International Journal of Multidisciplinary and Current Research ISSN: 2321-3124
Research Article Available at: http://ijmcr.com

Enterprise Risk Management and Firm Performance in Pakistan: Interaction effect of intellectual capital

Sajjad Nawaz Khan[1*], Engku Ismail Engku Ali[2], Kaleem Anjum[3] and Muhammad Noman[4]

[1]Ph.D., [2]Associate prof, [3,4]Ph.D. Scholar, School of Accountancy (UUM), Malaysia

Received 10 Dec 2018, Accepted 12 Feb 2019, Available online 13 Feb 2019, **Vol.7 (Jan/Feb 2019 issue)**

Abstract

Nowadays, business have attentive more to developed effective risk management practices to augment firm performance as manager, decision maker and policy makers are considering complete view of risk management despite of silo-based context. In current years, numbers of organizations have enhanced their performance by using ERM framework to manage varied range of risks due to this ERM is considered as much venerable practice in this era. This study examines the relationship between ERM on the firm performance with the moderating role of intellectual capital. The dependent variable firm performance measured by ROE. The data was collected by 130 non-financial listed firms from 2012 to 2015, for data analysis used multiple regression. The results indicate the positive but insignificant results between ERM and ROE. Moreover, the current study results indicating the significant positive moderating effect of IC between ERM and ROE. The current study has contributed empirically to various known relationships between the variables and expands the knowledge of literature and leaving certain aspects for future research.

Keywords: *ERM, Intellectual Capital, Firm Performance*

Introduction

Performance of firms is significantly dynamic for the stakeholder, investors, and economic development. Business investors always need greater return on their investment and proper organized business can bring greater profit in long term for its investors. Firms with greater profitability and financial performance may have good friendly environment production units, bring the high-quality products for its customers, and increase the employee income (Mirza & Javed, 2013). However, firm necessity to face different types of risks in order to attain the higher returns. Therefore, it is very important for the management to differentiate the prospect to let the organization to increase the profit whereas mitigating the risk. According to Nocco and Stulz (2006), firms which are not practicing the techniques of contemporary risk management can face loss or produce the less profit due to fast changing the technology trends and greater competitive market. Consequently, from the last few years, firms have s their conventional risk management techniques systems with ERM (Robinson, 2002). As an extension of control system, ERM processes at strategic level and unifies comprehensive risk management structure. According to Banham (2004) ERM is an integrated and inclusive technique that confirms high degree monitoring of the firm's risk portfolio in spite of analyzing the risk management separately. The main implication of ERM is to maintain the predicted cost of capital and also earnings to improve the capital efficiency of the organization (Berry-Stölzle, & Xu,2015). While, advance countries have already overcome their risk problems through sophisticated risk management system but the underdeveloped countries like Pakistan still facing this issue. Corporate sector in Pakistan are away behind to adopting the effective risk management practices. According to Subhani and Osman (2011), Pakistan scored the lowermost as compare the countries who adopt the ERM techniques in their capital markets. It is very horrible situation for Pakistan that Bangladesh got independence late to the Pakistan independence and score greater than Pakistan. So, it is very important to highlight the value of ERM in the Pakistani context.

Nevertheless, to date, there is no empirical study in the in perspective of Pakistan which ensure the influence of ERM on firm performance. ERM adoption gives the lot of benefits to firms such as the efficient coordination of compliance matters, effective use of resources, uniform risk reporting and efficiently focused risk culture. Though, it is also suggested that intellectual capital can significantly moderate the relationship between ERM and

*Corresponding author's ORCID ID: 0000-0002-4889-8556
DOI: https://doi.org/10.14741/ijmcr/v.7.1.5

firm performance (Khan &Ali, 2017). Intellectual capital of the organization is an essential determinant of the success particularly in highly competitive and knowledge base economy. Attention of the firms are shifting from tangible assets to intellectual capital as it generates competitive advantages for them (Sarmadi, 2013, Khan & Ali ,2017). Consequently, it is expected that greater intellectual capital in a firm may give boost to ERM adoption to increase the firm value.

Enterprise Risk Management and Firm Performance

In today's vibrant all around the world environment, risk management is basic concern for businesses (Gordon, Loeb, & Tseng, 2009). As stated by Stanton (2012, p. 69), "risk management refers to the process through which firms evaluate and examines intimidations, analyze substitutes and mitigates or accepts those threats". Most of researchers projected ERM is one of the effective essential tools that using by firms to reduce their potentials risks (Culp, 2002). General, the basic aim of risk management is to give constant monitoring of day to day operations, creating recovery plans and warning of whole risky activates which sometimes give abnormal revenues to the firm. There is deficiency of academic literature about the effectiveness of ERM and its influence of overall firm value (Andersen, 2008; Gordon et al., 2009; McShane, Nair, & Rustambekov, 2011, Khan & Ali, 2017). From the last decade, risk management has a captured an extensive range of risk measure as well as several risks (Nocco & Stulz, 2006). The first preference and key concern of the firms nowadays is understanding and dealing with different types of risks (Liu, 2012). Risks can turn out into a greater opportunity if dealt passably (Aabo, Fraser, & Simkins, 2005). Nowadays, corporate are low concerned about managing with various risks individually, thus, the terms such as integrated risk management, enterprise risk wide management and firm wide risk management has developed (Kalita, 2004). The capability of ERM has to retain few risks while reducing the other and thus, with refined risk portfolio management it improves the shareholder value. The number of firms, one CFO is held accountable for dealing all kind of risks but infect, risk connection and structures should be developed at every level of corporate (Moeller, 2007). While advance nation has previously adopted ERM practices but under developing economies are still on struggling stage to execute ERM framework on their capital market. For instance, Soltanizadeh, Rasid, Golshan, Quoquab and Basiruddin (2014) examined that ERM execution varies across businesses in Malaysia as firms in the technology, hotel and infrastructure sectors are most likely to execute ERM framework earlier.

Gordon *et al.* (2009) stated a holistic approach to evaluate the impact of ERM on firm performance. Through considering 112 USA firms as sample, they claimed that the link between ERM and firm performance is liable on the passable match between ERM and five factors affecting the firms i.e. board of director's monitoring, firm complexity, firm size, industry competition and environmental uncertainty. Shad and Lai (2015) found the positive link between ERM implementation and firm performance on the 120 Malaysian firms. Similarly, Ping and Muthuveloo (2015) also investigated the adoption of ERM and its impact on firm performance in listed companies of Malaysia. They also suggested that adoption of ERM can positively influence Ahmed and Manab (2016) gathered data from chief financial officers and chief risk officers in Nigeria through survey method. They purposed that ERM execution can affect positively both financial and non-financial performance of the firm. Rodrigue, Fernandes & Chan (2018) found the positive link between ERM and performance of the firm in the evidence of Brazil. Similarly, Florio and Leoni (2016) also found positive effect of ERM implementation on firm performance in Italian firms. On the other hand, Şenol, & Karaca, (2017) did not find any significant effect of ERM on firm performance. Eikenhout (2015) also found no relationship between ERM implementation and firm performance in Dutch insurance firms. Similarly, Pagach and Warr (2010) also investigate the adoption impact on firm performance and they did not find ERM adoption creating the value of firm. Base on the discussion the following hypothesis established,

H1: There is positive relationship between ERM and firm performance

Interaction effect of Intellectual Capital

In the advance economy, firms become trademark who have utilized their intellectual assets significantly. While with the high IC need for financial reporting can improve but it enhances the value of the firm. Invaluable intellectual assets in a firm may resolve the prominent issues like risk policy, neglect internal control, reporting and accountability to stakeholders, board strategy and monitoring of top management (Kirkpatrick, 2006, Khan & Ali 2017). Previous studies also claimed that firms with greater IC are good positioned to be capable withstand the impact of unanticipated changes in current economies and markets (Khan & Ali,2018). These particular firms can sufficiently anticipate the exposure to risks and can control in good way (Khan& Ali, 2017; Sofian, Tayles, & Pike, 2004). Firms with greater IC adopt ERM practices in order to impact the market and operating performance of the firm positively. The supports of resource-based view suppose both ERM and IC as the prominent resources of firm. Consequently, in line with this view, it is suggested that the joint impact of ERM and IC can improve the firm performance efficiently. On the bases discussion the following hypothesis,

H2: Intellectual capital (IC) moderate the relationship between ERM and firm performance

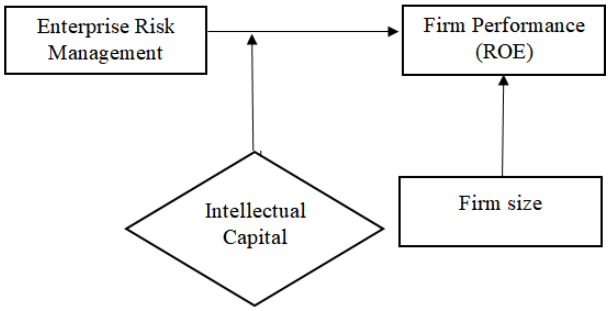

Figure 1 interaction effect of Intellectual Capital between ERM and Firm Performance

Research Methodology and Measurement of Variables Data

The purpose of the study to examine the moderating role of intellectual capital on the relationship between ERM and firm performance of Pakistani nonfinancial listed firms. Data relevant to ERM, IC and ROE measure were taken from the annual reports of listed firms on the Pakistan stock exchange during 2012 to 2015. The final sample set, after deleting firms with incomplete data, consist 520 observations for 130 firms over the period of four years.

Methodology

Researcher used for analysis penal data methodology due to sample confined data across firms and over the period. Beside, this panel data is much better to identify and evaluate the effect that simply is not measure able in the time-series data. The multiple regression analysis used to evaluate the relationship between independent variable (ERM) and dependent variable (ROE) with interaction term (IC)

Measurement of variables

Prior researches utilized the different method to measures the ERM adoption/implementation i.e survey method or dummy variables. In Pakistan disclosure policy is weak to capture these proxies. So, the most of pervious studies utilized measurement by Tahir and Razali (2011) they also evaluate the impact of ERM on firm performance in Malaysia though dummy variable(1= if company is practicing ERM, 0= otherwise). Similarly, Hoyt and Liebenberg (2008) they also used similar proxy to measure ERM and evaluate its vain insurance firms of USA. Bertinetti, Cavezzali and Gardenal (2013) also utilized dummy variable to measure ERM in European firms. Firm performance measured through ROE (net income/total equity). Intellectual capital measure through VAIC model (Pulic,2000).

Operational Model

$ROE_{it}=\alpha+\beta1(ERM_{it})+\beta2(FS_{it})++\varepsilon_{it}$ (Equation 1)

$ROE_{it}=\alpha+\beta1(ERM_{it})+\beta2(IC_{it})+)+\beta3(ERM*IC) +\beta2(FS_{it})+\varepsilon_{it}$ (Equation 2)

Empirical results

Descriptive statistics

The Person descriptive statistics of dependent and predicted variables used in this current study are represented in Table 1; which shows that average of return on equity is 11.33 percent.

Table 1: Descriptive analysis

Variables	Mean	Std. Dev.	Minimum	Maximum
Return on equity (ROE)	11.33	26.47	-170.43	116.40
Enterprise risk management (ERM)	0 .09	0 .28	0	1
Intellectual capital (IC)	16.49	113.46	-18.99	1915.92
Firm size (FS)	22.19	1.55	17.43	27.04

Moreover, the average of the ERM is 0.09 percent. The mean of the IC is 16.49 percent whereas the firm size average is 22.19 percent.

Diagnostic Tests

Regression diagnostic tests must be performed to avoid misleading results and to verify the data's compatibility for the multiple regression analysis before the model is accepted.

Table 2: Breusch-Pagan/Cook-Weisberg Test (Heteroscedasticity test)

Chi^2 (P-value)	ROE
	8.24(0.004)

Table 3: Wooldridge Test (Auto Correlation Test)

F (1, 129)	0.213
Prob.>F	8.24(0.004)

The above Table 2 & Table 3 shows the heteroscedasticity problem and no autocorrelation problem. According to (Gujarati, 2003) the issue of heteroscedasticity can be handled with help of standard error techniques.

Regression results and discussion

This study adopted two model which are showing the direct effect of independent variables on the dependent variables and also showing interaction effect in table 5&6. For the regression analysis use correlated panels corrected standard errors (PCSEs) to handle the heteroscedasticity.

Direct effect of ERM on firm performance

In this section present a discussion on the relationship between ERM and firm performance. The regression results finding shown in table 4. As represented in the table, the regression results shown the model fitness whereas P-value (0.000) and the R^2 value is 0.05 percent which implies that the independent variable explains 5% percent of the variations in the firm performance.

Table 4: Relationship between ERM and Firm performance

Variables	B-value **e**	T-value	**P-v** P-value
ROE			
Enterprise risk management (ERM)	4.17	1.04	0.299
Firm size (FS)	3.71	4.97	0.000
_cons	-71.46	-4.32	0.000
R^2	0.050		
P-value	**0.000**		

In the reference of the table II, the results of regression analysis for the ERM and firm performance relationship presents a positive insignificant (t =1.04, p = 0.299). This result indicates the hypothesis H1 is not supported. One of the possible justifications, the insignificant relation between ERM and firm performance (ROE) is due to only 9% of the Pakistani listed companies implemented the ERM framework. Moreover, the insignificant effect due the ERM implication which is supposed as investment of the business for long term survival efforts, though the proxied profitability in the ROE is a static firm performance proxy. The total depends on its profits or loss in related period. Tahir and Razali (2011) also find the insignificant relationship between ERM and ROE. Similarly, Agustina and Baroroh (2016) also find the insignificant result between ERM and ROE. The results also indicate control variable firm size has a significant relationship between ERM and ROE.

Interaction effect of IC between ERM and firm performance

This section describes the moderating effect of IC between ERM and firm performance. Accordingly, the regression analysis results shown in table 5. As depicted in the table, the regression analysis shown the model fitness where the P value (0.000) and the value of R^2 is 5.8%. This indicate that independent variables explain the 5.8% variance level of firm performance. The table also indicates the change the value of R^2 which 0.008 due to interaction term. According to hair *et al* (2006) the change in R^2 indicates the moderating effect in the model.

Table 5: interaction effect of IC on the relationship b/w ERM and Firm performance

Variables	B-value	T-value	P-value
ROE			
Enterprise risk management (ERM)	-2.70	-0.98	0.328
Intellectual capital (IC)	-0.01	-1.50	0.135
IC*ERM	1.10	5.06	0.000
Firm size (FS)	3.67	5.15	0.000
_cons	-70.45	-4.47	0.000
R^2	0.058		
Change in R^2	0.008		
P-value	0.000		

Moreover, the regression results also indicate the moderating effect of IC have significant positive effect between ERM and firm performance (ROE), where as the P-value (0.000) and T-value (5.06). This result indicates the hypothesis H2 is supported. This results also supported the view of Khan & Ali (2017) firms with greater IC are good positioned to be capable withstand the impact of unanticipated changes in current economies and markets. The results indicate control variable firm size also the positive significant relationship between ERM., IC and ROE.

Conclusion, Recommendations and Limitation

The implementation of Enterprise Risk Management (ERM) has no significant effect on the firm performance of non-financial listed firms of Pakistan. In addition, the outside party does not concentrate more on the qualitative reporting that it will be difficult to relate one another (Skerci 2015).This study also attempted to determine the moderating effect of intellectual capital (IC) in the relationship between ERM and firm performance of non-financial listed companies of Pakistan.The current study results indicates the intellectual capital have positive significant moderating effect between ERM and ROE. The current study results indicate the importance of intellectual capital in the firms. It is suggested that future studies should test this relationship separately in both financial and non-financial sector of Pakistan. The current study has contributed empirically to various known relationships between the variables and expands the knowledge of literature and leaving certain aspects for future research. Moreover, it is also suggested that intellectual capital should use as independent, moderating or mediating variable with different dependent variables. The disclosure policy of Pakistan is weak, therefore, the effectiveness of ERM cannot be tested with conventional ERM index developed by prior researchers. It is suggested that an ERM index in the reference of Pakistan should be developed to further explore the ERM success in Pakistan.

References

[1]. Aabo, T., Fraser, J. R., & Simkins, B. J. (2005). The rise and evolution of the chief risk officer: enterprise risk management at Hydro One. *Journal of Applied Corporate Finance*, *17*(3), 62-75.

[2]. Agustina, L., & Baroroh, N. (2016). The Relationship Between Enterprise Risk Management (ERM) And Firm Value Mediated Through the Financial Performance. *Review of Integrative Business and Economics Research*, *5*(1), 128.

[3]. Ahmed, I., & Manab, N. A. (2016). Influence of enterprise risk management framework implementation and board equity ownership on firm performance in Nigerian financial sector: An initial finding. *IOSR Journal of Business and Management (IOSR-JBM)*, *18*(1), 61-68.

[4]. Andersen, T. J. (2008). The performance relationship of effective risk management: Exploring the firm-specific investment rationale. *Long range planning*, *41*(2), 155-176.

[5]. Banham, R. (2004). Enterprising views of risk management. *Journal of Accountancy*, *197*(6), 65-71.

[6]. Berry-Stölzle, T. R., & Xu, J. (2015). Enterprise Risk Management and the Cost of Capital. *Available at SSRN 2656516*.

[7]. Bertinetti, G. S., Cavezzali, E., & Gardenal, G. (2013). The effect of the enterprise risk management implementation on the firm value of European companies. *Department of Management, Università Ca'Foscari Venezia Working Paper*, (10).

[8]. Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management decision*, *36*(2), 63-76.

[9]. Carrell, J. (2007). Intellectual capital: an inquiry into its acceptance. *Business renaissance quarterly*, *2*(1), 67-96.

[10]. Choudhry, W. (2010). *Enterprise Risk Management*. Retrieved from http://www.icpap.com.pk/frontend/web/attachments/newsletters/news%20letter%20June-2010.pdf

[11]. COSO (2004). *Enterprise risk management*. Committee of the Sponsoring Organizations of the Treadway Commission.

[12]. Culp, C. L. (2002). The revolution in corporate risk management: A decade of innovations in process and products. *Journal of Applied Corporate Finance*, *14*(4), 8-26.

[13]. Davenport, E. W., & Bradley, L. M. (2000). *Enterprise Risk Management: A Consultative Perspective. Casualty Actuarial Society Discussion Paper Program*. Working paper 23-42 [Online]. Available at: http://www.casact.com.

[14]. Edvinsson, L. (1997). Developing intellectual capital at Skandia. *Long range planning*, *30*(3), 320-373.

[15]. Eikenhout, L. (2015). *Risk Management and Performance in Insurance Companies*. Master's thesis, University of Twente.

[16]. Florio, C., & Leoni, G. (2016). Enterprise risk management and firm performance: The Italian case. *The British Accounting Review*. 1-19.

[17]. Gordon, L. A., Loeb, M. P., & Tseng, C. Y. (2009). Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy*, *28*(4), 301-327.

[18]. Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis (Vol. 6)

[19]. Hoyt, R. E., & Liebenberg, A. P. (2008, April). The value of enterprise risk management: Evidence from the US insurance industry. In *unpublished paper, accessed at: http://www. aria. org/meetings/ 2006papers /Hoyt_Liebenberg_ERM_070606. pdf*.

[20]. Kalita, M. (2004). Enterprise-Wide Risk Management: Myth or Reality? *Business credit New York then Columbia MD*, *106*(3), 22-23.

[21]. Khan, S. N., & Ali, E. I. E. (2017). How Intellectual Capital Moderates the Relationship between Corporate Governance and Firm Performance in the Capital Market of Pakistan: A Conceptual Review and Proposal. *Journal of Economic & Management Perspectives*, *11*(2), 359-371.

[22]. Khan, S. N., & Ali, E. I. E. (2017). The Moderating Role of Intellectual Capital between Enterprise Risk Management and Firm Performance: A Conceptual Review. *American Journal of Social Sciences and Humanities*, *2*(1), 9-15.

[23]. Khan, S. N., & Ali, E. I. E. (2018). The Moderating Effect of Intellectual Capital on the Relationship between Corporate Governance and Companies Performance in Pakistan. *Journal of Governance and Integrity 2(1), 29-55*

[24]. Kirkpatrick, M. G. (2006). Intellectual assets and value creation: implications for corporate reporting. Organization for Economic Co-operation and Development.

[25]. Liu, X. (2012). Model for Evaluating the Risk Management of Trade Enterprise with Interval Intuitionistic Trapezoidal Fuzzy Information. *Advances in Information Sciences & Service Sciences*, *4*(4).

[26]. McShane, M. K., Nair, A., & Rustambekov, E. (2011). Does enterprise risk management increase firm value?. *Journal of Accounting, Auditing & Finance*, *26*(4), 641-658.

[27]. Mirza, S. A., & Javed, A. (2013). Determinants of financial performance of a firm: Case of Pakistani stock market. *Journal of economics and International Finance*, *5*(2), 43-52.

[28]. Moeller, R. R. (2007). *COSO enterprise risk management: understanding the new integrated ERM framework*. John Wiley & Sons.

[29]. Nocco, B. W., & Stulz, R. M. (2006). Enterprise risk management: Theory and practice. *Journal of applied corporate finance*, *18*(4), 8-20.

[30]. Nocco, B. W., & Stulz, R. M. (2006). Enterprise risk management: Theory and practice. *Journal of applied corporate finance*, *18*(4), 8-20.

[31]. Pagach, D. P., & Warr, R. S. (2010). The effects of enterprise risk management on firm performance. *Available at SSRN 1155218*.

[32]. Ping, T. A., & Muthuveloo, R. (2015). The Impact of Enterprise Risk Management on Firm Performance: Evidence from Malaysia. *Asian Social Science*, *11*(22), 149-159.

[33]. Pulic, A. (2000). VAIC™–an accounting tool for IC management. *International journal of technology management*, *20*(5-8), 702-714.

[34]. Quon, T. K., Zeghal, D., & Maingot, M. (2012). Enterprise risk management and firm performance. *Procedia-Social and Behavioral Sciences*, *62*, 263-267.

[35]. Robinson, G. (2002). Exploring risk management in probation practice contemporary developments in England and Wales. *Punishment & society*,*4*(1), 5-25.

[36]. Rodrigues da Silva, J., Fernandes da Silva, A., & Chan, B. L. (2018). Enterprise Risk Management and Firm Value: Evidence from Brazil. *Emerging Markets Finance and Trade*, (just-accepted).

[37]. Sarmadi, S. (2013). Investigating of relationship between intellectual capital and financial performance of Petrochemical Companies listed in Tehran Stock Exchange. *Available at SSRN 2251620*.

[38]. Sekerci, N. (2015). Does Enterprise Risk Management create value for firms? Evidence from Nordic countries. *Essays on corporate governance, Dissertation, Lund University*.

[39]. Şenol, Z., & Karaca, S. S. (2017). The Effect of Enterprise Risk Management on Firm Performance: A Case Study on Turkey. *Financial Studies*, *21*(2).

[40]. Shad, M. K., & Lai, F. W. (2015). Enterprise Risk Management and Firm Performance Validated Through Economic Value-Added Factors. *International journal of economics and statistics,* 3, 148-154.

[41]. Sofian, S., Tayles, M., & Pike, R. H. (2004). *Intellectual capital: an evolutionary change in management accounting practices*. University of Bradford, School of Management.

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

[43]. Stanton, T. H. (2012). *Why some firms thrive while others fail: governance and management lessons from the crisis*. OUP USA.

[44]. Stewart, T. A. (1997). Brainpower: Who Owns It and How They Profit from It. *Fortune-European edition*, *135*, 64-69.

[45]. Subhani, M. I., & Osman, A. (2011). The essence of enterprise risk management in today's business enterprises in developed and developing nations. *Available at SSRN 1818862*.

[46]. Tahir, I. M., & Razali, A. R. (2011). The Relationship between enterprise risk management (ERM) and firm value: Evidence from Malaysian public listed companies. *Management*, *1*(2), 32-41.

[47]. Walker, P. L., Shenkir, W. G., Barton, T. L., & Barton, T. L. (2002). *Enterprise risk management: pulling it all together*. Altamonte Springs: Institute of Internal Auditors Research Foundation.