

COMBATING CORRUPTION FOR SUSTAINABLE PUBLIC SERVICES IN MALAYSIA: SMART GOVERNANCE MATRIX AND CORRUPTION RISK ASSESSMENT

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Abstract: In a developing country such as Malaysia, combating corruption is needed to ensure its sustainable social and economic development. While numerous initiatives are undertaken to increase integrity in Malaysia, corruption issues in public services are still alarming. Corruption involving public institutions disrupts service efficiency, hampers confidence in public institutions, and increases the cost of public transactions. This study examines the link between the quality of governance environment and the ability to assess corruption risk. The quality of governance environment is proxied by five governance initiatives (Smart Governance Matrix) while the ability to predict corruption is represented by corruption risk assessment that consists of five indicators. Thirty-nine responded questionnaires, gathered from Integrity Officers in public institutions in Malaysia, are used in the analysis. We find that enterprise governance model, data governance model and human governance model are positively associated with the corruption risk assessment. Good governance environment, which is represented by the Smart Governance Matrix, increases the ability to assess corruption risks. The findings provide insight into the need to improve the governance environment in public services in Malaysia as it can work towards controlling corruption activities through its ability to comprehensively assess corruption risk.

Keywords: Corruption risk assessment, integrity, public services, sustainable governance.

Introduction

This paper aims at providing input into the role of governance in combating corruption by focusing on public services in Malaysia. For a developing country such as Malaysia, tackling corruption is an essential role of the government who has major responsibilities in ensuring public sector efficiency through development of policies such as tax policy and development of economic regulation. In public services, corruption can be seen in cases involving the quality of service delivery system, public fund embezzlement, bribery in issuance of tender, favoritism and fraud in election process. 'Grand corruption' by high-level officials, which includes robbery of public budgets and over-investment in capital-intensive projects, generates poverty and retards economic growth (Rose-Ackerman, 1999). Low-level corruption by civil servants, which include bribery to

reduce bureaucratic delay or lower the cost of government taxes and regulations, undermines the legitimacy of the state and spreads the culture of corruption (Rose-Ackerman, 1999). Accordingly, corruption affects sustainable economic development, such as causing threat on macroeconomic stability and foreign direct investment, and social development, such as affecting the environment and causing the poor to suffer (Mauro, 1997).

In the context of Malaysia, there have been many initiatives to fighting corruption being implemented, especially under the National Key Results Areas (NKRA) initiatives. These include the establishment of Integrity Units in all federal and state government agencies with a Certified Integrity Officer (CeIO) as the unit head and the establishment of Committee on Integrity Governance (CIG) in all government ministries and departments. Nevertheless, the

corruption issues in Malaysia are still alarming perhaps due to the failure in implementing and enforcing the anti-corruption legislations. The 2014 Malaysian Corruption Barometer Survey highlights that the perception on the effectiveness of government's anti-corruption efforts has declined and the incidences of bribery in public services, especially in the education and medical/health services, have escalated with the main reason given for bribery is to 'speed things up' (Transparency International – Malaysia, 2014). The annually published Auditor-General Report reports many instances where projects, such as the Sultanah Nora Ismail Hospital upgrading project, are delayed and faced with many non-compliance issues. These evidences, while not conclusive, signify that corruption in Malaysian public services is a matter of concern.

An aspect that is important in tackling corruption is the quality of governance environment. The International Framework: Good Governance in the Public Sector by IFAC (2014) elaborates the fact that good governance in the public sector is achieved when the governing bodies and the players work towards achieving the organisation's goals while adhering to the public interest; in line with the laws and policies of the government. Serving as a benchmark for good governance practices for public services, the framework aims to improve the delivery of services and accountability in public service organisations. However, there is no 'one-size fits all' governance framework, as there are different objectives and governance structures surrounding public service organisations. Further, prior studies in Malaysian corporate governance (Ariff *et al.*, 2007; Hashim & Devi, 2008) have mainly focused on the private sectors and undermined the importance of good governance in the public sector. Thus, it is crucial to examine the governance framework that can work towards the development of greater ethical conduct in the context of public service organisations in an emerging country such as Malaysia. Also, to add to the existing evidence that has mainly focused on individual governance measure (Shim & Eom, 2008), this study uses a holistic governance measure i.e. Smart Governance Matrix (SGM). Since

corporate governance is a multi-dimensional phenomenon, a composite measure that captures multi-dimensions of corporate governance would be a better research approach and can add to the existing evidence involving the effectiveness of corporate governance. To our knowledge, this study is the first to employ the SGM in measuring the governance environment of public institutions.

In the context of corruption, where prevention is better than cure, it is important to tackle the issue at the earlier stage possible. Corruption risk assessment, therefore, is a prominent agenda for Malaysia. Corruption risk assessment involving public institutions measures the ability of public institutions to identify risks in their system, to act towards preventing corruption within their capacity, and the role of ministers and the cooperations within sectors (OECD Anti-Corruption Network for Eastern Europe and Central Asia, 2015). However, to date, there is no specific tool to assess corruption risk in public service organisations Malaysia. Our discussion with a government agency in Malaysia signifies the fact that the agency currently measures corruption risk in Malaysia based on the number of investigation papers issued, which is only when the corrupt practices are highly probable with very significant consequences and subsequent impact. As the input from the risk assessment involving corruptions is beneficial in order to propose and develop follow-up actions to manage the risks, this paper fills the gap in the literature by being the first to employ Corruption Risk Assessment (CRA) in measuring the ability to assess corruption risks in an organisations. As compared to corruption risk that is measured based on perception of respondents, such as those of the Transparency International, the CRA in this study measures the corruption risk assessment from the actual incidences of corruption from the perspective of the regulators, mainly the related government agencies. The CRA has the potential to be used by public and private organisations - if the tool is adopted by Malaysian regulators in assessing corruption risks.

In this study, we investigate the relation involving the quality of governance environment and the corruption risk assessment. The aim is to test the role of governance environment in controlling corruption activities through its ability to predict corruption risk in public services. In the context of the literature on corruption risk assessment, prior studies are mainly concentrated on the methodological and systematic approach to measure corruption risk and the use of corruption risk assessment measure in analysis is uncommon. Accordingly, the possibility that the quality of governance environment can enhance the ability to predict corruption risk is an area that remains unexplored. In order to tackle the issue, we adopt Holmes's (1997) three antecedents of corruption: institutional, economics, and cultural and historical factors, in setting the hypotheses below.

Institutional Elements

One of the measure of institutional elements is the monopoly power of the Board and the discretion level of their practice (Ali & Isse, 2003) that escalate the risk of corruption in the organisations. Unethical attitude by the members of the board may trigger the same attitude from the subordinates. Therefore, it is vital for the quality of the Enterprise Governance Model (EGM) to be enhanced so that the Board members are committed towards achieving the objectives of the organisations (Lees, 2007). In this context, high quality EGM can work to assist the organisations towards focusing on drivers of value creation while at the same time ensure that effective control and monitoring are intact. High quality EGM is expected to enhance the ability to assess corruption risk. Thus, the first hypothesis is developed as follows:

Hypothesis 1 : There is a positive relationship between the quality of EGM and corruption risk assessment.

Further, the rules of the game in a society shape the institutional elements that empower corruption. This context is explained as the

humanly-devised constraints that determine the interaction between humans (Knack & Keefer, 1995). To cater to this issue, improving the quality of data governance is essential in keeping track of the organisations' formal rules and information as it is valuable in detecting potential risks related to corruption mismanagement (Power, 2013). The necessity for high quality data calls for a need to have a high quality Data Governance Model (DGM). The use of a system that can track and improve enterprise data will enhance the ability to assess corruption risk. Hence, the second hypothesis is hypothesised as follows:

Hypothesis 2 : There is a positive relationship between the quality of DGM and corruption risk assessment.

Another aspect of institutional elements that gives rise to corruption comes from 'corruption of greed' surrounding government servants with senior positions. While they have sufficient income, they desire for more because accumulating wealth is perceived as a normal activity of those in their positions. Along with their power in influencing their working environment, these staff have the ability to overcome and bypass the computerised information systems that manage the significant data and information unless there are involvements from strong external agency (Wu, 2005). For this particular objective, management of information technology (IT) requires a comprehensive control of corruption to monitor these issues. Hence, high quality IT Governance Model (ITGM) is required to support critical business functions and processes by providing prompt and safe feedback for effective management of complex technology. The existence of high quality ITGM is expected to enhance the ability to assess corruption risk. The third hypothesis is therefore developed as follows:

Hypothesis 3 : There is a positive relationship between the quality of ITGM and corruption risk assessment.

Economic Elements

Size of the organisation is found to be as one of the economic elements that trigger corruption (Dreher *et al.*, 2007). In an organisation with significant size, the officials are able to apply a higher degree of discretion in their review and supervisory role, and hence increase the risk of corruption (Tanzi, 1998). Therefore, it is crucial for the board of directors to strictly perform their governance role in relation to overseeing the transparency and stability needed to increase the organisations' value creation and growth. High quality Corporate Governance Model (CGM), which revolves around the responsibilities of the board of directors in strategising policies and guidelines towards achieving a company's goals, is expected to increase the ability to assess corporate risk. Accordingly, the fourth hypothesis is developed as follows:

Hypothesis 4 : There is a positive relationship between the quality of CGM and the corruption risk assessment.

Cultural Elements

The cultural elements that consider psychological influences of individuals are also considered to be as one of the determinants of corruption. In the context of internal factors, one has to consider the fact that there are individuals who are "naturally evil" and willing to commit bribery (Voskanyan, 2000). In the context of external elements, factors such as the individual's relationship to a group are vital (Voskanyan, 2000). In short, human governance is an important thing to focus in the establishment of moral culture that incorporates integrity within the human capital (Dreher *et al.*, 2007). Accordingly, Human Governance

Model (HGM), that brings back the initial intention that should be upheld during decision-making, is required to combat corruption. High quality HGM is expected to benefit in terms of enhancing the ability to predict corruption risk. Hence, the fifth hypothesis is as follows:

Hypothesis 5: There is a positive relationship between the quality of HGM and the corruption risk assessment.

Methodology

A threshold model of collective behaviour, which employs the perspective of threshold effect, is used as the theoretical underpinning in the development of the hypotheses. Granovetter and Soong (1988) conclude that the threshold distribution predicts the results of the aggregate behaviour. Aidt *et al.* (2008) affirm that the causes of corruption can be implied as the antecedents of corruption risk. Accordingly, Holmes (1997) believes that there are three antecedents of corruption: economics, institutional and cultural and historical factors. Figure 1 depicts the theoretical framework of the study. For this study, the threshold model prescribes the determinants of corruption as the threshold distribution and the corruption risk assessment as the outcome of the aggregate behaviour. In the framework, quality of governance is represented by the present and future requirements of the organisation in prioritising the comfort of stakeholders. Numerous good governance indicators must be considered to ensure a holistic governance model is used. Thus, SGM outlines five governance models. The framework also depicts that the SGM predicts the ability to assess corruption risks, which is presented by the CRA.

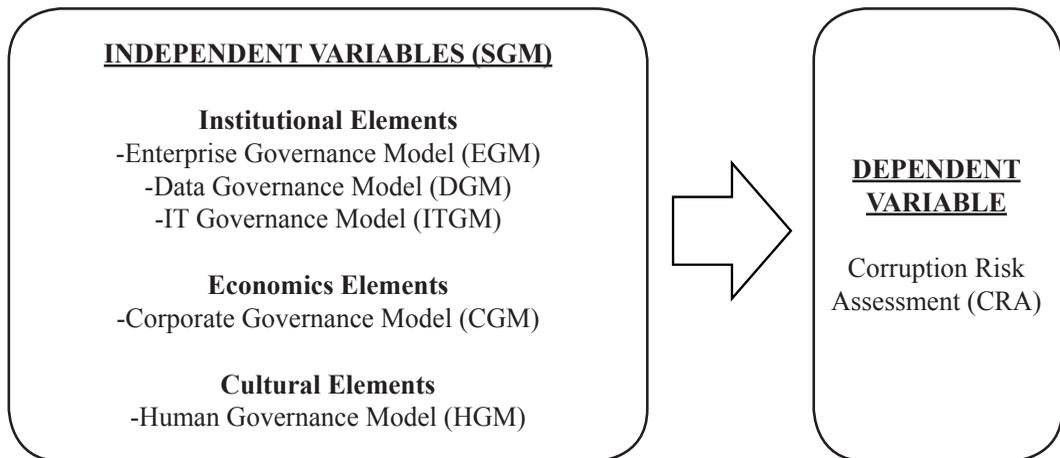


Figure 1: The link between quality of governance and corruption risk assessment

To develop the independent variables, SGM, this study puts together five governance models which all refer to the environment that is required for good governance in an organisation. SGM is used in this study as it is a holistic governance initiative comprising all stages of management: from planning, implementing and evaluating. SGM represents the governance environment of an organisation that allows one to measure the quality of governance from the perspective of enterprise, corporate, IT, data, and human governance. These five governance models are the outcome of the Confirmatory Factor Analysis (CFA) on all governance variables that are derived from focus group discussions with a government agency in Malaysia. The first model is Enterprise Governance Model (EGM) that refers to an integrated model to assist entities in focusing on drivers of value creation and ensuring effective control and monitoring. EGM provides enterprise governance capabilities to create value for shareholders through the effectiveness of the enterprises' operations (Lees, 2007). The second model is Corporate Governance Model (CGM). CGM focuses on the transparency principles and stability required for the increment of growth and value creation. Board of Directors is responsible in strategising for policies and guidelines towards achieving a company's goals. The third model is IT Governance Model (ITGM) that provides

support for important business functions and processes through the creation of competitive advantage for effective management by using technology. It allows for a prompt and safe responses to business requirements. Data Governance Model (DGM), which is the fourth model, functions to improve data quality through the use of system for tracking and improving enterprise data (Loshin, 2013). The last model is Human Governance Model (HGM). According to Salleh and Ahmad (2010), HGM incorporates human well-being and interest in the process of making decision, by considering the initial intention that should be upheld during the decision-making.

The dependent variable, CRA, is developed from five indicators; policy, integrity, accountability, transparency, and monitoring. These five indicators are the outcome of the Confirmatory Factor Analysis (CFA) on all corruption risk assessment variables that are derived from focus group discussion with a government agency in Malaysia. Firstly, the formulation of policy is expected to decrease the corruption risks in organisation. Secondly, the assessment of integrity assists management with feedback on whether their efforts in combating corruption are effective or otherwise, and accordingly provides justification for adjustment to be done systematically (Public Governance

Committee, 2004). Thirdly, accountability is important as it refers to the responsibilities of each public officer such as in the formation, implementation, and enforcement of the law (Lanyi & Azfar, 2005). Fourthly, transparency requires information dissemination to be accurate, timely, and useful (GOPAC, 2005). The fifth indicator is monitoring which is a tool to keep an eye on corruption. Olken (2007) emphasises that involvement of every member of the organisation supplements important monitoring information that allows the check and balance in efforts to control corruption. This eventually provides better ability to monitor risk towards the organisation.

The data on quality of governance and corruption risk assessment in Malaysian public services is derived from survey questionnaire that has 4 sections. A 5-point Likert scale is used to measure the response. The questionnaires were distributed to 43 respondents via email while 21 respondents were given the questionnaires by hand. There were only 64 respondents to which this study has access to in accordance with the information provided by the Malaysian Anti-Corruption Commission (MACC) as at 31 December 2014. The data was collected from the respondents on a continuous basis from January to March 2015. The determination of the means of distribution was based on the availability of email address and also upon the request from the respondents who preferred to receive the survey by hand. The respondents were the Chief Integrity Officer (CeIO)/Integrity Officer who are appointed by the MACC and attached to government agencies, federal departments, statutory bodies, and government-linked companies in Malaysia as well as Integrity Officer who are appointed by the respective organisations themselves. The Integrity Officer refers to accredited officers that are appointed to inculcate integrity and ethical values within the organisation. They hold an important role in reducing the risk of corruption in organisation. For example, they have the capability to develop integrity action plan as they are well-trained in the aspects of integrity management, legal framework, compliance and monitoring system.

To test the hypotheses of the study, statistical analyses were performed based on structural equation modelling (SEM) by utilising the Partial Least Squares (PLS) method. PLS is suitable to be employed as it can be used to perform data analysis for both univariate and multivariate outlier especially when the sample size is small (Hair *et al.*, 2010). PLS discloses the variables relationship in both measurement and structural model. This study follows the approach derived from Anderson and Gerbing (1988) to estimate the reliability and validity of the measurement model prior to testing the structural model. First, it assesses the measurement model for convergent validity. The assessment was made using factor loadings, composite reliability (CR), and average variance extracted (AVE) in accordance with Hair *et al.* (2006). Second, this study examines the discriminant validity to identify 'the extent to which the measures are not a reflection of some other variables'. Discriminant validity is shown by the low correlations between the measure of interest and the measures of other constructs (Ali *et al.*, 2015; Ramayah *et al.*, 2013). In relation to the structural model, this study applies bootstrapping technique using 5,000 iterations to assess the statistical significance of the weights of sub-constructs and the path coefficients (Chin, 1998).

Results

Demographic Profile

From 64 questionnaires distributed, 60% of the questionnaires were successfully collected. The small number of sample is used due to the limited access to the information involving Integrity Officers. The demographic profile of the 39 respondents can be examined in Table 1 with the majority of the respondents, 46% are from federal departments. 64% of the respondents are the Chief Integrity Officer (CeIO) in the organisation with majority of them, 36% have been in the position of the CeIO for less than 1 year. There are 43.6% respondents who have served the organisation for less than 10 years.

Table 1 : Demographic profile

	Items	Frequency	Percent	Valid Percent	Cumulative Percent
Organisation structure	Ministries	15	38.5	38.5	38.5
	Federal Departments	18	46.2	46.2	84.6
	Government Agencies	2	5.1	5.1	89.7
	Government-Linked Companies (GLC)	4	10.3	10.3	100.0
Are you the Chief Integrity Officer (CeIO) / Integrity Officer appointed by SPRM?	Yes	25	64.1	64.1	64.1
	No	14	35.9	35.9	100.0
The number of years appointed as Chief Integrity Officer (CeIO) / Integrity Officer in this organisation	1 year and below	14	35.9	35.9	35.9
	1 - 2 years	7	17.9	17.9	53.8
	2 - 3 years	2	5.1	5.1	59.0
	More than 3 years	2	5.1	5.1	64.1
	Not CeIO	14	35.9	35.9	100.0
The number of years served in this organisation	10 years and below	17	43.6	43.6	43.6
	11- 20 years	15	38.5	38.5	82.1
	21 - 30 years	6	15.4	15.4	97.4
	31 years and above	1	2.6	2.6	100.0

Measurement Model

Table 2 shows that, with the exception of five items that were finally deleted, all the other item loadings exceeded the recommended value of 0.6 (Chin, 1998). The deletion of the five exceptional items does not affect the reliability of the factor. Composite reliability values, which

represent the degree to which the construct indicators indicate the latent construct, exceeded the recommended value of 0.7 (Hair *et al.*, 2006). AVE, which identifies the overall amount of variance in the indicators accounted for by the latent construct, exceeded the recommended value of 0.5 (Hair *et al.*, 2006).

Table 2 : Validity and reliability for construct

Variables	Outer Loadings	Cronbach Alpha	Composite Reliability	AVE
CG1	0.75	0.88	0.91	0.62
CG2	0.84			
CG3	0.88			
CG4	0.74			
CG5	0.73			
CG6	0.78			
CR1	0.49	0.94	0.94	0.51
CR10	0.82			
CR11	0.64			
CR12	0.51			
CR13	0.74			
CR14	0.76			
CR15	0.68			
CR16	0.71			
CR17	0.49			
CR18	0.64			
CR19	0.60			
CR2	0.51			
CR20	0.63			
CR3	0.51			
CR4	0.79			
CR5	0.82			
CR6	0.79			
CR7	0.71			
CR8	0.79			
CR9	0.81			
DG1	0.84	0.93	0.95	0.79
DG2	0.92			
DG3	0.86			
DG4	0.95			
DG5	0.85			
EG1	0.89	0.93	0.94	0.77
EG2	0.93			
EG3	0.93			
EG4	0.85			
EG5	0.79			

HG1	0.60	0.83	0.88	0.55
HG2	0.73			
HG3	0.55			
HG4	0.85			
HG5	0.80			
HG6	0.85			
IT1	0.77	0.91	0.93	0.73
IT2	0.79			
IT3	0.92			
IT4	0.92			
IT5	0.86			

Note : CG : Corporate Governance; CR : Corruption Risk; DG : Data Governance; EG : Enterprise Governance; HG : Human Governance; and IT : IT Governance.

As shown in Table 3, the square root of the AVE (diagonal values) of each construct is larger than its corresponding correlation coefficients. As depicted by Fornell and Larcker (1981), these results indicate adequate discriminant validity.

Table 3: Discriminant validity

Constructs	CGM	CRA	DGM	EGM	HGM	ITGM
CGM	0.787					
CRA	0.589	0.714				
DGM	0.526	0.667	0.888			
EGM	0.772	0.692	0.620	0.877		
HGM	0.418	0.644	0.610	0.479	0.741	
ITGM	0.586	0.645	0.688	0.681	0.578	0.854

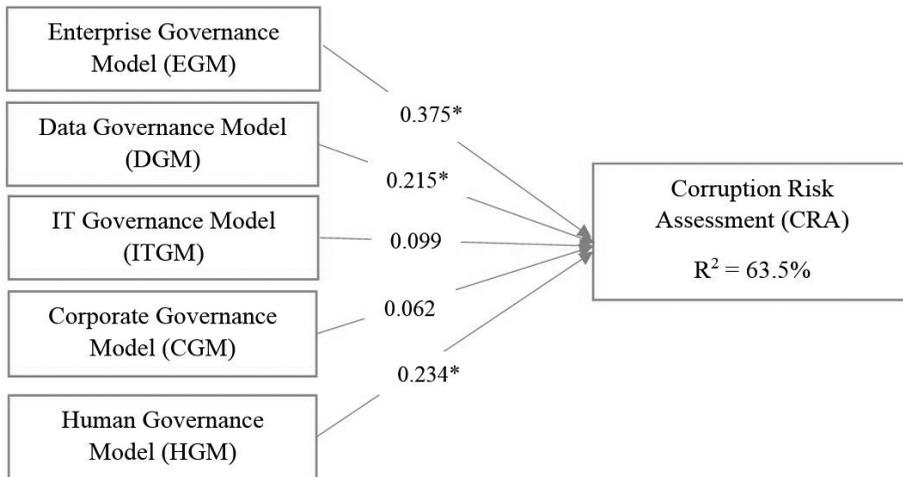
Note : Corporate Governance Model (CGM), Corruption Risk Assessment (CRA), Data Governance Model (DGM), Enterprise Governance Model (EGM), Human Governance Model (HGM), and IT Governance Model (ITGM).

Overall, the measurement model shows an adequate convergent validity and discriminant validity.

Structural Model

Figure 2, which presents the results of the structural model analysis, shows the corrected R². The value represents the explanatory power

of the predictor variables on the respective construct. It can be seen that all the independent variables, EGM, DGM, ITGM, CGM and HGM, explain 63.5% of the dependent variable i.e., Corruption Risk Assessment (CRA).



* $p < 0.05$ ($t\text{-value} > 1.645$)

Figure 2: Results of the structural model

Table 4 displays the full results related to the structural model and hypotheses testing. The results indicate a strong support for three out of the five hypotheses. More specifically, DGM, EGM and HGM are shown as having positive

relationship with CRA. On the other hand, there is no significant associations shown for results involving CGM and ITGM and CRA.

Table 4 : Structural estimates (Hypotheses testing)

Hypotheses	Beta	Standard Error	t-statistics	Decision
H1: EGM > CRA	0.375	0.171	2.197	Supported
H2: DGM > CRA	0.215	0.153	1.704	Supported
H3: ITGM > CRA	0.099	0.201	0.490	Not Supported
H4: CGM > CRA	0.062	0.146	0.423	Not Supported
H5: HGM > CRA	0.234	0.097	2.418	Supported

Note : Corruption Risk Assessment (CRA), Enterprise Governance Model (EGM), Data Governance Model (DGM), IT Governance Model (ITGM), Corporate Governance Model (CGM), and Human Governance Model (HGM).

Discussions

In this study, the issue of corruption that affects the sustainable social and economic development of a country is addressed by examining the relation between the quality of governance environment (measured by five governance initiatives i.e. SGM) and the ability to assess corruption risk (measured by CRA). The hypothesised relationship between enterprise

governance and corruption risk assessment was significant and positive. This result explained that enterprise governance is able to assess corruption risk. According to Ali and Isse (2003), the behaviors of board members are able to influence the behavior of subordinates. If management puts more commitment towards company's mission and vision, the ability to assess corruption risk will be higher. Therefore, hypothesis 1 is supported. There exists a

significant positive relationship between data governance and corruption risk assessment. Good data governance is able to provide value on the formal rules and important information to detect the likelihood of any corruption and manipulation being done (Power, 2013). Shim and Eom (2008) support that data governance can reduce corrupt behaviors externally, through the ability to enhance relationships with the public, as well as internally, through more effective controlling and monitoring towards employees' behaviors. Therefore, hypothesis 2 is supported.

The hypothesised relationship between human governance and corruption risk assessment is significant and positive. The results indicate that good human governance is able to enhance the corruption risk assessment. This finding is in line with the argument from Dreher *et al.* (2007) that human governance is able to develop moral culture in achieving all the goal, mission and mission. Salleh and Ahmad (2010) support that human governance could bring positive effect to the profession since human governance will be a part of the core guiding principles for professional conduct. Therefore, hypothesis 5 is supported. The other hypotheses were rejected due to the fact corporate governance and IT governance structure only focuses on the processes, which may be important as the back stop, but may not be able to directly incorporate integrity in the organisation. Therefore, hypothesis 3 and 4 are not supported.

Overall, our findings are in support of the view that good governance environment increases the likelihood of being able to assess corruption risk. Three SGM elements are found to be related to corruption risk assessment: enterprise, data, and human governance. To enhance the role of governance in combating corruption, focus should be placed on improving governance in the context of enterprise, data and human in Malaysian public sector organisations. This is because good governance increases effectiveness of corruption risk assessment, thus

allowing preventive and proactive mechanisms to be adopted to combat corruption accordingly.

Conclusions and Recommendations

This study finds that enterprise governance model (EGM), data governance model (DGM) and human governance model (HGM) are associated with the corruption risk assessment. The Smart Governance Matrix, which represents governance environment, predicts the ability of assessing corruption risks. The findings contribute towards the improvement of governance environment in public services in Malaysia as a tool in detecting red flags of corruption in the organisations through its ability to comprehensively assess corruption risk. In terms of EGM, our results indicate that the 'tone from the top' matters in combating corruption. A superior who is well-versed with the activities within the organisations would be able to delegate and monitor the assigned tasks efficiently, and therefore would easily identify irregularities occurring within the organisations that are related to corruption accordingly. In terms of DGM, our results emphasise on the importance of having high quality data as it ensures efficient and effective resource allocation. For example, the availability of high quality data on companies applying for logging license would allow the government to accurately evaluate them before the licenses can be awarded, so as to ensure that logging activities are performed in a manner that do not negatively affect the environment and livelihood of local communities. In terms of HGM, our results indicate that the core factor to combat corruption relies on the human capital i.e. the public servants themselves. A person with high integrity and ethical values would be able to ensure policies and regulations are adhered to, and perform their tasks effectively, such as in monitoring the progress of government projects undertaken by suppliers and vendors. Strict monitoring would enable government projects to be completed in time, or for any discrepancies with the suppliers and vendors to be rectified, so that the projects serve their purpose in providing

better quality of life to the public.

Nevertheless, the findings of our study are limited to the fact that the sample used is only Certified Integrity Officers (CeIOs) that may result in bias assessment of the findings. Future researchers can therefore extend the study by collecting feedback from other officials who are directly involved with the suppliers, vendors and customers i.e. the public. In the context of suppliers and vendors, for example, while the public procurement system is available in the Malaysian Government system of administration, there are weaknesses in the public procurement processes that may open avenues for corruption to take place (Othman *et al.*, 2010). Besides, this study covers five models of governance in developing the Smart Governance Matrix. Future researchers can also explore other governance environment including enterprise architecture governance model and multi-stakeholder governance as the corruption control efforts. Also, the corruption risk assessment has a great potential to be adopted as a tool to assess corruption risk in both public and private organizations in Malaysia. Further input from Malaysian regulators shall be sought out to incorporate further refinement in the corruption risk assessment tool.

In terms of policy implications, findings of this study provide input to various efforts in the development of policy and enforcement mechanisms towards combating corruption in Malaysia. This is because, aside from having the right rules, controlling corruption at the earlier stage possible is necessary for the purpose of identifying the sources of informality that have caused divergence between the policies and the regulations as well as their effectiveness. The findings of this study calls for refinement in the governance environment in public services in Malaysia as high quality governance enhances the ability to assess corruption risk so as to prevent the 'cancer of corruption'. Special focus could be targeted to improve data governance within public services because accurate and reliable data increases the likelihood to predict corruption risk. In this aspect, data sharing

between public sector organisations, that does not compromise confidentiality and control, should be implemented to enable an effective corruption risk assessment. On top of that, special emphasise is needed to improve the enterprise and human governance within the public services. These two governance initiatives are rather related as both involve human beings and their interactions. Albeit challenging, it is not impossible that combating corruption can be enhanced by improving integrity and ethical values of the core players in the organisations i.e. the top management and the public servants.

Acknowledgements

We thank the Ministry of Higher Education (MOHE) for the Fundamental Research Grant Scheme (FRGS/1/2016/SS01/UNITEN/02/1) fund awarded. The assistance given by the Malaysian Anti-Corruption Commission (MACC) during focus group discussion session, to scrutinise issues with regard to the study, is highly appreciated.

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