are docked before the court	3.62	.701
R4	Colleagues commit low level frauds and nothing ever happens.	3.76	.770
	Capability (C)	**3.83**	
C1	I have the ability to convince other staff to go along with my suggestions.	3.86	.806
C2	My ability to multitask makes me superior at the workplace.	3.84	.790
C3	My ability to solve the problems of customers/clients makes me trusted by my employer.	3.86	.806
C4	I have influence over situations in my department because I believe I am good at what I do.	3.74	.812
	Arrogance (A)	**3.86**	
A1	I care what other people think of me.	3.84	.739

A2	What others think of me has an effect on what I think about myself.	3.82	.707
A3	I care if other people have a negative opinion about me.	3.83	.794
A4	I cannot respect myself if I did not live up to a moral code.	3.83	.806
A5	Whenever I follow my moral principles, my sense of self-respect gets a boost.	3.88	.720
A6	Doing something I know is wrong makes me lose my self-respect.	3.94	.735

Perceived Pressure

This section discussed the EFA results for the perceived pressure construct. In measuring this construct, 6 items (PP1 – PP6) from Table 1 were used and every item was measured using the 5-point Likert scale, where 1 refers to "strongly disagree" and 5 refers to "strongly agree." The mean response, SD, and item statement, for every item, are presented in Table 1 and discussed in previous section.

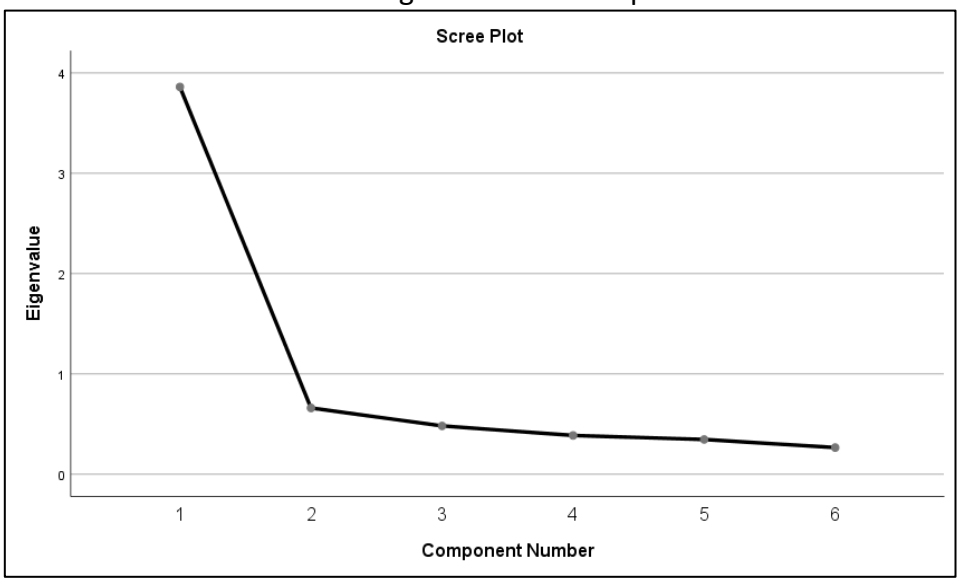
The next step of the EFA was to use the principal component analysis with varimax rotation. The EFA output were examined for appropriateness of the EFA based on the KMO which measures the sampling adequacy (at least 0.6) and the Bartlett's Test (i.e., p-value less than 5 percent) indicating that the data were suitable for EFA (Awang, 2012). Table 2.1 shows the KMO of 0.880 and the Bartlett's Test of Sphericity is significant (p-value = 0.000), implying that the sample size is adequate (Baistaman et al., 2020; Dehisat & Awang, 2020).

Table 2.1: The Value for KMO Bartlett's Test

KMO and Bartlett's Test for Perceived Pressure		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.880
Bartlett's Test of Sphericity	Approx. Chi-Square	313.907
	Df	15
	Sig.	.000

Figure 1 presents the scree plot for the perceived pressure construct where the 6 items clearly emerged into one construct. The inspection of the scree plot for this construct reveal that the items are mutually exclusive and no component has emerged from the EFA. The first eigenvalue was greater than the others. Thus, a unidimensional model is reasonable for the study data since the first eigenvalue is the highest among all the others (Ruscio & Roche, 2012).

Figure 1: The Scree Plot shows the emergence of one component



In order to reduce the items into a manageable number before further analysis, the total variance explained was extracted and examined. Table 2.2 reveals the value for this construct is 64.341%. The overall variance explained is acceptable since it is greater than the minimum requirement of 60% (Bahkia et al., 2019; Baistaman et al., 2020). Therefore, the items were subject to further analysis.

Table 2.2: Total Variance explained contributed by individual components of perceived pressure.

Total Variance Explained for Perceived Pressure					
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% Of Variance	Cumulative %	% Of Variance	Cumulative %
1	3.860	64.341	64.341	64.341	64.341
Extraction Method: Principal Component Analysis.					

Table 2.3 presents the components and dimensions for each item for the perceived pressure construct and shows that all items for the construct have been grouped into one component. Thus, Rotated Solution in the analysis menu was skipped and instead, only the principal component matrix was performed. According to Ehido et al (2020) the minimum acceptable value of the factor loading for individual items should be at least 0.6 to ensure retention. Thus, all of the items are retained since the value of factor loading is greater than 0.6.

Table 2.3: The factor loading for each item and component matrix

Component Matrix	
	Component
	1
PP1	.726
PP2	.820
PP3	.812
PP4	.860
PP5	.807
PP6	.781
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	

The final step is to compute the internal reliability of each construct. It is required to calculate the Cronbach's Alpha for every component to assess the internal reliability of the component in the measurement of the construct. Table 2.4 reveals that the value of the Cronbach's Alpha test is 0.887, exceeding 0.7, which confirms the reliability of these components.

Table 2.4 The Reliability Statistics (Cronbach Alpha)

Reliability Statistics for Perceived Pressure Construct	
Cronbach's Alpha	N of Items
.887	6

Perceived Opportunity

This section discusses the EFA results for perceived opportunity construct. In measuring this construct, 9 items (PO1 – PO9) from Table 1 were used and every item was measured using the 5-point Likert scale. The mean response, SD, and item statement for every item are as presented in Table 1.

The EFA employed the Principal Component Analysis (PCA) for these 9 items to evaluate the perceived opportunity construct. The outcomes as shown in Table 2.5 indicate that the Bartlett's Test of Sphericity is significant ($p < 0.05$). Also, the KMO is 0.931 which is higher than the minimum requirement of 0.6 (Awang, 2012) and thus, implies the adequacy of the sample size.

Table 2.5: The Value for KMO Bartlett's Test for Perceived Opportunity

KMO and Bartlett's Test for Perceived Opportunity		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.931
Bartlett's Test of Sphericity	Approx. Chi-Square	808.294
	df	36
	Sig.	.000

The scree plot in Figure 2 indicates that the items are mutually exclusive and no component has emerged from the EFA. The first eigenvalue was the largest among all of the other eigenvalues. Thus, a unidimensional model is reasonable for the data (Ruscio & Roche, 2012). The total variance explained in Table 2.6 for this construct is 70.686%. which is higher than the minimum of 0.6 and thus, would be considered for further analysis (Bahkia et al., 2019; Baistaman et al., 2020).

Figure 2: The Scree Plot for Perceived Opportunity

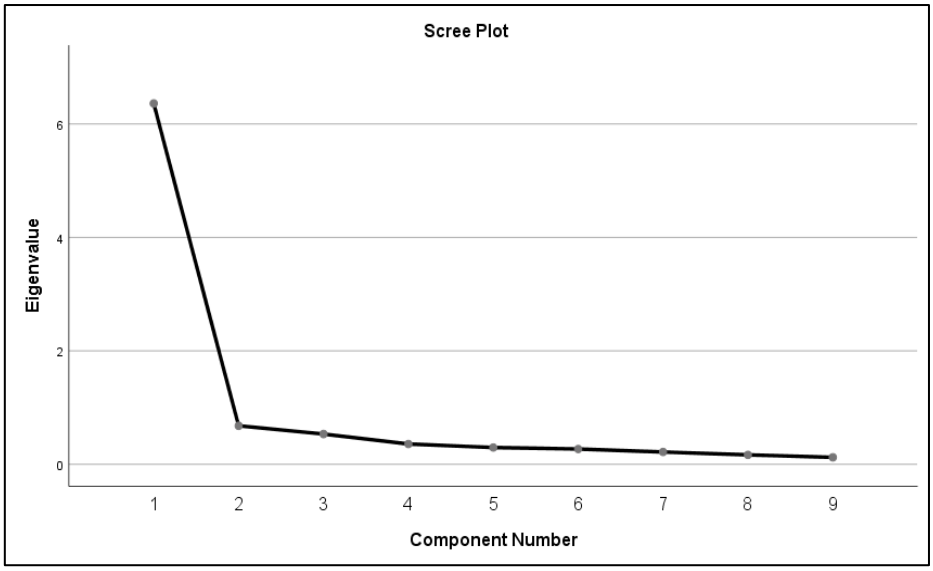


Table 2.6: Total Variance explained contributed by individual components of perceived opportunity

Total Variance Explained for Perceived Opportunity					
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% Of Variance	Cumulative %	% Of Variance	Cumulative %
1	6.362	70.686	70.686	70.686	70.686
Extraction Method: Principal Component Analysis.					

Table 2.7 presents the components and dimensions for each item and shows that all items for the construct have been grouped into one. Thus, the Rotated Solution procedure was not performed and the component matrix was examined. Ehido et al. (2020) states that the minimum acceptable value of the factor loading for individual items is 0.6 to ensure retention. Thus, all of the 9 items were retained.

Table 2.7: The factor loading for each item

Component Matrix	
	Component
	1
PO1	.893
PO2	.837
PO3	.879
PO4	.845
PO5	.855
PO6	.843
PO7	.880
PO8	.878
PO9	.625
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	

The final step is to compute the internal reliability and Cronbach's Alpha for every component was calculated. Table 2.8 indicates that Cronbach's Alpha test is 0.947, exceeding 0.7, which confirms the reliability of these components.

Table 2.8 The Reliability Statistics (Cronbach Alpha)

Reliability Statistics for Perceived Opportunity Construct	
Cronbach's Alpha	N of Items
.947	9

Rationalisation

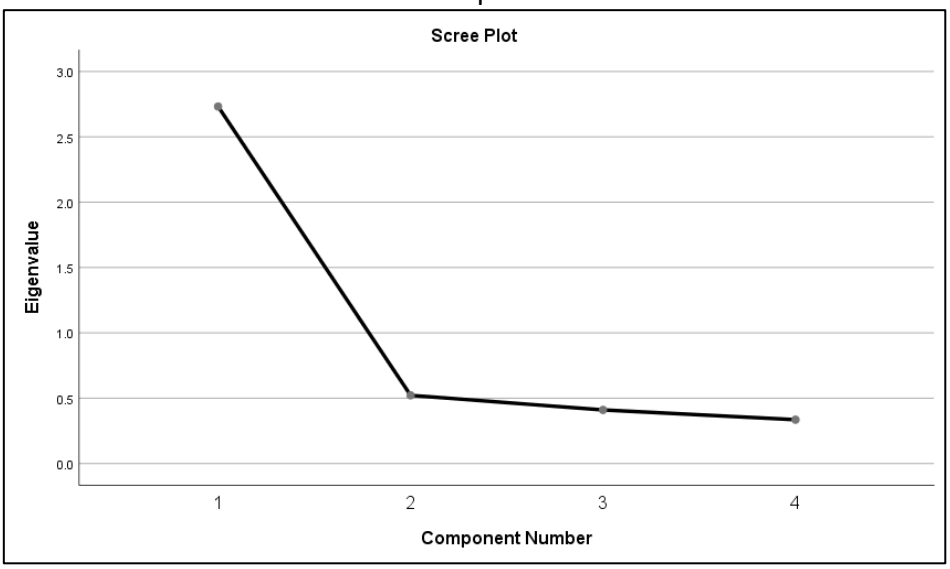
This section discussed the EFA results for rationalization construct which consists of 4 items. The 5-point Likert scale was used from 1 (strongly disagree) to 5 (strongly disagree). The value of the KMO is 0.814 as presented in Table 2.9 which is higher than the threshold value of 0.6, indicate that the existing data is adequate (Baistaman et al., 2020; Dehisat & Awang, 2020). The Bartlett's Test of Sphericity was also significant (Chi-square = 164.153, p-value < 0.000).

Table 2.9: The Value for KMO Bartlett's Test for Rationalisation

KMO and Bartlett's Test for Rationalisation		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.814
Bartlett's Test of Sphericity	Approx. Chi-Square	164.153
	df	6
	Sig.	.000

Next, the scree plot in generated and shown in Figure 3 for the rationalisation construct and the 4 items were sorted into one component. The inspection of the scree plot for this construct reveals the items are mutually exclusive and no component has emerged from the EFA. The first eigenvalue it the largest among all of the other eigenvalues. Thus, a unidimensional model is reasonable for the study data (Ruscio & Roche, 2012).

Figure 3: The Scree Plot of Rationalisation component



The total variance explained in Table 2.10 below for this construct is 68.307%. The overall variance explained is acceptable when it is greater than the minimum of 60% (Bahkia et al., 2019; Baistaman et al., 2020). Thus, the component manages to explain 68.307% of the construct and would be considered for further analysis.

Table 2.10: Total Variance explained by individual components of rationalisation

Total Variance Explained for Rationalisation					
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% Of Variance	Cumulative %	% Of Variance	Cumulative %
1	2.732	68.307	68.307	68.307	68.307
Extraction Method: Principal Component Analysis.					

Table 2.11 presents the components and dimensions for each item for the construct and shows that all items for the construct have been grouped into one component. Thus, the component matrix was generated and examined. All items are retained since each of them carries a factor loading of more than 0.6 (Ehido et al., 2020).

Table 2.11: The factor loading for each item and their components

Component Matrix	
	Component
	1
R1	.769
R2	.834
R3	.841
R4	.858
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

The final step is to compute the internal reliability of each construct by calculating the Cronbach's Alpha. Table 2.12 indicates that Cronbach's Alpha is 0.841, exceeding 0.7 and thus, confirms the reliability of these components.

Table 2.12 The Reliability Statistics (Cronbach Alpha)

Reliability Statistics for Rationalisation Construct	
Cronbach's Alpha	N of Items
.841	4

Capability

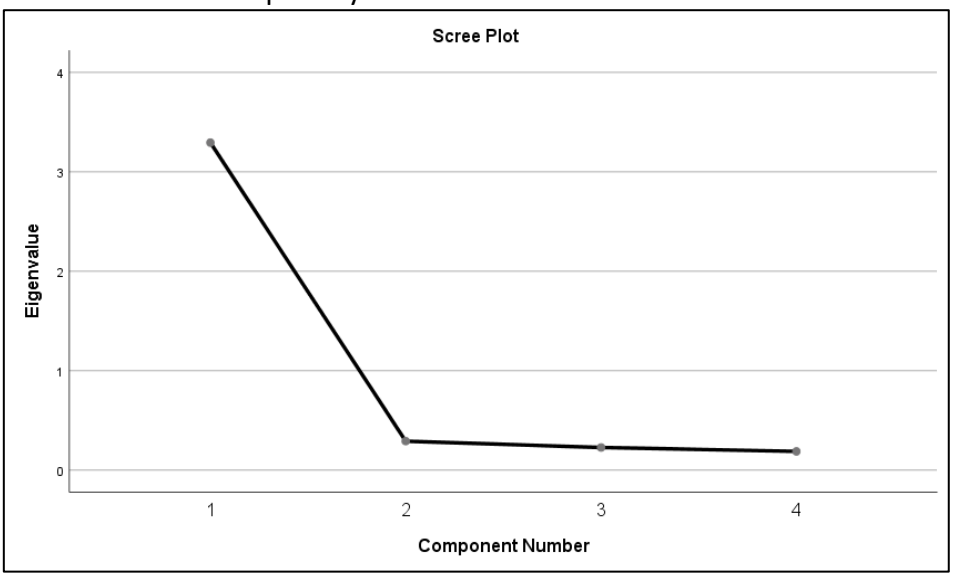
This section discusses the EFA results for capability construct which consists of 4 items. The Likert scaled of 5-point ranging from 1 (strongly disagree) to 5 (strongly disagree) was adopted. The value of the KMO as reported in Table 2.13is 0.858. Since this value is higher than the threshold value of 0.6, the existing data is considered adequate (Baistaman et al., 2020; Dehisat & Awang, 2020) and the Bartlett's Test of Sphericity is significant (Chi-square = 322.045, p-value < 0.000).

Table 2.13: The Value for KMO Bartlett's Test (Capability)

KMO and Bartlett's Test for Capability		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.858
Bartlett's Test of Sphericity	Approx. Chi-Square	322.045
	df	6
	Sig.	.000

The scree plot for this construct is presented in Figure 4 and all of the items had been sorted into one component. The plot indicates that the items are mutually exclusive and no component has emerged from the EFA. The first eigenvalue was the highest among than the rest of the eigenvalues. Thus, a unidimensional model is reasonable for this study data (Ruscio & Roche, 2012).

Figure 4: The Scree Plot for Capability



The total variance explained for this construct as reported in Table 2.14 is 82.336%. The overall variance explained is acceptable when it exceeds the minimum of 60% (Bahkia et al., 2019; Baistaman et al., 2020). Thus, 68.307% of the construct was explained by the items and would be subject to further analysis.

Table 2.14: Total Variance explained contributed by individual components of Capability

Total Variance Explained for Capability					
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% Of Variance	Cumulative %	% Of Variance	Cumulative %
1	3.293	82.336	82.336	82.336	82.336
Extraction Method: Principal Component Analysis.					

Table 2.15 presents the components and dimensions for each item and shows that all of the items for the construct have been grouped into one component. Thus, the component matrix was generated and examined. The results indicate that each of the value is greater than the minimum acceptable value of 0.6 factor loading and thus, all items are retained (Ehido et al., 2020).

Table 2.15: The factor loading for each item

Component Matrix	
	Component
	1
C1	.916
C2	.917
C3	.884
C4	.913
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

To determine the internal reliability of each construct, Cronbach's Alpha was calculated and the results are presented in Table 2.16. The value is 0.928 exceeds the required minimum of 0.7, which thus, confirms the reliability of the components.

Table 2.16 The Reliability Statistics (Cronbach Alpha)

Reliability Statistics for Capability Construct	
Cronbach's Alpha	N of Items
.928	4

Arrogance

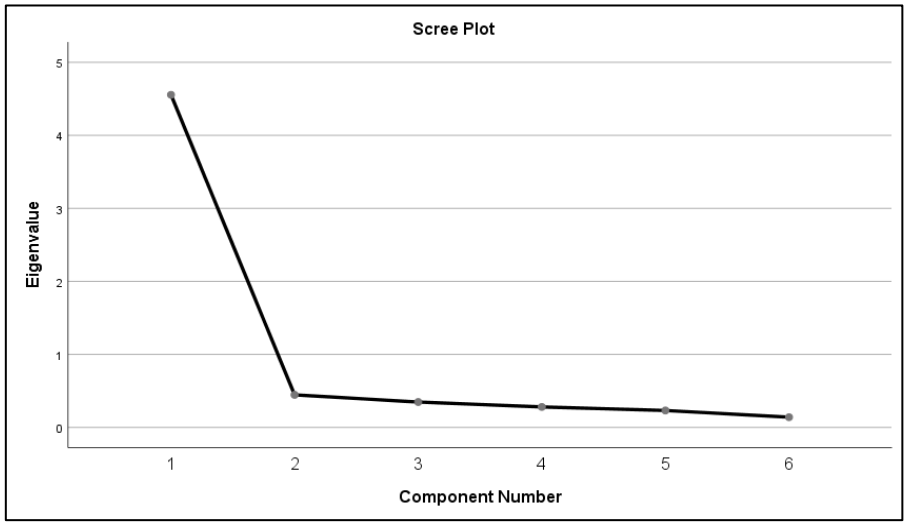
This EFA results for the arrogance construct is discussed in this section. A total of 6 items are used and the Likert scale from 1 (strongly disagree) to 5 (strongly disagree) is adopted. The value of the KMO is 0.898 as shown in Table 2.17 is higher than the threshold value of 0.6. Therefore, the existing data is adequate (Baistaman et al., 2020; Dehisat & Awang, 2020) since the Bartlett's Test of Sphericity is also significant (Chi-square = 505.912, p-value < 0.000).

Table 2.17: The Value for KMO Bartlett's Test (Arrogance)

KMO and Bartlett's Test for Arrogance		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.898
Bartlett's Test of Sphericity	Approx. Chi-Square	505.912
	df	15
	Sig.	.000

Figure 5 reveals the scree plot for the construct and shows that the items had been sorted into one component. The inspection of the scree plot indicates that the items are mutually exclusive and no component has emerged from the EFA. Since the first eigenvalue was the largest among all of the others, a unidimensional model is reasonable for the data of this study (Ruscio & Roche, 2012).

Figure 5: The Scree Plot of Arrogance



The total variance explained as shown in Table 2.18 is 75.920%. The overall variance explained is acceptable since the value is greater than the minimum of 60% (Bahkia et al., 2019; Baistaman et al., 2020). Thus, the component manages to explain 75.920% of the construct and subject to further analysis.

Table 2.18: Total Variance explained contributed by individual components of Arrogance

Total Variance Explained for Arrogance					
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% Of Variance	Cumulative %	% Of Variance	Cumulative %
1	4.555	75.920	75.920	75.920	75.920
Extraction Method: Principal Component Analysis.					

Table 2.19 indicates that the components and dimensions for each item or the construct have been grouped into one. Thus, the only the component matrix is examined to ascertain that the acceptable value of 0.6 is achieved for the retention (Ehido et al., 2020). Since the condition for minimum value is met, all items for this construct are retained.

Table 2.19: The factor loading for each item and their components

Component Matrix	
	Component
A1	.906
A2	.876
A3	.892
A4	.824
A5	.871
A6	.855
Extraction Method: Principal Component Analysis.	
a. 1 component extracted	

The internal reliability of each construct is determined based on Cronbach's Alpha. Table 2.20 indicates that the Cronbach's Alpha is 0.936, exceeding the 0.7 minimum value requirement and thus, the reliability is confirmed.

Table 2.20 The Reliability Statistics (Cronbach Alpha)

Reliability Statistics for Arrogance Construct	
Cronbach's Alpha	N of Items
.936	6

Efa Procedures for Asset Misappropriations

Table 2 shows the items for the AM construct which were adopted from Kazemian et al. (2018) and Koomson et al. (2020) . A 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) was utilised. The mean response, SD and item statement for every item are presented in Table 2.

Table 2: The Descriptive Statistics for items measuring Asset Misappropriations

Item	Statement	Mean	Std. Deviation
	Asset Misappropriations	**3.69**	
AM1	I often taken some resources of the organisation.	3.79	.720
AM2	I conduct personal work during office hours	3.79	.664
AM3	I do not comply with all policies regarding asset usage.	3.70	.736
AM4	I used cash/cash equivalent for personal use.	3.45	.891
AM5	I use office assets for personal purposes.	3.65	.822
AM6	I use the Internet service of the office for personal purposes.	3.65	.773
AM7	I use the computer and printer of the office for personal use.	3.83	.703

Table 2 presents the descriptive statistics including the number of items, mean score, and SD for each item representing the AM construct. The mean value for every item measures the degree of importance respondents attach to that item and the fall in the range of 3.45 to 3.83. The values of SD were ranged from 0.664 to 0.891, indicating the data are clustered tightly around the mean, and reliable. The table shows that the SD for each item is less than 1.5, implying consistency of the score distribution (Altman & Bland, 1995). The Principal Component Analysis was then employed to evaluate each of the items that form the construct.

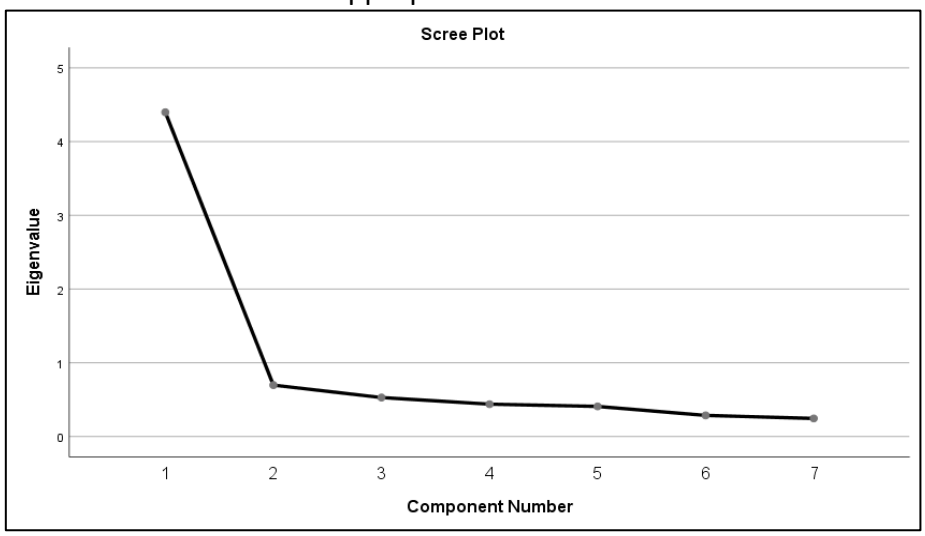
The overall mean of 3.69 for the AM construct suggests that respondents agree to a great extent with the statements describing AM at the workplace. The statement "I use the computer and printer of the office for personal use" had the highest mean score of 3.83, while the statement, "I used cash/cash equivalent for personal use" showed the lowest mean score of 3.45. The outcomes as depicted in Table 2.21 show the Bartlett's test of sphericity (BTS) is significant ($p < 0.05$), and the KMO which measures the sample adequacy is 0.890. The value exceeds the minimum requirement of 0.6 and thus, the sample size is considered adequate (Baistaman et al., 2020; Dehisat & Awang, 2020).

Table 2.21: The Value for KMO Bartlett's Test (Asset Misappropriations)

KMO and Bartlett's Test for Asset Misappropriations		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.890
Bartlett's Test of Sphericity	Approx. Chi-Square	389.210
	df	21
	Sig.	.000

The scree plot for AM as presented in Figure 6 shows that all of the 7 items for this construct had been sorted into one component. Further examination of the scree plot for AM indicates that the items are mutually exclusive and no component has emerged from the EFA. The first eigenvalue has the largest value in comparison to all the other eigenvalues. Thus, a unidimensional model is reasonable for the dat of this study (Ruscio & Roche, 2012).

Figure 6: The Scree Plot of Asset Misappropriations



The total variance explained as presented in Table 2.22 is 62.826% and greater than the minimum of 60% (Bahkia et al., 2019; Baistaman et al., 2020). Thus, the components are subject to further analysis.

Table 2.22: Total Variance explained contributed by individual components of Asset Misappropriations

Total Variance Explained for Asset Misappropriations					
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% Of Variance	Cumulative %	% Of Variance	Cumulative %
1	4.398	62.826	62.826	62.826	62.826
Extraction Method: Principal Component Analysis.					

Table 2.23 demonstrates the components and dimensions for each item and shows that all of the items for the construct have been grouped into one component. Thus, the component matrix analysis is performed to examine the factor loading for individual items. According to Ehido et al. (2020) the minimum acceptable value of the factor loading is 0.6 to qualify for retention. Since the factor loading is greater than 0.6, all items are retained.

Table 2.23: The factor loading for each item and their component

Component Matrix	
	Component
	1
AM1	.791
AM2	.732
AM3	.792
AM4	.782
AM5	.779
AM6	.801
AM7	.865
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

The final step is to confirm the internal reliability of each construct based on the value of Cronbach's Alpha. Table 2.24 indicates that Cronbach's Alpha is 0.899 exceeds the benchmark of 0.7 and thus, the reliability of the items is confirmed.

Table 2.2.4 The Reliability Statistics (Cronbach Alpha)

Reliability Statistics for Asset Misappropriations Construct	
Cronbach's Alpha	N of Items
.899	7

Conclusions

The study describes the development of a survey instrument to examine the effect of five fraud risk factors on asset misappropriation in the public sector. The elements are perceived pressure, perceived opportunity, rationalisation, capability and arrogance which form the foundation of the Fraud Pentagon theory. The constructs used to measure the elements were adapted from earlier studies of frauds in both the public and private sector. A pilot study was conducted and the data was analysed using EFA. This study discusses the procedures involved in the verification process for each of the construct examined in the survey instruments. The reliability of the constructs for the fraud risk factors and asset misappropriation were measured using Cronbach's Alpha value and the Bartlet Test. All of the constructs exceed the minimum required values and thus, reflect the adequacy of data. The findings of the EFA analysis confirms the internal validity and consistency of the survey instrument and offer support for the questionnaire to be used in the final survey in the public sector. This survey instrument is therefore, recommended to be used in future studies of asset misappropriation in the public sector. Future researchers may adopt the validated instrument to study asset misappropriations in different industries and countries.

Contribution of this Study

The current study contributes significantly to the measurement of fraud risk factors and asset misappropriation constructs, particularly in the Malaysian public sector setting. The elements of fraud risk factors (refer as fraud pentagon theory elements) include perceived pressure, perceived opportunity, rationalisation, capability, and arrogance, which become variables

that encourage public-sector employees to misappropriate assets at work. Furthermore, by focusing on asset misappropriations, this work has made a significant contribution to the literature on fraud theory and occupational fraud prevention and detection. The findings of this study have been incorporated into a practical application. This research will assist government officials and policymakers in strengthening their efforts and improving techniques for preventing asset misappropriation. Internal auditors and risk management officers will benefit from learning more about the issue of asset misappropriation as well as enterprise risk management practises for minimising asset misappropriation.

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