HONG KONG JOURNAL OF SOCIAL SCIENCES

香港社會科學學報

第一的第 58 期 (2021 春/夏) Vol. 58 Autumn/Winter 2021

**Open Access Article**

# The Impact of Enterprise Risk Management on Performance of Non-State Higher Educational Institutions in Sri Lanka

**A. A. S. Perera[1], Abdul Khabir Rahmat[2*], Ali Khatibi[3], S. M. Ferdous Azam[3]**

[1] *Doctoral Candidate, Postgraduate Center, Management and Science University (MSU), Shah Alam, Malaysia*

[2] *Malaysia Institute of Transport, Faculty of Business Management, Universiti Teknologi MARA, Shah Alam, Malaysia*

[3] *Postgraduate Center, Management and Science University (MSU), Shah Alam, Malaysia*

***Received: October 15, 2021 ▪ Reviewed: November 19, 2021***

***▪ Accepted: December 20, 2021 ▪ Published: January 28, 2022***

**Abstract:**
Enterprise risk management is a modern, strategic tool that mitigates the overall risks of organizations. The theoretical literature review revealed the standards and frameworks recommended by international risk management organizations, which provide guidelines for risk assessment and mitigation. The empirical literature review revealed that studies conducted to examine the relationship between the implementation of ERM and firm performance concluded with contradictory conclusions. This study explores the relationships between organizational ERM philosophy, organizational governance structure, implementation of ERM, and the organizational performance of non-state higher educational institutions in Sri Lanka. A sample of 155 senior and above-level persons involved in strategic decision-making was used to collect primary data. This study proves the existence of a statistically significant relationship between the organizational ERM philosophy and the implementation of ERM. Further, this study proves the existence of a statistically significant relationship between the organizational governance structure and the implementation of ERM. This study further proves that there is no statistically significant relationship between the implementation of ERM and the firm performance with aligning to the findings from past studies in various other contexts. This study shows that 8% of the performance of the higher educational institutions is explained by the factors of organizational ERM philosophy, organizational governance structure, and implementation of ERM. This study shows that employee involvement does not significantly affect the relationship between implementation of ERM and firm performance. Overall, the findings of this study expand the empirical literature on the higher education sector related to institutional risk management, provide risk management frameworks and standards for strategy formulators.

**Keywords:** organizational culture, employee involvement, organizational governance structure, organizational

Corresponding Author: Abdul Khabir Rahmat, Malaysia Institute of Transport, Faculty of Business Management, Universiti Teknologi MARA, Shah Alam, Malaysia; email: abd_khabir@yahoo.com

*This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0)*

enterprise risk management philosophy, tone from the top.

# 企业风险管理对斯里兰卡非公立高等教育机构绩效的影响

**摘要**:
企业风险管理是一种现代的战略工具，可以降低组织的整体风险。理论文献回顾揭示了国际风险管理组织推荐的标准和框架，为风险评估和缓解提供了指导。实证文献回顾显示，为检验企业风险管理的实施与公司绩效之间的关系而进行的研究得出了相互矛盾的结论。本研究探讨了组织风险管理理念、组织治理结构、风险管理的实施以及斯里兰卡非公立高等教育机构的组织绩效之间的关系。以155名参与战略决策的高级及以上人员为样本，收集原始数据。这项研究证明了组织风险管理理念与风险管理实施之间存在统计上显着的关系。此外，本研究证明了组织治理结构与风险管理实施之间存在统计上显着的关系。本研究进一步证明，风险管理的实施与公司绩效之间没有统计学上的显着关系，这与过去在各种其他情况下的研究结果一致。本研究表明，高等教育机构8%的绩效是由组织风险管理理念、组织治理结构和风险管理实施等因素解释的。本研究表明，员工参与不会显着影响企业风险管理的实施与公司绩效之间的关系。总体而言，本研究的结果扩展了与机构风险管理相关的高等教育部门的实证文献，为战略制定者提供了风险管理框架和标准。

**关键词**：组织文化、员工参与、组织治理结构、组织企业风险管理理念、自上而下的基调。

## 1. Introduction

Enterprise Risk Management (ERM) is a concept that has emerged as an effective, integrated alternative solution to Traditional Risk Management (TRM), to defend institutions from potential catastrophes and increase the value of the firm while promoting the benefits for stakeholders (Yudianto et al., 2021). Phan et al. (2020) defined enterprise risk management as the set of practices that address the overall risk profile of the enterprise, reducing both the likelihood of and costs from negative events, and taking advantage of the benefits of positive events. The vital component to survive in the current volatile economic landscape is adaptation in response to changes in the market place and utilization of the prevailing opportunities, using the most suitable ERM system matching the capabilities of an entity (Institute of Risk Management, 2018).

ERM has added a prototypical blow to the risk management domain, encouraging organizations to assess their own risk attitude, to identify risk types they are exposed to, and to rank risky events to which they may be vulnerable in the future, categorizing these risks as acceptable, moderate or unacceptable (Abeyrathna & Lakshan, 2021). The major contribution of ERM is the way it allows organizations to develop an overall strategy accelerating the adoption of ERM best practices with the discretion of all the relevant stakeholders (The Committee of Sponsoring Organizations of the Treadway Commission, 2017). Contemporary organizations must set clear business strategies and evaluate them continuously in order not to miss opportunities in the market place that will help increase the firm's value while managing the challenges expected to occur (Shatnawi et al., 2020).

### *1.1. Summary of the Theoretical Literature Review*

A theoretical review of the literature of relevance to the study has revealed several standards, models and frameworks that are introduced and recommended by international institutions that are concerned about the management of entity-wide risk of enterprises. It is essential for entities to select the ERM framework or the model that is most suitable to the capabilities and limitations of the organization. In order to select the best model, it is essential to carry out a proper mapping of the overall risk that the entity faces with the support of risk management specialists based on their expertise and knowledge (Phan et al., 2020).

The following international standards and frameworks were identified through the theoretical literature review of the study:

1) COSO ERM Integrating with Strategy and Performance Framework (The Committee of Sponsoring Organizations of the Treadway Commission, 2017);

2) COSO ERM – Integrated Framework (The Committee of Sponsoring Organizations of the Treadway Commission, 2004);

3) International Standard for Risk Management (ISO 31000: 2018) (Institute of Risk Management, 2018);

4) International Standard for Risk Management (ISO 31000: 2009) (International Organization for Standardization, 2009);

5) COBIT 2019: Framework of the Information Systems Audit and Control Association for Customizing and Right-Sizing Enterprise Governance of Information Technology (White, 2019);

6) Standards and Poor's Enterprise Risk Management: Analysis into Corporate Credit;

7) Casualty Actuarial Society (CAS) (2003) Framework.

### *1.2. Summary of the Empirical Literature Review*

The empirical literature review was performed using electronically published research articles by scholars, practitioners and academicians grounded on their empirical research studies. Sithipolvanichgul (Perera et al., 2020) state that many studies have been carried out to investigate the relationship between the impact of ERM implementation on the firm performance. Mikes and Kaplan, Krause and Lehner, and Iyer and Rogers (Perera, 2019) state that there has been continuous criticism about the quality of the measurement of ERM implementation, which has hindered a definite understanding of the relationship between ERM and other aspects of the firm, such as value creation and thus performance. This has had a huge impact on studies in relation to ERM implementation and the firm performance.

There is continuous dialog among shareholders and risk managers as to whether the high cost involved in implementation of a suitable ERM system is justified by the increases in firm performance that result from this. This debate always discourages small organizations from implementing ERM, which comes at a high cost and without adequate justification of the likelihood of significant performance rise as a result of the ERM system implementation. This has therefore been researched by many academics and practitioners to substantiate the impact of ERM implementation on value creation for stakeholders (Alawattegama, 2018; Karaca & Senol, 2017).

Many studies have found that ERM implementation has a positive impact on firm performance, but many of those relationships are not statistically significant (Alawattegama, 2017, 2018; Karaca & Senol, 2017; Soliman & Adam, 2017). It has recently been found that ERM has a strong negative correlation with the firm's value, with a discount of 5% in terms of Tobin's Q (ROA). There are therefore contradictory findings with regard to ERM's impact on firm performance. This indicates that further studies need to be carried out to clarify whether ERM leads to an increase in a firm's performance (Bone & Kachroo, 2021; Alawattegama, 2017, 2018; Karaca & Senol, 2017).

This researcher has been motivated to study the existing empirical gap of the higher education sector and the ERM implementation research area as there was less literature available on this focus area.

## 2. Method

### *2.1. Research Design*

The positivist view of epistemology research philosophy was used in this study, considering some epistemological and ontological assumptions and the nature of knowledge. The hypo-deductive research approach was implemented, as this study was conducted with the purpose of hypotheses testing with the quantitative research strategy. The cross-sectional research design was used, as data was collected only at a single point of the time.

### *2.2. Participants*

The target population of this study is the senior managers in 116 non-state higher educational institutions. The study population is the senior managers in 94 actively operating non-state sector higher educational institutions in Sri Lanka. The content analysis was carried out by scrutinizing websites for available information of the senior and top level personnel of the institutions, and published sources of information were also utilized to find the population size. As a result of the content analysis, it was found that there are 705 personnel who are involved in senior and above management categories of non-state higher educational institutions presently. Based on this population size, the sample size of 170 respondents was determined using the sample size table prepared by Krejcie and Morgan in 1970 (Sekaran & Bougie, 2013).

Table 1. The sample size

| Institution Category | No of persons in senior management (N) | Stratified sample proportion | Number of subjects in the sample (n) |
|---|---|---|---|
| Professional Institutions | 128 | 18% | 25 |
| Institutions Registered with MOHE | 68 | 10% | 15 |
| Affiliated with Foreign Universities | 511 | 72% | 115 |
| Total | 707 | 100% | 155 |

As per Table 1, there are three types of non-state higher educational institutions in Sri Lanka: professional institutions offering professional qualifications, institutions registered with the Ministry of Higher Education (MOHE) of Sri Lanka, and the majority of the institutions having partnerships, collaborations, or franchises with foreign universities and foreign higher education authorities/institutions. These institutions are compelled to offer courses in Sri Lanka under the rules and regulations of their parent universities. Therefore, the sample of 155 was selected using the proportionated stratified random sampling technique to represent each type of institution. The sample consists of 25 respondents from professional institutes (18% of the sample size), 15 respondents from institutions registered with the Ministry of Higher Education of Sri Lanka (10% of the sample), and 115 respondents from institutions affiliated with foreign institutions (72% of the sample).

### *2.3. Data Collection Tools*

The collection of quantitative data for the study was

carried out using a survey instrument - a questionnaire shared with the respondents via a Google form. The validity of the survey instrument was tested using the content validity, criterion validity, and construct validity methods before the questionnaire was distributed in the pre-test phase. The opinions on the pre-test survey instrument questions were obtained from five experts in the industry, and the questionnaire was modified based on their comments. The reliability of the survey instrument was tested in the pilot-testing process using 32 surveys using Statistical Package of Social Science (SPSS) software. The respondents for the pilot study were selected from three strata of institutions following the same proportion of the sample to maintain the compatibility of the pilot study results with the main study. The pilot study sample contained six senior managers from the professional institutions (18% of the sample size), three from the institutions registered with the ministry of higher education (10% of the sample size), and 23 respondents from the institutions affiliated with foreign universities (72% of the sample size).

### *2.4. Variables*

The literature review's empirical evidence and theoretical support recognized six variables and their interrelationships. The organizational ERM philosophy (OEP) and the organizational governance structure (OGS) are the two identified factors positively impacting ERM implementation. The implementation of ERM (IERM) is recognized as the conceptual framework's mediating variable. However, according to the findings of the empirical literature review, many previous studies have also used IERM as an independent variable (Alawattegama, 2017, 2018). This study tests the IERM's mediating impact between the OEP, OGS, and organizational performance (OP) variables for the first time. The tone-from-the top (TFT) and employee involvement (EI) variables are two moderating variables that affect the relationship between the IERM and OP. The OP is the conceptual framework's dependent variable, which is affected by the three independent variables of OEP, OGS, and IERM.

*Organizational Performance (OP)* is this study's dependent variable, which is supported by many past studies (Karaca & Senol, 2017; Soliman & Adam, 2017; Alawattegama, 2017, 2018, 2019). OP is a notion that mirrors the extent that corporations have realized their goals (Shatnawi et al., 2020). Steady performances help firms assess their objectives and measure beneficiary and stakeholder satisfaction levels, and vice versa. Ahmed and Manab (Shatnawi et al., 2020) employed both financial and non-financial performance for a more comprehensive assessment of OP. Naser and Welch (Shatnawi et al., 2020) stated that non-financial measures better predict OP. Most past research has used a single financial indicator to measure firm performance, such as return on equity (ROE), return on assets (ROA), and Tobin's Q (Soliman & Adam, 2017; Alawattegama, 2017, 2018, 2019). Published data were used to measure the financial performance of firms, such as balance sheets, income statements, and cash flow statements.

*Organizational Governance Structure (OGS)* is the first exogenous variable recognized from the literature (Perera, 2019). Types of governance approaches applied in higher educational institutions vary according to several contextual factors. These variables might be related to the regulatory and socioeconomic environment, culture and traditions, ownership, organizational complexity, and types of leadership and management.

*Organizational ERM Philosophy (OEP):* This independent variable represents the overall opinion of the senior managers on the key areas:

1) Risk identification;
2) Risk analysis;
3) Risk evaluation;
4) Risk mitigation and control (Perera, 2019).

These four components are represented by the single variable of risk assessment and risk response. The researcher decided to represent all the four components under the single variable of OEP as an independent variable. In his two studies on the impact of ERM implementation on the banking and finance sectors of Sri Lanka and the performance of diversified companies in Sri Lanka, Alawattegama (2017, 2018) used the eight components of the COSO integrated framework as independent variables. One of the variables is the risk assessment and the risk response. From both studies, Alawattegama found that none of the eight components of the COSO integrated framework significantly impacts the firm performance, including the variable of risk assessment and risk response.

*Implementation of Enterprise Risk Management (IERM)* is the mediating variable of the conceptual framework of this study. The mediating variable in an experimental and correlational study explains the relationship between the independent (a casual variable) and dependent (outcome) variables (Namazi & Namazi, 2015). Implementation of the Enterprise Risk Management (IERM) in an institution, the mediating variable of the conceptual model falls in between the two independent variables of OGS and OEP and the dependent variable of OP.

*Tone-from-the-Top (TFT) and Employee-Involvement (EI)* are the two moderator variables (MO) of the conceptual framework. The moderator variable of a research design provides more faithful and precise findings of the study (Namazi & Namazi, 2015). This study revealed the literature support for the moderating impact of the two variables of tone-from the top and the employee involvement on the relationship between the ERM implementation and the firm performance (Perera et al., 2020).

### *2.5. Conceptual Framework*

The variables and their relationships identified by the theoretical and empirical literature review are depicted in the study's conceptual framework and shown in Figure 1.

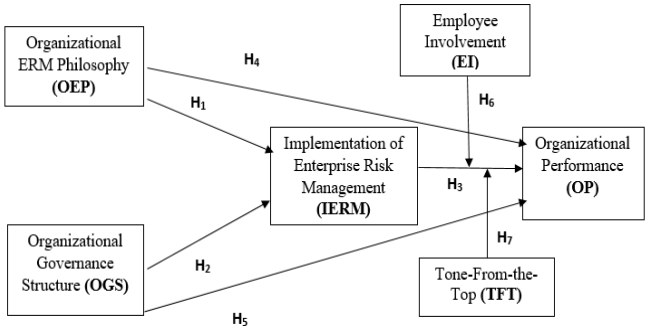


Figure 1. Conceptual framework of the study

### *2.6. Hypotheses*

- *$H_1$:* OEP has a significant positive impact on IERM;
- *$H_2$:* OGS has a significant positive impact on IERM;
- *$H_3$:* IERM has a significant positive impact on OP;
- *$H_4$:* OEP has a significant positive impact on OP;
- *$H_5$:* OGS has a significant positive impact on OP;
- *$H_6$:* EI has a significant moderating impact on the relationship between IERM and OP;
- *$H_7$:* TFT has a significant moderating impact on the relationship between IERM and OP;
- *$H_8$:* IERM mediates the relationship between OEP and OP;
- *$H_9$:* IERM mediates the relationship between OGS and OP.

## 3. Data Analysis

### *3.1. Pilot Study*

The reliability of the questionnaire was tested using a pilot study, and its results were examined using the Statistical Package for Social Science (SPSS). The Cronbach's alpha values of six scales were analyzed to determine whether the items in each scale sufficiently fit the indicators used to measure the latent variable. The constructs, number of items in each construct, and resulting Cronbach's alpha values are shown in Table 2.

Table 2. Constructs and their Cronbach's alpha values

| Construct | Number of Items | Cronbach's Alpha |
|---|---|---|
| Organizational ERM Philosophy (OEP) | 11 | 0.911 |
| Organizational Governance Structure (OGS) | 18 | 0.842 |
| Implementation of ERM (IERM) | 11 | 0.817 |
| Tone from the Top (TFT) | 03 | 0.759 |
| Employee Involvement (EI) | 05 | 0.909 |
| Organizational Performance (OP) | 18 | 0.911 |

All the items in the construct of organizational ERM philosophy (OEP) fit each other, as the alpha value was much greater than the 0.70 threshold. Organizational governance structure (OGS), a latent variable, was measured using 18 items. All 18 items fit this indicator; the alpha value was 0.842, which was higher than 0.70. Implementation of ERM, which is the mediating variable of the conceptual framework in this study, was measured using 11 items. All 11 items fit each other, as the alpha value was higher than 0.70. Tone from the top (TFT) and employee involvement (EI) are moderating variables that are expected to moderate the relationship between IERM and organizational performance (OP). Each construct has three and five items, respectively, and both alpha values were higher than 0.70, indicating that there was no need to remove any item from these scales. OP is the dependent variable of the conceptual framework and was measured using 18 items. All items fit each other well; the alpha value was higher than 0.70. Certain items had to be removed from these scales, but the Cronbach's alpha value did not significantly improve after their removal, as it was already above the threshold of 0.70.

### *3.2. Demographic Analysis*

A total of 155 participants were selected from 49 non-state higher educational institutions in Sri Lanka. The respondents were senior- and higher-level employees who were involved in strategic-level decision-making in these institutions.

Table 3 shows the demographic characteristics of the respondents.

Table 3. Demographic profiles of the respondents (n = 155)

| Profile | Categories | Frequency | Percent |
|---|---|---|---|
| Gender | Male | 108 | 69.7 |
| | Female | 47 | 30.3 |
| Age | Between 25-35 years | 11 | 7.1 |
| | Between 35-45 years | 41 | 26.5 |
| | Between 45-55 years | 79 | 51.0 |
| | Above 55 years | 24 | 15.5 |
| Education Level | Bachelors | 29 | 18.7 |
| | Masters or above | 114 | 73.5 |
| | Professional | 12 | 7.7 |
| Experience | Less than 2 years | 4 | 2.6 |
| | Between 2-5 years | 28 | 18.1 |
| | Between 5-10 years | 50 | 32.3 |
| | Between 10-20 years | 56 | 36.1 |
| | More than 20 years | 17 | 11.0 |

The male respondents dominated the sample (nearly 70%). The majority of the respondents belonged to the age group of 45–55 years, and the rest belonged to the age range of 25–35 years. Regarding the highest education level attained, 73% of the respondents held master's degrees or higher qualifications, nearly 19% had bachelor's degrees, and 8% had other qualifications. A total of 68% of the respondents had been working for 5–20 years in their present employers, which indicated that they were well aware of the strategic-level decisions made in their institutions.

### *3.3. Exploratory Factor Analysis (EFA)*

Principal component analysis (PCA) is appropriate for any study with a normal data distribution. Thus, PCA extraction was used in this work. Factor loadings less than 0.40 were suppressed for ease of interpretation. The following criteria were used to identify factors for further analysis: (1) Bartlett's test of sphericity ($p < .05$), (2) Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy (> 0.70), (3) factor loadings (> 0.40), (4) total variance explained (> 0.60), and (5) Cronbach's alpha (> 0.70).

Table 4 summarizes the factor analysis results. The findings showed that 58 indicators became seven factors with eigenvalues greater than 1. The KMO measure of sampling adequacy (0.865) and Bartlett's test of sphericity showed satisfactory results ($p = .000$). The loadings of all indicators and their relevant factors were above 0.40, and there were no cross loadings with gaps of less than 0.20. The Cronbach's alpha values of all identified factors were satisfactory (more than 0.70), which showed internal consistency among the items. However, due to the elimination of items TFT1, TFT2, and TFT3 in the EFA, one of the two moderating variables named TFT was excluded from the conceptual framework.

Table 4. EFA results after the item deletion

| Var. | Item | OP | OEP | IERM | SAP | OC | OH |
|---|---|---|---|---|---|---|---|
| OP | OP1 | 0.820 | | | | | |
| | OP2 | 0.833 | | | | | |
| | OP3 | 0.800 | | | | | |
| | OP4 | 0.794 | | | | | |
| | OP5 | 0.808 | | | | | |
| | OP6 | 0.748 | | | | | |
| | OP7 | 0.872 | | | | | |
| | OP8 | 0.861 | | | | | |
| | OP9 | 0.893 | | | | | |
| | OP10 | 0.832 | | | | | |
| | OP11 | 0.822 | | | | | |
| | OP12 | 0.792 | | | | | |
| | OP13 | 0.731 | | | | | |
| | OP14 | 0.794 | | | | | |
| | OP15 | 0.836 | | | | | |
| | OP16 | 0.813 | | | | | |
| | OP17 | 0.873 | | | | | |
| | OP18 | 0.822 | | | | | |
| OEP | OEP1 | | .775 | | | | |
| | OEP2 | | .806 | | | | |
| | OEP3 | | .722 | | | | |
| | OEP4 | | .843 | | | | |
| | OEP5 | | .810 | | | | |
| | OEP6 | | .805 | | | | |
| | OEP7 | | .747 | | | | |
| | OEP8 | | .800 | | | | |
| | OEP9 | | .808 | | | | |
| | OEP10 | | .845 | | | | |
| | OEP11 | | .849 | | | | |
| IERM | IERM1 | | | 0.72 | | | |
| | IERM 2 | | | 0.75 | | | |
| | IERM 3 | | | 0.76 | | | |
| | IERM 4 | | | 0.65 | | | |
| | IERM 6 | | | 0.78 | | | |
| | IERM 7 | | | 0.82 | | | |
| | IERM 8 | | | 0.75 | | | |
| | IERM 9 | | | 0.80 | | | |
| | IERM 10 | | | 0.82 | | | |
| | IERM 11 | | | 0.80 | | | |
| SAP | SAP1 | | | | 0.83 | | |
| | SAP2 | | | | 0.830 | | |
| | SAP3 | | | | 0.770 | | |
| | SAP4 | | | | 0.833 | | |
| | SAP5 | | | | 0.723 | | |
| | SAP6 | | | | 0.749 | | |
| | SAP7 | | | | 0.719 | | |
| | SAP8 | | | | 0.665 | | |
| OC | OC1 | | | | | 0.727 | |
| | OC2 | | | | | 0.703 | |
| | OC3 | | | | | 0.815 | |
| | OC4 | | | | | 0.832 | |
| | OC5 | | | | | 0.724 | |
| OH | OH1 | | | | | | 0.924 |

| Continuation of Table 4 | | | | | | |
|---|---|---|---|---|---|---|
| OH2 | | | | | | 0.881 |
| OH3 | | | | | | 0.902 |
| OH4 | | | | | | 0.709 |
| OH5 | | | | | | 0.760 |
| Eigen | 21.04 | 10.9 | 3.98 | 3.70 | 3.5 | 1.921 |
| No. of items after deleting | 18 | 11 | 10 | 8 | 5 | 5 |
| Cronbach's alpha | 0.9 | 0.97 | 0.96 | 0.951 | 0.943 | 0.902 |
| Total Variance Explained = 76.50% | | | KMO = 0.865 | | | |
| Bartlett's Test Chi square = 12292.47 | | | | | df= 1891 | |

Through EFA, seven latent variables and their indicators were deemed valid and reliable for use in further analysis. The EFA results provided empirical support for the proposed structure, but the structure had to be confirmed using confirmatory factor analysis (CFA). This approach confirms measurement models and provides evidence of their reliability and validity (Hair et al., 2019).

### *3.4. CFA*

Given the small sample size of this study; its emphasis on exploration rather than confirmation; the few items in the constructs; the complexity of the path model; the theoretical, measurement, and distribution conditions; and practical considerations, partial least squares–structural equation modeling (PLS–SEM) was used as the data analysis tool.

The sample size (n = 155) was justified using the "10 times" rule and the 80% statistical power method by Cohen (1992). The maximum number of arrows pointing from an exogenous construct to an endogenous construct in the structural model was five. With use of the "10 times" formula (5 × 10), the minimum number of samples required was determined to be 50. However, according to Cohen's 80% statistical power table at 95% with an $R^2$ of ≥ 0.25, at least 70 units must be sampled. The sample size used in this study was 155, which was well above the minimum sample sizes calculated by both rules.

Internal consistency (composite reliability), indicator reliability, convergent validity (average variance extracted), and discriminant validity were used for evaluation. According to Sekaran and Bougie (2013), reliability indicates how consistently an instrument measures the concept it intends to assess. Validity generally indicates the extent to which a test measures the construct that it needs to measure; in particular, construct validity shows the extent to which the existence of a construct is established through an interlinked set of items (Perera et al., 2020).

Discriminant validity detects a significant difference between two individual constructs. Correlation and Average Variance Extractions (AVE) are two methods used by researchers to test the discriminant validity of models. According to Hair et al. (2019), if the correlation values are greater than 0.90, they are significantly overlapping constructs, and the discriminant validity does not exist. It is explained as multicollinearity. The second method of testing the discriminant validity is the comparison of AVE values with the squared correlation between two constructs (Fornell & Larker, 1981).

The construct validity of the measurement model was measured by the convergent validity and discriminant validity measures. Convergent validity indicated how close the indicators are to the latent variables, and the discriminant validity indicated how far latent variables differ from each other. Convergent validity was measured using factor loadings, composite reliability (CR), and Average Variance Extracted (AVE) (Fornell & Larker, 1981).

Table 5. Composite reliability (CR) of latent variables in the measurement model

| **Variable** | **Composite Reliability (CR)** |
|---|---|
| Organizational_ERM_Philosophy (OEP) | 0.976 |
| Organizational_Governance_Structure (OGS) | 0.916 |
| Implementation_of_ERM (IERM) | 0.957 |
| Organizational_Performance (OP) | 0.975 |
| Organizational_Culture (OC) | 0.952 |
| Organizational Hierarchy (OH) | 0.854 |
| Systems_and_Procedures (SAP) | 0.959 |

Composite reliability is a suitable measure of internal consistency. If it is above the threshold of 0.708, the internal consistency exists, but if CR is below 0.60, the internal consistency of the items with the latent variable does not exist. If CR is between 0.60 and 0.708, the internal consistency of exploratory research exists (Hair et al., 2019).

CR values for all the seven latent variables are above 0.708. This indicated that the items in each latent variable measure the same phenomenon they are intended to measure, which satisfies the internal consistency; thus, construct reliability of the measurement model exists.

The average variance extracted (AVE) evaluates the convergent validity of a measurement model. The AVE is defined as the grand mean value of the squared loadings and is equivalent to the commonality of a construct. If the AVE value is > 0.50, it indicates that, on average, more variance has been explained than unexplained by the variables associated with the construct (Fornell & Larker, 1981). On the other hand, AVE < 0.5 indicates that, on average, more errors remain in the items than explained by the construct.

Table 6. Average variance extracted (AVE) values of latent variables (original model)

| Variable | Average Variance Extracted (AVE) |
|---|---|
| Implementation_of_ERM (IERM) | 0.675 |
| Organizational_Culture (OC) | 0.800 |
| Organizational_ERP_Philosophy (OEP) | 0.786 |
| Organizational_Governance_Structure (OGS) | 0.446 |
| Organizational_Hierarchy (OH) | 0.552 |
| Organizational_Performance (OP) | 0.681 |
| Systems_and_Procedures (SAP) | 0.745 |

According to the statistics in Table 6, the AVE of all the latent variables in the measurement model surpasses the 0.5 threshold except for the AVE of the variable *organizational governance structure* (OGS).

To improve the AVE of OGS to above the 0.50 threshold, the items of the OGS latent variable, which have had outer loadings below 0.40, namely OH1, OH2, OH3 and OH4, were removed. Item IERM5 was also problematic, which made low loading (less than 0.60) and lead AVE less than 0.70.

Table 7. Composite reliability and average variance extracted (AVE) (adjusted model)

| Variable | Composite Reliability (CR) | Average Variance Extracted (AVE) |
|---|---|---|
| 1) Organizational_ERM_Philosophy (OEP) | 0.976 | 0.786 |
| 2) Organizational_Governance_Structure (OGS) | 0.954 | 0.616 |
| 3) Implementation_of_ERM (IERM) | 0.962 | 0.717 |
| 4) Organizational_Performance (OP) | 0.975 | 0.681 |
| 5) Organizational_Culture (OC) | 0.952 | 0.800 |
| 6) Systems_and_Procedures (SAP) | 0.959 | 0.745 |

The improved CR and AVE for all the latent variables in the measurement model after removing the problematic items are depicted in Table 7. The CR values are greater than 0.708, and all the AVE values are above 0.50.

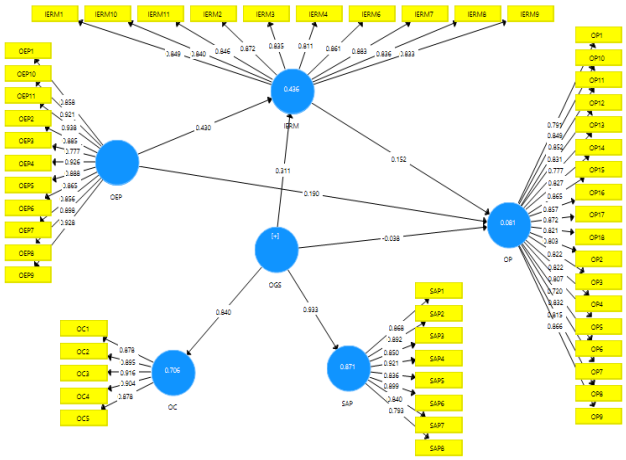

Figure 2. PLS reflective measurement model (adjusted)

Figure 2 shows the adjusted measurement model after deleting the problematic items of OH1, OH2, OH3 and OH4.

The Fornell-Larker criterion (Fornell & Larker, 1981) measures discriminant validity and assesses the discriminant validity at the construct level. As depicted in Table 8, all diagonal elements exceeded the off-diagonal elements in the matching rows and columns, indicating that discriminant validity does exist among constructs in the measurement model.

Table 8. The Fornell-Larker criterion for the discriminant validity

| | IERM | OC | OEP | OGS | OH | OP | SAP |
|---|---|---|---|---|---|---|---|
| **IERM** | 0.847 | | | | | | |
| **OC** | 0.535 | 0.894 | | | | | |
| **OEP** | 0.610 | 0.414 | 0.886 | | | | |
| **OGS** | 0.560 | 0.839 | 0.580 | 0.785 | | | |
| **OH** | 0.130 | 0.064 | 0.214 | 0.121 | 1.000 | | |
| **OP** | 0.247 | 0.102 | 0.260 | 0.163 | 0.269 | 0.825 | |
| **SAP** | 0.478 | 0.589 | 0.587 | 0.834 | 0.137 | 0.173 | 0.863 |

The heterotrait-monotrait ratio (HTMT) measures the construct correlation where the values exceeding 0.90 indicate the collinearity between two reflective constructs and that discriminant validity does not exist (Hair et al., 2019).

Table 9. HTMT ratio for discriminant validity

| | IERM | OC | OEP | OGS | OH | OP |
|---|---|---|---|---|---|---|
| **OC** | 0.562 | | | | | |
| **OEP** | 0.628 | 0.441 | | | | |
| **OGS** | 0.585 | 0.887 | 0.611 | | | |
| **OH** | 0.133 | 0.066 | 0.215 | 0.124 | | |
| **OP** | 0.242 | 0.115 | 0.252 | 0.172 | 0.278 | |
| **SAP** | 0.501 | 0.621 | 0.617 | 0.885 | 0.140 | 0.179 |

All HTMT values in Table 9 are less than 0.90, which means that there are no collinearity issues among the constructs and thus, discriminant validity does exist in the measurement model.

After verifying the existence of construct and discriminant validities in the measurement model, the structural model was assessed to evaluate the significance and the relevance of the structural model relationships using path coefficients (β) and R2 values obtained from bootstrapping. Figure 3 shows the structural model assessment outcomes.

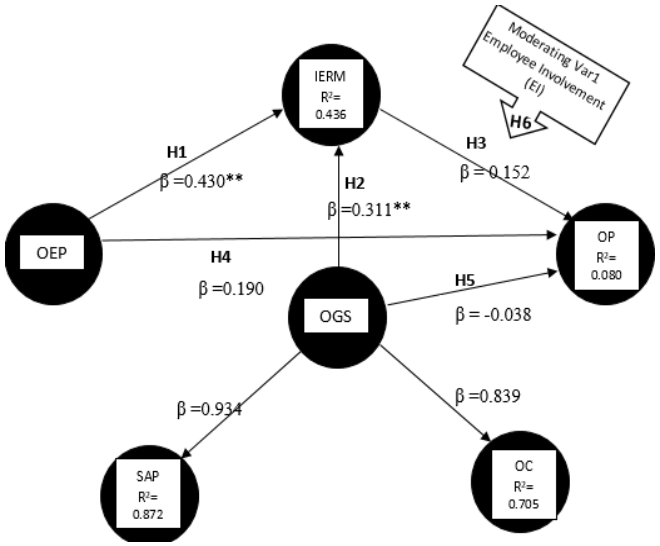


Figure 3. PLS reflective structural model of the study

The coefficient of determination ($R^2$) indicates the explanatory power of a structural model, where the

substantial, moderate, and weak power is described respectively by 0.67, 033, and 0.19 values (Chin, 1998). It provides the portion of the total variance of an endogenous variable explained by its predictor variables. In this structural model, 44% of the implementation of ERM into an educational institution is explained by the two variables of organizational ERM philosophy and organizational governance structure. However, it is remarkable that when the organizational performance is considered, the predictor variables of implementation of ERM, organizational governance structure, and the organizational ERM philosophy have only explained 8% of the variance, where predictability or impact of these factors on the endogenous variable is very small.

Five direct hypotheses were formulated in this study (H1, H2, H3, H4, and H5). These hypotheses are re-stated in Table 10.

Table 10. Direct hypotheses

| |
|---|
| $H_1$: OEP has a significant positive impact on IERM |
| $H_2$: OGS has a significant positive impact on IERM |
| $H_3$: IERM has a significant positive impact on OP |
| $H_4$: OEP has a significant positive impact on OP |
| $H_5$: OGS has a significant positive impact on OP |

For validating the above hypotheses determining direct relationships, bootstrapping was performed in PLS. The obtained results are presented in Table 11.

Table 11. Results of direct effects

| | Direct Effect | Original Sample (O) (Path Coefficients) | Sample Mean (M) | T-Statistics | P-Values |
|---|---|---|---|---|---|
| H1 | OEP -> IERM | 0.430 | 0.431 | 4.944 | 0.000*** |
| H2 | OGS -> IERM | 0.311 | 0.308 | 3.734 | 0.000*** |
| H3 | IERM -> OP | 0.152 | 0.160 | 1.540 | 0.124 (ns) |
| H4 | OEP -> OP | 0.190 | 0.190 | 1.498 | 0.134 (ns) |
| H5 | OGS -> OP | -0.038 | -0.030 | 0.278 | 0.781 (ns) |

According to the statistics in Table 11, there are two significant direct effects and three non-significant direct effects in the structural model. OEP has a significant direct impact on IERM as the p-value is less than 0.05. Also, the OGS has a significant direct impact on IERM. However, IERM does not have a significant impact on the OP. Furthermore, OEP and OGS also do not significantly impact the OP as the p-values are not less than 0.05.

Two indirect hypotheses were formulated in this study, where they depict the mediating impact of the variable IERM between OEP and OP and between OGS and OP. These hypotheses are re-stated in Table 12.

Table 12. Indirect hypotheses

| |
|---|
| $H_8$: IERM mediates the relationship between OEP and OP |
| $H_9$: IERM mediates the relationship between OGS and OP |

For validating the above hypotheses determining indirect relationships, bootstrapping was performed in PLS. The obtained results are presented in Table 13.

Table 13. Results with indirect effects

| Indirect Effect | Original Sample (O) | Sample Mean (M) | T-Statistics | P-Values |
|---|---|---|---|---|
| OEP -> IERM -> OP | 0.066 | 0.071 | 1.301 | 0.200 (ns) |
| OGS -> IERM -> OP | 0.047 | 0.048 | 1.435 | 0.164(ns) |

According to the statistics, implementation of ERM does not mediate the relationship between organizational ERM philosophy and organizational performance ($\beta$ = 0.066, P=0.200>0.05). Implementation of ERM does not mediate the relationship between organizational governance structure and organizational performance ($\beta$ = 0.047, P=0.164>0.05).

Two indirect hypotheses are formulated in this study, depicting the moderating effect of two variables, Employee Involvement (EI) and the Tone from the Top (TFT), on the relationship between IERM and OP. These hypotheses are re-stated in Table 14.

Table 14. Moderating relationships

| |
|---|
| $H_6$: EI has a significant moderating impact on the relationship between IERM and OP |
| $H_7$: TFT has a significant moderating impact on the relationship between IERM and OP |

The effect of the moderator variable can be assessed by the percentage of variance explained in the dependent variable by the interaction term comparing the percentage of variance explained with and without the interaction term (Perera, 2019).

Employee involvement was predicted to have a moderating impact on the relationship between implementation of ERM and organizational performance, though the direct relationship between the ERM implementation and the organization performance is not significant. As a result, the moderating variable Employee Involvement will also have the same relationship with the ERM independent variable, where there is no significant moderating impact between IERM and OP (Namazi & Namazi, 2015). The exploratory factor analysis (EFA) proved the non-existence of the items to measure the variable of TFT. The TFT construct was removed from the analysis; therefore, the hypotheses are not accepted. Thus, TFT does not significantly moderate the relationship between IERM and OP.

# 4. Results

This study was conducted with the main objective to prove the existence of statistical relationships among the factors on the performance of non-state higher educational institutions in Sri Lanka. This study covered nine hypothesized relationships identified from the literature review. Out of 700 senior and above-level persons employed presently, 155 were selected using the stratified random sampling technique at the response rate of 55%. The collected data were analyzed using SPSS and SMART PLS software packages. The

results were analyzed at the 95% confidence level, with an alpha level of 0.05.

Table 15 contains the research objectives, formulated hypotheses, path coefficients, t-values, p-values, and the study findings.

Table 15. Summary of research objectives, hypotheses, and findings

| Specific Objective | Hypotheses | Path Coefficients (β) | T-value | p-value | Status |
|---|---|---|---|---|---|
| To examine the significant impact of the OGS and the OEP on the implementation of ERM | H1: OEP-->IERM | 0.43 | 4.944 | 0.000*** | Accepted |
| | H2: OGS-->IERM | 0.311 | 3.734 | 0.000*** | Accepted |
| To examine the significant impact of the implementation of ERM on organizational performance | H3: IERM -> OP | 0.152 | 1.54 | 0.124 (ns) | Not Accepted |
| To examine the significant impact of the OGS and the OEP on organizational performance | H4: OEP -> OP | 0.19 | 1.498 | 0.134(ns) | Not Accepted |
| | H5: OGS -> OP | -0.038 | 0.278 | 0.781 (ns) | Not Accepted |
| To examine the significant mediating impact of IERM between OEP and OP, OGS and OP | H8: OEP -> IERM -> OP | 0.066 | 1.301 | 0.200 (ns) | Not Accepted |
| | H9: OGS -> IERM -> OP | 0.047 | 1.435 | 0.164(ns) | Not Accepted |

## 5. Discussion

This study covered nine hypothesized relationships. Five of them are direct relationships, two are indirect relationships, and two are moderating relationships among the two exogenous, one mediating, two moderating, and one endogenous variables identified from the theoretical and empirical literature review.

From the study's literature review, numerous internal, external, organizational, and human factors were found, affecting the implementation of enterprise risk management. They can be grouped under three categories: management-based, firm-based, and ERM performance-based factors.

This study has proved that the performances of higher educational institutions are not significantly dependent on the organizational governance structure, organizational ERM philosophy, and the implementation of ERM. These findings support the general views in the existing literature. Most research studies concluded that enterprise risk management does not affect organizational performance (Alawattegama, 2017, 2018; Karaca & Senol, 2017). This has been further validated in this study for the Sri Lankan non-state sector higher education context.

Empirical evidence of the study indicated that the ERM philosophy of an educational institution has a significant positive impact on the implementation of ERM at that institution. The study also found that the organizational governance structure determined by organizational culture, systems and procedure, and organizational hierarchy has a significant positive impact on implementing ERM at that institution.

This study also found that 44% of the ERM implementation variance is explained by the two variables, organizational ERM philosophy and organizational governance structure, where 54% of the ERM implementation variance at higher educational institutions is explained by other factors out of this study's scope.

## 6. Conclusion

The literature review of this study reveals factors influencing the implementation of ERM into various organizations, especially into higher education, as there are numerous internal, external, organizational, and human factors affecting the implementation of ERM. They can be grouped under three categories: management-based, firm-based, and ERM performance-based factors.

This study proves empirically that the ERM philosophy of an educational institution has a significant positive impact on the implementation of ERM into that institution. Furthermore, empirical evidence from this study supports the organizational governance structure, which is determined by the dimensions of organizational culture, systems and procedure, and organizational hierarchy having significant positive impacts on the implementation of ERM into that institution. Empirical evidence further indicates that the organizational ERM philosophy has a significant positive impact on the performance of non-state higher educational institutions in Sri Lanka, at a 5% significance level.

The conceptual framework of this research tested the mediating impact of the implementation of ERM integrated with the organizational governance structure, organizational ERM philosophy, and the organizational performance all for the first time—a scientific novelty for academic literature. However, the implementation of ERM does not in any way mediate the two factors and the organizational performance at the 0.05 level of significance. Two important relationships are added to the empirical literature through this study:

1. Organizational ERM philosophy has a significant positive impact on the implementation of ERM into a higher educational institution;

2. The organizational governance structure variable has two reflective significant dimensions named *organizational culture* and *systems and procedures*. The organizational governance structure of a higher

educational institution also makes a significant positive impact on the implementation of ERM at that higher educational institution.

Several limitations were confronted throughout this study, such as unavailability of disclosed financial information, the busy work schedules of the respondents, the lack of understanding of the senior managers on technical terminologies of risk management, and the pandemic situation during the study period. The letters issued by the Ministry of Higher Education of Sri Lanka to the institutions recommending and pledging their support to carry out this study gave the researchers a major advantage in overcoming the limitations during the study.

## 7. Recommendations

Having identified many organizational, human, internal, and external factors influencing the ERM implementation at higher educational institutions from the theoretical and empirical literature review, this study only tested the significant positive impact of the two main organizational factors, organizational ERM philosophy and organizational governance structure, on the ERM implementation. There is a potential for future researchers to conduct studies to identify and test the impact of other influential factors on ERM implementation in the higher education context.

Furthermore, the research model developed in this study was tested using the cross-sectional method. However, this could be examined in a pre- and post-implementation context to gain additional insights by a longitudinal study based on the proposed research framework. Its variables may explain how they change during the ERM pre- and post-implementation. Future researchers, therefore, may consider further studies in this area.

Additionally, researchers may explore other instruments to measure the same variables within the same context to check any differing outcomes of this research. As an example, in order to measure the organizational performance of higher educational institutions, the implementation of ERM, organizational governance structure, and organizational ERM philosophy indicators can be included as they contribute to 8% of the organization's performance variance, according to this study.

Furthermore, this study recommends for higher educational institutions to consider international standards such as those presented herein: COSO (The Committee of Sponsoring Organizations of the Treadway Commission, 2004, 2017), ISO 31000:2009 (International Organization for Standardization, 2009), CAS (2003), COBIT 5 (Information Systems Audit and Control Association, 2012), and COBIT 2019 (White, 2019)—to decide appropriate frameworks for managing, identifying, assessing, measuring, and responding to all types of risks that occur across institutions.

This study provides useful outcomes not only for future researchers and higher educational institutions, but also for policy decision-makers of the country. It provides findings to recommend that government authorities in policy decision-making both encourage and facilitate future researchers to focus on higher education and risk management, as empirical studies in critical literature are limited, especially in the Sri Lankan context. Decision-makers should also encourage higher educational institutions toward risk management and focused-strategy formulations.

## Acknowledgment

We thank the Malaysia Institute of Transport (MITRANS), Universiti Teknologi MARA, for funding this paper via the VANGUARD Research Grant. We also thank the reviewers who provided valuable inputs for the perfection of this scientific article.

## Co-Authors' Contributions

The authors were involved in conducting this research, advising in data collection and analysis, proofreading, and reviewing articles under the obligations of the research group members.

## References

[1] ABEYRATHNA, S.P.G.M., & LAKSHAN, A.M.I. (2021). Do Enterprise Risk Management Practices impact on Strategic Performance? – Evidence from an emerging economy. *6th International Conference on Contemporary Management*. Retrieved from https://ssrn.com/abstract=3843525

[2] ALAWATTEGAMA, K.K. (2017). The Effect of Enterprise Risk Management (ERM) on Firm Performance: Evidence from Sri Lankan Banking and Finance Industry. *International Journal of Business Management*, 13(1), 225-237. https://doi.org/10.5539/ijbm.v13n1p225

[3] ALAWATTEGAMA, K.K. (2018). The Effect of Enterprise Risk Management (ERM) on Firm Performance: Evidence from the Diversified Industry of Sri Lanka. *Journal of Management Research*, 10(1), 75-93. https://doi.org/10.5296/jmr.v10i1.12429

[4] ALAWATTEGAMA, K.K. (2019). Enterprise Risk Management Practices and Its impact on Firm Performance: Evidence from Sri Lankan Insurance Industry. *International Journal of Engineering Technologies and Management Research*, 6(12), 11-21. https://doi.org/10.5281/zenodo.3595238

[5] BONE, J., & KACHROO, G. (2021). *Human Factors: A Cognitive Risk Framework for Cybersecurity and Enterprise Risk Management*. https://doi.org/10.13140/RG.2.2.29337.54887

[6] CASUALTY ACTUARIAL SOCIETY. (2003). *Overview of Enterprise Risk Management*. Retrieved from https://www.casact.org/sites/default/files/database/forum_03sforum_03sf099.pdf

[7] CHIN, W.W. (1998). The partial least squares

approach to structural equation modeling. In: MARCOULIDES, G.A. (ed.) *Modern methods for business research*. Mahwah, New Jersey: Erlbaum, pp. 295–358. Retrieved from https://books.google.ru/books?hl=ru&lr=&id=EDZ5AgAAQBAJ&oi=fnd&pg=PA295&ots=49tE7rr2mm&sig=o9c4pGJWh59iKsZ2Si8sdLuu7Tg&redir_esc=y#v=onepage&q&f=false

[8] COHEN, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159. https://doi.org/10.1037/0033-2909.112.1.155

[9] FORNELL, C., & LARCKER, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. https://doi.org/10.2307/3151312

[10] HAIR, J.F., RISHER, J.J., SARSTEDT, M., & RINGLE, C.M. (2019). When to use and How to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24. https://doi.org/10.1108/EBR-11-2018-0203

[11] INFORMATION SYSTEMS AUDIT AND CONTROL ASSOCIATION. (2012). *COBIT 5: a Business Framework for the Governance and Management of Enterprise IT*. Retrieved from https://static1.squarespace.com/static/56b3cadb59827ecd82b02b43/t/56d8c0d84d088e673055c308/1457045725120/COBIT-5_res_eng_1012.pdf

[12] INSTITUTE OF RISK MANAGEMENT. (2018). *A Risk Practitioners Guide to ISO 31000: 2018*. Retrieved from https://www.theirm.org/media/3513119/IRM-Report-ISO-31000-2018-v3.pdf

[13] INTERNATIONAL ORGANIZATION FOR STANDARDIZATION. (2009). *ISO 31000:2009: Risk management — Principles and guidelines*. Retrieved from https://www.iso.org/standard/43170.html

[14] KARACA, S.S., & SENOL, Z. (2017). *The effect of Enterprise Risk Management on firm performance: A case study on Turkey*. Doctoral thesis, Cumhuriyet University.

[15] NAMAZI, M., & NAMAZI, N.R. (2016). Conceptual Analysis of Moderator and Mediator Variables in Business Research. *Procedia Economics and Finance*, 36, 540–554. https://doi.org/10.1016/S2212-5671(16)30064-8

[16] PERERA, A.A.S. (2019). Enterprise Risk Management – International Standards and Frameworks. *International Journal of Scientific and Research Publications*, 9(7), 211-217. https://doi.org/10.29322/IJSRP.9.07.2019.p9130

[17] PERERA, A.A.S., RAHMAT, A.K., KHATIBI, A., & AZAM, S.M.F. (2020). Review of Literature: Implementation of Enterprise Risk Management into Higher Education. *International Journal of Education and Research*, 8(10), 155-172. Retrieved from https://ijern.com/journal/2020/October-2020/14.pdf

[18] PHAN, T.D., DANG, T.H., NGUYEN, T.D.T., NGO, T.T.D., & HONG, T. (2020). The effect of enterprise risk management on firm value: Evidence from Vietnam industry listed enterprises. *Accounting*, 6(4), 473-480. https://doi.org/10.5267/j.ac.2020.4.0011

[19] SEKARAN, U., & BOUGIE, R. (2013). *Research Methods for Business. A Skill-Building Approach*. 6th ed. New Delhi: Willey.

[20] SHATNAWI, S.A., HANEFAH, M.M., ANWAR, N.A.B.M., & ELDAIA, M. (2020). The Factors Influencing the Enterprise Risk Management Practices and Firm Performance in Jordan and Malaysia. *International Journal of Recent Technology and Engineering*, 8(5), 687-702. https://doi.org/10.35940/ijrte.D8114.018520

[21] SOLIMAN, A., & ADAM, M. (2017). Enterprise Risk Management and firm performance: An integrated model for the banking sector. *Banks and Bank Systems*, 12(2), 116-123, http://dx.doi.org/10.21511/bbs.12(2).2017.12

[22] THE COMMITTEE OF SPONSORING ORGANIZATIONS OF THE TREADWAY COMMISSION. (2004). *Enterprise Risk Management - Integrated Framework - Executive Summary*. Retrieved from https://www.coso.org/Documents/COSO-ERM-Executive-Summary.pdf

[23] THE COMMITTEE OF SPONSORING ORGANIZATIONS OF THE TREADWAY COMMISSION. (2017). *Enterprise Risk Management: Integrating with Strategy and Performance - Executive Summary*. Retrieved from https://www.coso.org/Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf on 14 March, 2019.

[24] WHITE, S.K. (2019). *What is COBIT? A framework for alignment and governance*. Retrieved from https://www.cio.com/article/3243684/what-is-cobit-a-framework-for-alignment-andgovernance.html

[25] YUDIANTO, I., MULYANI, S., FAHMI, M., & WINARNINGSIH, S. (2021). The Influence of Enterprise Risk Management Implementation and Internal Audit Quality on Universities' Performance in Indonesia. *Journal of Southwest Jiaotong University*, 56(2), 149-164. https://doi.org/10.35741/issn.0258-2724.56.2.13

**参考文:**

[1] ABEYRATHNA, S.P.G.M. 和 LAKSHAN, A.M.I.
（2021年）。企业风险管理实践会影响战略绩效吗？–
来自新兴经济体的证据。第六届现代管理国际会议。取自 https://ssrn.com/abstract=3843525

[2] 阿拉瓦特加马，K.K.

（2017）。企业风险管理(风险管理)对公司绩效的影响：来自斯里兰卡银行业和金融业的证据。国际商业管理杂志，13（1），225-237。https://doi.org/10.5539/ijbm.v13n1p225

[3] 阿拉瓦特加马，K.K.（2018年）。企业风险管理(风险管理)对企业绩效的影响：来自斯里兰卡多元化产业的证据。管理研究杂志，10（1），75-93。https://doi.org/10.5296/jmr.v10i1.12429

[4] 阿拉瓦特加马，K.K.（2019）。企业风险管理实践及其对公司绩效的影响：来自斯里兰卡保险业的证据。国际工程技术与管理研究杂志，6（12），11-21。https://doi.org/10.5281/zenodo.3595238

[5] BONE, J. 和 KACHROO, G.(2021)。人为因素：网络安全和企业风险管理的认知风险框架。https://doi.org/10.13140/RG.2.2.29337.54887

[6] 伤亡精算协会。（2003年）。企业风险管理概述。取自 https://www.casact.org/sites/default/files/database/forum_03sforum_03sf099.pdf

[7] 下巴，W.W.（1998年）。结构方程建模的偏最小二乘法。在：马库里德斯，乔治亚州（编辑）商业研究的现代方法。新泽西州莫瓦：厄尔鲍姆，第295-358 页。取自 https://books.google.ru/books?hl=ru&lr=&id=EDZ5AgAAQBAJ&oi=fnd&pg=PA295&ots=49tE7rr2mm&sig=o9c4pGJWh59iKsZ2Si8sdLuu7Tg&redir_esc=y#v=onepage&q&f=false

[8] 科恩，J.(1992)。电源底漆。心理公报，112（1），155-159。https://doi.org/10.1037/0033-2909.112.1.155

[9] FORNELL, C., & LARCKER, D.F.（1981年）。评估具有不可观察变量和测量误差的结构方程模型。营销研究杂志，18（1），39-50。 https://doi.org/10.2307/3151312

[10] HAIR, J.F., RISHER, J.J., SARSTEDT, M., & RINGLE, C.M.（2019）。何时使用以及如何报告PLS-扫描电镜的结果。欧洲商业评论，31(1)，2-24。 https://doi.org/10.1108/EBR-11-2018-0203

[11]信息系统审计与控制协会。（2012）。科比特5：企业它治理和管理的业务框架。取自 https://static1.squarespace.com/static/56b3cadb59827ecd82b02b43/t/56d8c0d84d088e673055c308/1457045725120/COBIT-5_res_eng_1012.pdf

[12]风险管理研究所。（2018年）。国际标准化组织31000风险从业者指南：2018。检索自 https://www.theirm.org/media/3513119/IRM-Report-ISO-31000-2018-v3.pdf

[13]国际标准化组织。（2009年）。国际标准化组织31000:2009：风险管理——原则和指南。取自 https://www.iso.org/standard/43170.html

[14] KARACA, S.S. 和 SENOL, Z.(2017)。企业风险管理对企业绩效的影响：以土耳其为例。博士论文，库姆胡里耶大学。

[15] NAMAZI, M., & NAMAZI, N.R.（2016年）。商业研究中调节变量和中介变量的概念分析。普罗西迪亚经济与金融，36，540–554。https://doi.org/10.1016/S2212-5671(16)30064-8

[16] 佩雷拉，A.A.S.（2019）。企业风险管理——国际标准和框架。国际科学和研究出版物杂志，9（7），211-217。https://doi.org/10.29322/IJSRP.9.07.2019.p9130

[17] 佩雷拉，A.A.S.，RAHMAT，A.K.，KHATIBI，A.，和 AZAM，S.M.F.（2020年）。文献回顾：企业风险管理在高等教育中的实施。国际教育与研究杂志，8（10），155-172。取自 https://ijern.com/journal/2020/October-2020/14.pdf

[18] PHAN, T.D., DANG, T.H., NGUYEN, T.D.T., NGO, T.T.D., & HONG, T.(2020)。企业风险管理对企业价值的影响——来自越南行业上市企业的证据。会计，6（4），473-480。https://doi.org/10.5267/j.ac.2020.4.0011

[19] SEKARAN, U., & BOUGIE, R.(2013)。商业研究方法。一种技能培养方法。第 6 版。新德里：威利。

[20] SHATNAWI, S.A., HANEFAH, M.M., ANWAR, N.A.B.M. 和 ELDAIA, M.(2020)。影响约旦和马来西亚企业风险管理实践和公司绩效的因素。国际最新技术与工程杂志，8（5），687-702。https://doi.org/10.35940/ijrte.D8114.018520

[21] SOLIMAN, A. 和 ADAM, M.(2017)。企业风险管理和公司绩效：银行业的综合模型。银行和银行系统，12(2)，116-123，http://dx.doi.org/10.21511/bbs.12(2).2017.12

[22]赞助步道委员会组织的委员会。（2004年）。企业风险管理 - 综合框架 - 执行摘要。取自 https://www.coso.org/Documents/COSO-ERM-Executive-Summary.pdf

[23] 赞助步道委员会组织的委员会。（2017）。企业风险管理：与战略和绩效相结合-执行摘要。检索自 https://www.coso.org/Documents/2017-COSO-

ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf，2019 年 3 月 14 日。

[24]怀特，S.K.（2019）。什么是科比特？协调和治理的框架。取自 https://www.cio.com/article/3243684/what-is-cobit-a-framework-for-alignment-andgovernance.html

[25] YUDIANTO, I.、MULYANI, S.、FAHMI, M. 和 WINARNINGSIH, S. (2021)。企业风险管理实施和内部审计质量对印度尼西亚大学绩效的影响。西南交通大学学报, 56(2), 149-164. https://doi.org/10.35741/issn.0258-2724.56.2.13