APPLYING STRUCTURAL EQUATION MODEL TO DEVELOP ENTERPRISE RISK MANAGEMENT MODEL FOR MALAYSIAN MTUN UNIVERSITIES PERFORMANCE

Saleh Nasser Abdullah Al-Subari,
Faculty of Technology Management and Business,
Universiti Tun Hussein Onn Malaysia
86400 Parit Raja, Batu Pahat, Johor,
Malaysia.
snalsubari@gmail.com
Rumaizah Ruslan,
Faculty of Technology Management and Business,
Universiti Tun Hussein Onn Malaysia
86400 Parit Raja, Batu Pahat, Johor,
Malaysia.
rumaizah@uthm.edu.my
Shafie Bin Mohamed Zabri,
Faculty of Technology Management and Business,
Universiti Tun Hussein Onn Malaysia
86400 Parit Raja, Batu Pahat, Johor,
Malaysia.
shafie@uthm.edu.my
Fazal Akbar
Faculty of Technology Management and Business
University Tun Hussein Onn Malaysia,
86400, Johor, Malaysia
fazal.akbar22@gmail.com

ABSTRACT

Enterprise risk management (ERM) is a central focus for many private organizations, especially financial institutions. Like their counterparts, non-profit organizations are not safe from exposure to risk and is more crucial as their funding originates from the public. Little work has been done on the enterprise risk management factors in public organizations, and research is needed to find out whether their approach to managing risk is serious, with a formal structure and framework to handle it. There is also insufficient clear empirical evidence for the effectiveness of ERM, especially concerning future government funding, for example in the intensely competitive sector of higher education. The risk of a decrease in the number and quality of international post-graduate students through lack of funding might affect the university's world ranking, with a reduction in research projects, leading to a loss of reputation. This study is therefore intended to develop an enterprise risk management model (ERMM) that can be used to improve the performance of Malaysia's technical universities. Data were collected from the academic staff in the Malaysian Technical University Network (MTUN) which brings together four technology-based universities: The University of Malaysia Perlis (UNMAP), Technical University of Malaysia Malacca (UTEM), the University of Tun Hussein Onn Malaysia (UTHM) and the University of Malaysia Pahang (UMP). The target population, according to each university's website, is UNMAP = 734, UTEM = 874, UTHM = 1,238 and UMP = 720. The total population of academics is 3,566. The sample size of this study was 346 researchers, surveyed through the self-administered Google form. The data was screened, and out of the 800 questionnaires distributed, 281 were completed and returned. Of these, 21 questionnaire sets were either incomplete or unacceptable for further examination, leaving 260 considered valid for further analysis. Analysis of Moment Structures (AMOS) in Structural Equation Modelling (SEM) confirmatory factor analysis (measurement and structural measurement models) were used to analyse the data. The outcome of the study was encouraging, as it indicated that ERM factors would have varying levels of influence on university performance. The contribution of the current study would be the improvement of the operations management (performance) and risk management practices by producing high-quality publications, attracting good-quality international students, and attaining high ranking and a good reputation. This would assist top management to make the right decisions to improve the university performance, controlling risk. Furthermore, the process of ERM was found to be effective, contributing

to performance. This could be because risk management offers a better basis for decision making at strategic, tactical and operational levels by providing a clear understanding of potential risk profiles and options for dealing with risk management; this helps the university to make suitable decisions to reduce risk and maximize opportunities.

1. Introduction

All organizations place capital at risk in pursuit of uncertain ventures. This includes financial institutions, government bodies, corporations, and non-profit organizations, all of which have goals and allocate resources to pursue them. Because all organizations face uncertainty in achieving their goals, they all face risk (Setapa et al., 2015).

As a result of the rapid changes occurring in the 21st century, organizations the world over are open to diverse risk types, including information security, complex financial instruments, global competition, deregulation, downsizing, as well as consumer demands within the organizational environment (Shenkir & Walker 2006). Historically, Higher Education Institutions (HEIs) have viewed themselves differently from other businesses and corporate entities in terms of their exposure to risk, and the world has generally accepted this (Lundquist, 2015). However, Lundquist (2015) further argues that in today's world, as a result of the increased focus on HEIs as accountable for students' safety and welfare, these institutions now face many of the same pressures and exposure to risk as those faced in the corporate world. The variety and volume of risks facing higher education are numerous, and senior-level administrators are increasingly seeking effective measures to mitigate them. The types of risk spanning the higher education sector include the following: debt load, outsourcing of services, information security, student safety, compliance with local, state and federal regulations, disaster preparedness, competition for faculty, student conduct and mental health, discrimination lawsuits, sexual harassment, crime on campus, student suicide, accidents, transportation and travel, assault, tenure disputes, the protection and security of academic and intellectual property, grade tampering, the alteration of students' files and records, computer hacking, major fires and explosions, and so on (Lundquist, 2015).

Furthermore, HEIs now face severe scrutiny from accreditation agencies, federal regulatory agencies, state stakeholders, and student and parent stakeholders (Vann, 2012). Similarly, the media has now shown a heightened interest in financial, governance, safety, and ethical aspects at HEIs, holding them increasingly accountable for poor decisions, badly affecting their reputation (Eccles, & Schatz, R. 2007). Risks may disrupt their capacity to attain their objectives and consequently lead to damage and losses that may affect the sustainability of the institution.

This has necessitated HEIs adopting effective management practices in managing risks associated with the sector. Traditionally, risk management in higher education was delegated to a particular unit within the institution, operating in isolation to manage risks (Cameron, 2017; Deck, 2015). This approach has been criticized for its lack of an overarching strategy and impact. Hence, a more effective risk management approach termed Enterprise Risk Management (ERM) is recommended. According to Arena, Arnaboldi, and Azzone (2011), ERM is a transversal process that addresses all the events which could prevent the achievement of objectives within an organization.

Higher Education Institutions have been struggling to survive in a changing and competitive environment, especially in advanced countries. For example, many HEIs are threatened by declining student enrolment resulting from low birth rates and the reduction of national subsidies. Moreover, unpredictable events like natural disasters and terrible accidents may cause major damage to HEIs, as happened in Japan when it suffered an enormous earthquake in 2011. Furthermore, HEIs today has established relationships with various kinds of public stakeholders, which require them to provide many kinds of services related to their core missions of education, research, and public services. In these situations, HEIs face enormous anxieties and uncertainties in their environment and must learn how to deal with any adverse event that may cause them significant damage. This is recognized in, for example, the US, UK and Japan, where some HEIs have thus started implementing strategic and organizational risk management or ERM.

In Malaysia, initial studies have been conducted to explore ERM implementation. Soltanizadeh, Zaleha, Rasid, Golshan, and Quoquab (2014) conducted a study to ascertain the level of implementation of ERM in Malaysian firms, using a sample of 199 firms listed in the Malaysian Bursa; their findings show that ERM implementation differed across industries, and that firms within the infrastructure, hotel, and technology sectors

had higher levels of ERM framework implementation than others. Noticeably absent from the list of surveyed industries was the education sector, including the higher education sector. The absence of this sector suggests that ERM may still be very much in its infancy, or never undertaken in Malaysia's HEIs.

Similarly, Sum and Saad, (2017) investigated the importance of risk management to the academic world, particularly the factors driving the emergence of risk and benefits gained if the risks are managed. The study highlighted the risk management process in a university setting, and the authors concluded that risk management is not just another layer of bureaucracy within an HEI; rather, it is an effective management tool to assist universities in achieving their strategic objectives.

Ahmad, Isa, Tapa (2016) and Sum et al. (2017) investigated the extent to which 20 public universities in Malaysia communicated their risk management policy through information on their websites, From the findings as observed on 22 April 2015, only two universities (10%) published their risk policy on their website. Three universities (15%) stated that their risk management framework was based on ISO 31000:2009. The other 17 (85%) did not indicate the type of risk management framework anywhere on their website. Eleven universities have risk managers or a formal structure to manage the risks. Ten have appointed a risk manager to oversee the risk management activities and one university had appointed a risk management committee.

However, the studies of Ahmad, Isa, and Tapa (2016) and Sum et al. (2017) reported that in Malaysia risk management practices in non-profit institutions, including higher education, are less developed than in much of the corporate world. The direction of this study is therefore to investigate how to embed risk management processes into the basic management cycles of a university and develop a risk management framework that can suit a university setting.

The extent to which Malaysian universities, particularly MTUN universities, implement a risk management policy is not exactly known. Similarly, where there is a risk management policy, it is not known if the policies reflect ERM practices and principles, or the extent to which any such principles affect the organizational performance of MTUN universities. Therefore, it is important to establish empirical evidence supporting the status of ERM practices among MTUN universities, as well as contributing a framework of ERM for the organizational performance of MTUN universities. This study will hence attempt to fill this gap. Therefore, this study objective to develop an ERM model to improve the performance of MTUN universities.

2. Risk management in Malaysian universities

The University Good Governance Index (UGGI) introduced in 2011 requires Malaysian public universities to implement organized risk management if they are to be given autonomy status. Five public universities, Universiti Teknologi Malaysia, Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, Universiti Malaya, and Universiti Putra Malaysia have been granted autonomy since 2012 (Ariff et al., 2014). This enables them to compete intensively in the higher education market, resulting in greater exposure to multi-dimensional risks. The risks include uncertainty about future government funding, increasing the number of post-graduate students, pursuing high ranking in the world university ranking, increasing competition in attracting high-quality international students, and competing globally in terms of research, teaching and learning. Ahmad et al. (2016) stated public universities cannot avoid managing risks. The increasing demand for autonomous governance, especially in financial and resource decision making, has made it clear that they must be made accountable for the freedom given to them. Therefore, as stated by Ariff et al. (2014), a comprehensive risk management framework has been made one of the requirements for the award of autonomous status.

According to Ahmad et al. (2016), since the launch of the Malaysian Education Blueprint Higher Education 2013-2025 in 2013, six public universities have been awarded autonomous status. The revised Malaysian Education Blueprint Higher Education 2015-2025 (MEBHE) proposed greater autonomy for the public universities.

Table 1: Universities in Malaysia with Autonomy Status, Risk Policy, Risk Framework, Risk Manager and Risk Committee

University	Autonomy Status	Risk Policy	Risk Management Framework	Risk Manager	Risk Committee
UTM	Yes	Yes	ISO31000:2009	Yes	Yes
UKM	Yes	Yes	ISO31000:2009	Yes	No
UUM	Yes	No	ISO31000:2009	No	Yes
USIM	Yes	No	No	Yes	No
USM	Yes	No	No	Yes	No
UTEM	Yes	No	No	Yes	No
UiTM	Yes	No	No	Yes	No
UMT	Yes	No	No	Yes	No
UPM	Yes	No	No	Yes	No
UIA	Yes	No	No	Yes	No
UM	Yes	No	No	No	No
UNIMAS	Yes	No	No	No	No
UMP	Yes	No	No	No	No
UPNM	No	No	No	Yes	No
UPSI	No	No	No	No	No
UNIMAP	No	No	No	No	No
UTHM	No	No	No	No	No
UMS	No	No	No	No	No
UMK	No	No	No	No	No
UNISZA	No	No	No	No	No

Reproduced from Sum & Saad (2017)

Ahmad et al. (2016) investigated the existence of a formal comprehensive risk management framework, using the following proxies as evidence of risk management implementation: existence of a risk policy or risk management framework and existence of a formal structure to manage risks, such as a risk management committee or risk manager. The study scrutinized university websites to find evidence of either proxy, and the findings are discussed above in section section 1.1. Table 2.3 adds further detail from the work of Sum and Saad (2017).

This study is motivated by the work of Ahmad et al. (2016), with the aim of bringing risk management into the academic world by increasing the knowledge and understanding of risk and risk management in the higher education context. It also aims to correct people's perceptions of risk management, which is not another layer of bureaucracy but an effective management tool to assist universities to achieve their strategic objectives.

3.Methodology

The research approach is purely quantitative. It involved a pilot study with the use of questionnaire instrument. The questionnaire survey sets were administered among the academicians in MTUN universities. AMOS-SEM software package for simulation and modelling procedure is used in locating the significant and dominant factors. For the purpose of questionnaire development of the research instrument, the use of five (5) point Likert scale was used. Likert scale is proposed because of the anticipated method of data analysis (that is, Structural Equation Modelling SEM) due to the fact that most of the questions have to do with attitudinal and perception opinions of people (unobserved data) which are usually prone to error. Purposive sampling techniques was used while structural equation modelling (SEM) was used to develop an ERM model to improve the performance of MTUN universities. The data, having passed through various screening stages which included missing data, outlier, reliability test, multicollinearity, confirmatory factor analysis (CFA) and the structural model which was found to be fitted, revealed a significant P-Value.

The hypothesis proposed tin this study is as follows:

H1a: Internal environment significantly affects the performance of MTUN universities.

H2b: Objective setting significantly affects the performance of MTUN universities.

H3c: Event identification significantly affects the performance of MTUN universities.

H4d: Risk assessment significantly affects the performance of MTUN universities.

H5e: Risk response significantly affects the performance of MTUN universities.

H6f: Control activities significantly affect the performance of MTUN universities.

H7g: Information and communication significantly affect the performance of MTUN universities.

H8h: Monitoring significantly affects the performance of MTUN universities.

This study examined the assumptions of normality at univariate level, and at multivariate level. The recommendation is that skewness and kurtosis value scores for items of measurement should be between -1 to +1 and the results for the entire items were within the acceptable range of -1 to +1, this implies that the assumption is satisfied and indicated no deviation from data normality. Multicollinearity happens when two or more indicators in the model are associated and give repetitive data about the response. Multicollinearity was measured by variance inflation factors (VIF) and tolerance. multicollinearity in a set of variables are that tolerance less than 0.20 and VIF value no more than 4.0. The outcomes demonstrated that all VIF values stood at 1.012, and tolerance values were found to be 0.988, which showed that multicollinearity was not a problem in this data. Therefore, the preliminary analyses showed no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity; all the variables in the research model satisfied all assumptions. Confirmatory Factor Analysis (CFA) was tested on the measurement model covering eight constructs, include: Internal environment, Objective setting, Event identification, Risk assessment, Risk response, Control activities, Information and communication and Monitoring.

5 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) examines whether a construct's measures are in line with the researcher's view of the nature of that construct (Awang, 2014). In fact, Awang (2015) stated that the CFA procedure replaced older methods such as EFA in establishing the validity of the constructs. The proposed ERM model to improve the performance of MTUN universities is based on previously validated empirical literature. CFA is designed to confirm the relationships between the constructs adopted from the literature review, testing associations that may exist between the observed variables under each hypothesized construct to quantitatively evaluate the quality of the factor structure, providing further evidence of the new measurement's construct validity.

Basically, the use of SEM with the combination of CFA for this research is in line with the standard steps recommended by leading scholars (Awang, 2015): (1) model specification; (2) model identification; (3) parameter estimation; (4) goodness-of-fit measurement; and (5) model re-specification.

To be exact, the preliminary measure is to test the validity of the measurement model before considering the structural model in the analysis process. Accordingly, both measurement and structural models were evaluated through the estimation of Maximum Likelihood (ML). Table 4.8 outlines the goodness-of-fit indices and level of acceptance used as a guide in the evaluation of the fitness of construct of both measurement and structural equation models.

Table 1: Goodness-of-fit index and level of acceptance

Name of category	Goodness-of-fit indices	Acceptance level	Comments	Literature support

Absolute fit	Chisq	P > 0.05	Sensitive to sample size greater than 200	Wheaton et al., (1977)
Absolute fit	RMSEA	RMSEA < 0.08	Range 0.05 to 1.00 is acceptable	Brownne & Cudeck (1993)
Absolute fit	GFI	GFI > 0.90	GFI = 0.95 Is a good fit	Jorekog & Sorbom (1984)
Incremental fit	AGFI	AGFI > 0.90	AGFI = 0.95 Is a good fit	Tanaka & Huba (1985
Incremental fit	CFI	CFI > 0.90	CFI = 0.95 Is a good fit	Bentler (1990)
Parsimonious fit	Chisq/df	Chisq/df < 5.0	The value should be less than 5.0	Marsh & Hocevar (1985)

Source: Adapted from Awang (2014; 2012)

Re-specified models were subsequently tested in this research before using the models for further analysis, and Modification Indices (MI) were used as a guide for detecting errors during the re-specification process. Consequently, CFA of the measurement model's entire latent constructs in the research framework were evaluated, presented below. In addition, initial measurement models were presented sequentially for each latent construct; fitness indexes; modification indices; and final measurement models. The enables readers to understand each step in evaluating the fitness of each aspect of the research model.

6. Analysis for structural equation modeling

After the unidimentionality, reliability and validity of the research constructs were ascertained, the next stage is to analyse the entire constructs in a single SEM using AMOS. This displays the causal effects between one construct and another according to the research hypotheses. The exogenous and endogenous variables in the research framework were arranged as presented in Figure 1. The model is used to analyse the multidirectional relationships among the entire research constructs.

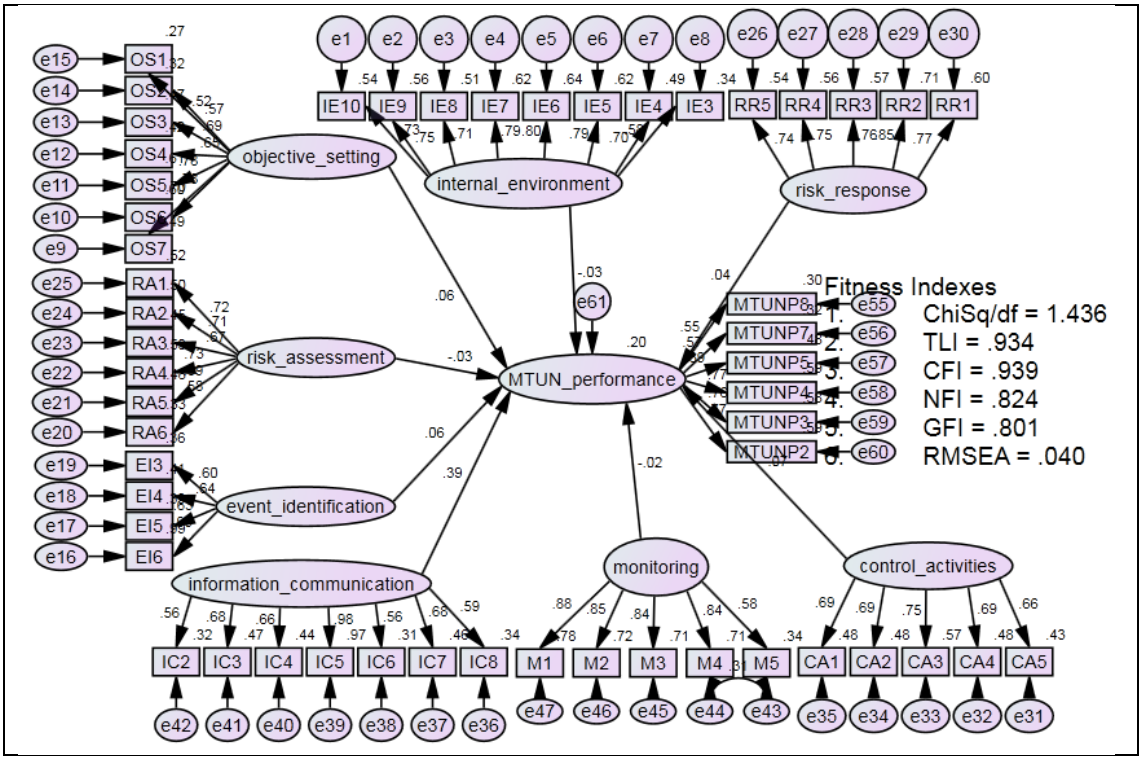

Figure 1: Structural measurement model for the entire research constructs and goodness-of-fitness

As shown in Figure 4.18 and Table 4.11, certain fitness indices for the structural measurement model do not reach acceptable levels for goodness-of-fitness (Awang, 2014). The observed factor loadings for all were above 0.5, although fitness indexes were sometimes below the recommended level. Therefore, modification indices were examined in order to identify redundant items and they were correlated with improvement of the model's goodness-of-fitness indices.

Table 2: The Fitness Indices of the structural model

Name of Index	Level of Acceptance	Index Value	Comments
Chisq/df	Chisq/df ≤3	1.436	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.934	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.939	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.824	The required level is achieved
GFI	GFI ≥ 0.80 suggests a good fit.	0.801	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.040	The required level is achieved
Model is accepted			

In summary, the goodness-of-fitness for the structural measurement models presented in the figure show progressive improvement until an acceptable level is realized. The final structural measurement model provided analysis of the causal effect (impact) for the multiple constructs in the path diagram. First and foremost, the fitness indices for the structural model reflect how fit is the hypothesized model; it was observed to be satisfactory within the established acceptable level (Awang, 2015).

The standard regression weights indicate the estimated beta coefficient which measures the impacts of the main constructs: exogenous variables on the intervening variable and endogenous variable (MTUN performance).

AMOS) produced two types of textual output: standardized regression weights and unstandardized regression weights for the path analysis. The former is adopted to explain the relationships among all the constructs in the theoretical framework, and subsequently to test the hypotheses in the research, as it is easier to interpret (Awang, 2015).

8 Testing the research hypotheses

The hypothesized research model was presented in Chapter Two. The results in Table 4.12 outline the outcome of every path in the structural measurement model, indicating whether or not the corresponding hypothesis is supported.

Table 3: The summary of the tested hypotheses in this research

The main hypothesis statement in the research		P-value	Result
H1a	There is a significant relationship between IE and MTUNP	0.000	Supported
H2b	There is a significant relationship between OS and MTUNP	0.000	Supported
H3c	There is a significant relationship between EI and MTUNP	0.000	Supported
H4d	There is a significant relationship between RA and MTUNP	0.001	Supported
H5e	There is a significant relationship between RR and MTUNP	0.031	Supported
H6f	There is a relationship between CA and MTUNP	0.064	Not Supported
H7g	There is a significant relationship between IC and MTUNP	0.000	Supported
H8h	There is a significant relationship between Monitoring and MTUNP	0.000	Supported

Key: *** represents P-value is less than 0.001

Every path/hypothesis in this research is interpreted in the next chapter. Meanwhile, with reference to the relationship between the objectives of this study, the structural measurement model and the hypotheses, it has been proven that the proposed model can be employed as a strategy in improving MTUN universities' performance by adopting the ERM approach.

5.3.2.1 Effect of Internal Environment on MTUNP

The analysis supported the hypothesized significant relationship between internal environment and MTUN universities' performance (p=.000). The more experienced the respondent was, the more strongly was this relationship recognized. The result indicated that the internal environment includes the board of academics, scholars, managers, workers and employees, organizational culture, structure, management strategies, and finally material and human resources; furthermore, the senior management of the universities is considered the most important part of the IE. as they are in control of the organization, manipulating them to achieve the strategic objectives and goals. This result supports the positive effect of the internal environment as found in several studies (Bailey et al., 2017).

5.3.2.2 Effect of Objective Setting on MTUNP

Analysis of the significant relationship between the effect of OS and MTUNP supported the hypothesis (p=.000). This means that ERM increases the university's ability to manage overall risks and helps it to make strategic plans to achieve its objectives. The result is in line with earlier findings (Lebedeva et al., 2016). Understanding OS means that staff know what is expected of them, and managers that they are prioritizing the right things, as required by the school or professional service. Risk-aligned objective setting allows top management to consider risk at the time of setting the organization's long-term objectives. The findings of this study, therefore, are not only consistent with empirical findings, but are also in tune with common sense in the attainment of organizational goals The results point out that management sets its objectives in the light of their risk exposure, and Gates et al. (2012) add that most ERM frameworks recommend that risk should be identified in relation to the organization's objectives.

5.3.2.3 Effect of Event Identification on MTUNP

The results support the hypothesis of a significant relationship between EI and MTUNP. universities performance. This means that ERM enhances the university's ability to identify and assess risk events effectively, and take into account the internal and external risks that affect performance. Employees can make suggestions for change and improvement. The relationship was significant relative to other exogenous ERM constructs tested, and strengthens the findings of earlier studies (Awang, 2014, 2015). In summary, EI is crucial in implementing a successful integrated ERM system and established rules and procedures, encouraging employees to be creative in dealing with problems at work. Risk identification requires organizations to identify sources of risk, areas of impact, events and their causes and potential consequences in order to generate a comprehensive list of risks based on those events that might create, enhance, prevent, degrade, accelerate or delay the achievement of objectives (MS ISO 31000:2010).

5.3.2.4 Effect of Risk Assessment on MTUNP

Risk assessment has a significant relationship with MTUN universities' performance. This result supports Arras (2016), who said that risk assessment is important since it is the way in which enterprises understand how significant each risk is to the achievement of their overall goals. Risk assessment can help the university executive directors to determine both internal and external risk, and can specify objectives with sufficient clarity to enable their identification and assessment relating to objectives Lecturers also obtain experience and establish routines in their risk assessment of specific workplaces. All gain a deeper understanding and greater confidence in decision making by exchanging their experiences and methods of assessment.

5.3.2.5 Effect of Risk Response on the MTUNP

The results showed that risk response has a significant relationship with MTUN universities performance and that its strategies reduce the negative impacts of risk and enhance performance. These results agree with Alawattegama et al. (2018), who reported that an effective risk response strategy is expected to have a positive impact on the organization's performance. Universities should also budget for ongoing changes in circumstances resulting in risk. Risk response planning involves determining ways to reduce or eliminate any threats to performance.

5.3.2.6 Effect of Control Activities on MTUNP

The result of the relationship test between Control Activities and MTUN universities' performance is the only one found not to be significant in this study, rejecting H6. This is because the regulatory activities of universities and their policies and procedures are insufficient to help in the implementation of risk management responses. Universities' control activities are too weak to contribute to the mitigation of risks to the achievement of objectives at acceptable levels. Since there is no relationship, recommendations must be made for control activities to act as expected, with procedures that put policies into action and improve performance. This will help employees to achieve the requisite standards and perform well.

5.3.2.7 Effect of Information and Communication on MTUNP

Information and Communication was found to significantly affect the performance of MTUN universities, supporting the hypothesis. Universities have open communication channels between management and staff, allowing the latter to report important information about the risks they face. The hypothesis confirms the response to the connections of third parties (students, researchers, etc.) properly and in a timely manner. The findings followed the path of earlier studies by Eikenhout (2015), who stated that improvement in the information of the organization's risk profile is another potential source of value created by ERM. The finding of this study also showed that it is necessary to devise methods of communication between employees and senior managers to report relevant risks. Universities have information systems including all the financial and non-financial information regarding suspension of internal and external events to make decisions.

5.3.2.8 Effect of Monitoring on MTUNP

Monitoring was shown to have significant effects on the performance of MTUN universities. This means that university management continuously monitors the control components to achieve excellence. This result supports Swinburn et al. (2015) who state that monitoring and evaluation are used in government to increase transparency, strengthen accountability, and improve performance. The monitoring function should be an ongoing process with timely evaluation of its effectiveness, aiming to decide whether further modifications are required for an effective performance management system.

10. Conclusion

The research objective was to develop an enterprise risk management model (ERMM) to improve the MTUN universities' performance. This objective has been achieved through evaluating the influential model variables, as discussed for the structural model. A non-challenging attitude is expressed toward the impact of ERM on MTUN performance with a view to boosting educational institutions' investment. The main thrust of the model dwells in the premise that careful consideration of the ERM's influential factors, the root causes of institutions' performance, would go a long way in ensuring success and high performance of MTUN universities in particular. Chapter Two of this thesis, the review of the literature, encapsulated the development of the conceptual framework and showed similar research that supports the desirability of the model.

More importantly, the result of the analysis which was based on the respondents' perception of the desirability and workability of the model also supports its applicability. The desirability of the model was further ascertained through model validation by CFA and testing the hypothesis. AMOS-SEM supported the influential factors related to ERM that have a substantial impact on MTUN performance. The study has provided proof that any effort made to improve MTUN performance by using ERM dimensions through the developed model reported is a step in the right direction. Furthermore, the results have been verified and the outcome of the model can help policymakers to understand the importance of ERM factors in improving performance. Furthermore, ERM overall was found to be effective in contributing to performance. This may be because risk management provided a better basis for decision making at the strategic, tactical and operational levels by providing a robust, logical, systematic and transparently auditable process that could make best use of the available experience, providing a clear understanding of potential risk profiles and options for dealing with risk management and helping top management to make suitable decisions to reduce risk and maximize opportunities.

References

Ahmad, S. N., Isa, M. Y., & Tapa, A. (2016). Web Disclosure of Risk Management Practices in Malaysian Public Universities. International Journal of Academic Research in Business and Social Sciences, 6(11), 404-410.

Ariff, M. S. B. M., Zakuan, N., Tajudin, M. N. M., Ahmad, A., Ishak, N., & Ismail, K. (2014). A framework for risk management practices and organizational performance in higher education. Review of Integrative Business and Economics Research, 3(2), 422.

Arras, M. (2016). *Corporate Risk Management in Emerging Markets*. Anchor Academic Publishing.

Awang, Z. (2012). Research methodology and data analysis. Selangor, Malaysia: Penerbit Universiti Teknologi MARA Press.

Awang, Z. (2015). SEM Made Simple. Structural Equation Modelling. Malaysia: PENERBIT Press, UniversitiTeknologi Mara.

Bailey, C., Collins, D. L., & Abbott, L. J. (2017). The Impact of Enterprise Risk Management on the Audit Process: Evidence from Audit Fees and Audit Delay. *Auditing: A Journal of Practice & Theory*, *37*(3), 25-46. 2.4 ERM and organizations Performance

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin*, *107*(2), 238.

Cameron, C. (2017). The strategic and legal risks of work-integrated learning: An enterprise risk management perspective.

Deck, S. C. (2015). Enterprise risk management at higher education institutions: How management concepts support its implementation (Doctoral dissertation, University of Maryland University College).

Eccles, R. G., Newquist, S. C., & Schatz, R. (2007). Reputation and its risks. Harvard Business Review, 85(2), 104.

Eikenhout, L. C. A. (2015). Risk management and performance in insurance companies (Master's thesis, University of Twente).

Gates, S., Nicolas, J. L., & Walker, P. L. (2012). Enterprise risk management: A process for enhanced management and improved performance.

ISO, M. (2010). 31000: 2010. *Risk management–Principle and Guideline, Department of Standard Malaysia*.

Lebedeva, T. E., Akhmetshin, E. M., Dzagoyeva, M. R., Kobersy, I. S., & Ikoev, S. K. (2016). Corporate governance issues and control in conditions of unstable capital risk. *International Journal of Economics and Financial Issues*, *6*(1S), 25-32.

Lukianchuk, G. (2015). The impact of enterprise risk management on firm performance of small and medium enterprises. European Scientific Journal, 11(13), 408-427.

Lundquist, A. E. (2015). Enterprise Risk Management (ERM) at US colleges and universities: Administration processes regarding the adoption, implementation, and integration of ERM.

Setapa, M., Zakuan, N., Saman, M. Z. M., Ariff, M. S. M., Zaidin, N., & Sulaiman, Z. (2015, March). The Impact of Enterprise Risk Management Practices on Malaysian Public Higher Educational Institution Performance: A Literature Review. In 2015 International Conference on Industrial Engineering and Operations Management (IEOM) (pp. 1-7). IEEE.

Shenkir, W. G., & Walker, P. L. (2006). Enterprise risk management: Frameworks, elements, and integration. *Institute of Management Accountant*.

Soltanizadeh, S., Abdul Rasid, S. Z., Golshan, N., Quoquab, F., & Basiruddin, R. (2014). Enterprise risk management practices among Malaysian firms. Procedia-Social and Behavioral Sciences, 164, 332-337.

Sum, R. M., & Saad, Z. M. (2017). Risk Management in Universities. In 3rd International Conference on Qalb-Guided Leadership in Higher Education Institutions (iQALB 2017).

Vann, M. (2012). Stakeholders' perceptions of quality in Cambodian higher education.

Wheaton, B., & Muthen, D. F. (1977). ALWIN, and GF SUMMERS (1977)"Assessing reliability and stability in panel models," pp. 84-136 in DR Heise (ed.).

Biographies

Saleh Nasser Abdullah Al-Subari is from IBB state and was born in 1987 at IBB state of Yemen. He attended Al Wahda Primary School, then to Kuwait High School. He did his bachelor's degree at University Tun Hussein Onn Malaysia (UTHM) from the faculty of Technology of Management and Business in 2015. He started working and thereafter, he applied and later gains admission for master's degree in Technology Management at University Tun Hussein Onn Malaysia (UTHM). He finished his master's degree in June 2017 and after which he immediately starts his PhD in the same university at the same faculty. The author published 2 papers.

Rumaizah Ruslan did her PhD in University Tun Hussein Onn Malaysia in 2018, her area of research interest includes occupational health and safety, OSH Risk Assessment & Management, Environmental Health and OSH Training & Education. She is the author of many journals and attended many international and local conferences.

Dr. Shafie Mohamed Zabri is an Assoc. Prof. in the Department of Business Management, Faculty of Technology Management & Business at the University Tun Hussein Onn Malaysia (UTHM). His Bachelor Degree was in Business Administration (Banking) from University Utara Malaysia (UUM), Malaysia and his Master Degree was also in Business Administration (Finance) from University Kebangsaan Malaysia (UKM), Malaysia and his PhD was in Business Administration (Management) from University of Plymouth, United Kingdom. He published many papers in conferences and reputable journals.

Fazal Akbar is a full researcher in the Faculty of Technology Management and Entrepreneurship at Universiti Tun Hussein Onn Malaysia. He earned his Master's in Technology Management from Universiti Tun Hussein Onn Malaysia. He has published journal and conference papers and his research interests include Marketing Management and Entrepreneurship, Strategic Management, and Innovation. Currently, the researcher has interest in Industrial Revolution 4.0, Entrepreneurship and Innovation.