

“THE MEDIATING ROLE OF PERFORMANCE MANAGEMENT SYSTEM IN THE RELATIONSHIP OF ENTERPRISE RISK MANAGEMENT SYSTEM AND FINANCIAL PERFORMANCE IN THE PHARMACEUTICAL INDUSTRY OF THAILAND”

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ABSTRACT:

The aim of the current study is to investigate the mediating impact of performance management system (PMS) on the relationship of enterprise risk management system (ERMS) and financial performance (FP) in the pharmaceutical industry of Thailand. For this purpose, the data was collected from the 609 managers of the pharmaceutical industry by using purposive sampling technique which yield a 41.2% response rate. The measurement and structural model of the study was run by using a PLS-SEM. The SEM analysis of the study has shown that ERMS has a positive and significant association with the FP, and also has positive and significant association with the PMS. In addition, PMS also has a positive and significant association with the FP. On the other hand, the indirect effect also shown that PMS is significantly mediates in the relationship of ERMS and FP in the pharmaceutical industry of Thailand. These findings indicate that PMS is considered to be a significant mediator in the relationship of ERMS and FP in the pharmaceutical industry of Thailand. Based on the findings, current study contributed a body of knowledge and also shown that PMS is a significantly which is considered to be big contribution of the study. The research limitations and future directions of the study are also discussed at the end of the study.

Keywords:

Enterprise risk management, performance management system, financial performance, pharmaceutical industry, Thailand.

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INTRODUCTION

It is indicating that in this theory the organization which is established in order to generate extreme values for the shareholders, all the operational activities exposed the risk on the essential basis (Calandro Jr, Fuessler, & Sansone, 2008; Jedynek & Bąk, 2019) Therefore, Enterprise Risk Management System (ERMS) very important instrument the managers can have used it for responding of impending risks, opportunities as well as uncertainties. It also increases the efficiency and success level of an organization (Beasley, Clune, & Hermanson, 2005; Shad, Lai, Fatt, Klemeš, & Bokhari, 2019) In addition, Performance Measurement System (PMS), is another essential tool manager can have utilized that in organizational management and make sure that strategies of a firm are implemented on competently and entirely basis in this way to sustain the growth of an organizations (Kopia,

Just, Geldmacher, & BUßIAN, 2017) ERMS and PMS is more essential for the managers to make investment in it if they want to establish and manage their organizations.

ERMS and PMS an essential tool which are manager utilized for the achievement of their objects and creation of strategies. The PMS is recognized as an instrument to assist the managers for the business checking and controlling, on the other hand ERMS of COSO ERM is specifically (Beasley et al., 2005; Malik, Zaman, & Buckby, 2019) accepted tool in the worldwide that is provides helps to the managers to monitor both negative as well as positive aspects that affected on achievement of the objects of an organization (Brustbauer, 2016; Mishra, Rolland, Satpathy, & Moore, 2019) While the communication of these system towards personnel's may be contrary, it is extremely possible to doing and in this way the

organization can achieve its objectives (Woods, 2012; Zou, Isa, & Rahman, 2019)

There is association between PMS and an ERMS arising out that components which are shared (Pérez-Cornejo, de Quevedo-Puente, & Delgado-García, 2019; Quon, Zeghal, & Maingot, 2012) There is a similar framework that they have (Zaleha Abdul Rasid, Rahim Abdul Rahman, & Khairuzzaman Wan Ismail, 2011) provide help to each other (Quon et al., 2012); (Khameneh, Taheri, & Ershadi, 2016); (Kopia et al., 2017); (Kittipat Laisasikorn & Nopadol Rompho, 2019); (Arnaboldi & Lapsley, 2011); (Li, 2012). The firms that implements of the PMS determine, arguably the employ of an ERMS with more efficiently. There are the PMS is very helpful to the managers to assess and recognized essential risks which come with the objectives of an organization. The firm that implements an ERMS is also utilized more efficiently PMS too. With the line in this an ERMS make aware the employees about the possible risks beside than pay less attention only improving the performance. Furthermore, an effective ERMS indicated that enhancement in the internal processes of an organization by minimizing or reducing risk that is normally take place in the operation of an organization.

In this way improvement enhance the satisfaction level of customer and thus financial performance of an organizations. While concept of PMS and an ERMS must lead to the success of an organization and it have to integrated, it is not yet clear that uses of the PMS and an ERMS are indeed ultimately lead the financial success. For the answer of this question, the objective of these empirical studies to examine the association among level of success the PMS and an ERMS as well as financial performance of an organizations. This research pays more attention on performance of an organization which is listed in the Stock Exchange of Indonesia. Therefore, the main purpose behind the assortment of only listed organizations is that they have maximum resources and they are very large.

There are the following sectors are deal into definition of the successful PMS, an ERMS, as well as financial performance that is followed through the research methodology, results and findings, as well as conclusions.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

1.1 Financial Performance

Financial performance (FP) that refers how the organizational activities and results of them as well (Stentoft, Paulraj, & Vastag, 2015). There is no generally accepted method for measuring the performance of companies; however, business financial and accounting results are the ultimate goal of many companies (Mekel, Anantadjaya, & Lahindah, 2014). Previous experimental studies show that multidimensional structural performance could be measured by several measurement criteria (Mekel et al., 2014). Based on the conducted researches, the evaluation of organizational performance which is mainly divided into two dimensions: operational and BP (Ogbo & Ukpere, 2014). Based on this, a company's FP is called the achievement of organizational goals or as active, constructive, and effective performance (Sabry, 2015). BP is referred with the company's achievement of the shareholder's financial goals in order to increase their wealth. These goals include indicators and criteria such as profit earnings, profit of percentage of, sales revenues, market share, capacity of production and return on investment (ROI which are considered as an important part of organization's performance (Bowersox, 2013; Sanchez Rodrigues, Stantchev, Potter, Naim, & Whiteing, 2008). Business performance is one of the important concerns of shareholders and managers of economic entities and using new methods managers try to manage their organization and provide an outstanding performance (Kempkes, Koberstein, & Suhl, 2010). According to the study, in an organization the effective financial performance is measured with perspective operations of the company and

makes profits by its own resources. There is in an organizations operation the basic purpose of selection of the financial performance because it is very helpful and easily controllable for the managers. Financial performance on the market basis, such as stock return, moreover several external aspects are affected on it. The conclusion is that association among the success of financial performance of an organization and PMS as well as ERMS are not verified if there is financial performance is measures on the market bases.

1.2 Successful Enterprise Risk Management System (ERMS)

Committee of the sponsoring enterprises in the commission of the trade way (SOCO) are very helpful for development of an Enterprise Risk Management (ERM) structure which is widely used on the international basis. The basic purpose of ERM process is to recognized every situation that may can be influence on the firm and on standard level manage to risk down as a result the organization make sure that overall tasks can be achieved (Beasley et al., 2005; Hayne & Free, 2014) In addition, Stock Exchange in the Indonesia (SEI) has awareness about the significance of an ERM framework on the other hand it also very helpful for publication of an ERM framework in place of it maintained in cooperation of COSO and price water house Coopers provide guidelines for the betterment of ERM in Thailand listed companies (Chong, Lee, Saw, Toh, & Yip, 2019; Moeller, 2011). For the reorganization of ERMS success level this guide is very helpful. Therefore, the success of an ERMS is consist on the four basic sections: structure, culture, infrastructure, and process.

1.3 Culture

According to the COSO, company's culture is depending on internal environment, this allow the other factors to sustain and arise and it also perform as the foundation. For the purpose of determine an organizations risk management policy it is used on the essential basis, and it also

pay more attention the personnel quality (Kittipat Laisaikorn & Nopadol Rompho, 2019). On the other hand, if it has encouragement from in management level and lacks of accountability in this way ERMS cannot achieve success. As a result, for building a batter internal environment it is necessary for the management to determine their firm strategies, policies, and objectives in the risk management as well as describe for the organization acceptable stage of risk. It is also essential for this process to stay consistent with the current operation. There is necessary for the management to support and play a part in the risk management also provide awareness about importance of the risk management by communicate this process of risk management to their employees (Kittipat Laisaikorn & Nopadol Rompho, 2019).

1.4 Process

Without the systematic compliance successful ERMS cannot be sustainable (Beasley et al., 2005; Shad et al., 2019). There is also needs to improve and made applicable this process on the regular basis for the specific operations. In addition, according to COSO framework of ERM and ERM process is consists on the seven steps: 1) event identification, 2) risk assessment, 3) objective setting, 4) risk response, 5) monitoring, 6) information and communication, 7) control activities.

1.5 Structure

For successfully executing an ERMS there is necessary for an organization to determine proper structure for the risk management and in the process of risk management clearly recognize all the responsibilities (Hayne & Free, 2014; Pagach & Warr, 2010). At this stage all the personnel, up to as well as top management essential to be participate and involved in an ERMS. On the other hand, the standard framework of the ERMS is not providing that work for all organizations. There is to obtain the most effective an ERMS management of each organization's must design a

suitable structure for their organization, in the line with contingency theory by (Hanggraeni, Ślusarczyk, Sulung, & Subroto, 2019; Lam, 2007) Generally, an effective structure must be composed: 1) a committee towards taking the responsibility for an ERMS, such as audit committee, 2) a committee that has responsible for the developing process of an ERMS (this committee contain on the top individual level of management), in addition 3) design a department which is responsible for execution an ERMS and also determine its policies.

1.6 Infrastructure

Infrastructure is a very important foundation and driver of an ERMS and it also provide help for an effective process of an ERM (Hanggraeni et al., 2019; Kittipat Laisasikorn & Nopadol Rompho, 2019). This only implies on these organizations which have a significant infrastructure and have an efficient ERMS, contained of: 1) proper training of employees, 2) efficient system of evaluation, 3) competent personnel, 4) quality of the process of risk management review, 5) and internal and external channels of communication. Hence, this research applied by using above four factors which is evaluate the ERMS success in the firms.

1.7 Performance Measurement System

Over the years, on the performance measurement system (PMS) there is much research has been done, however each study differently defines PMS. (Kittipat Laisasikorn & Nopadol Rompho, 2019; Serpell, Ferrada, & Rubio, 2019) is studied different PMS definitions and also categorized them in three basic features: 1) PMS composition which is consist on two important components: infrastructure and the measures that helps the system; for instance, system that is gathers, categorizes, translates, compares, distributes information, and analyzes, as well as personnel system including. 2) The PMS role which is consist on the performance measurement, communication, management strategies, and

effects on the improvement and learning and behavior. 3) The PMS process, for example, the design and selection of measures, adjustment and collection of information, reward and valuation, data management, and the system review.

According to the (Buckley & Carney, 2013; Gates, 1999), there are five attributes of an effective PMS that are:

1. Clear objectives: An efficient PMS start with clear and understandable objects and make sure that in the organization everyone must aware and understand these objectives.

2. Drivers of the performance which remain consistent with important objectives: afterward employee's awareness and understanding about these important objectives, this is necessary for the PMS to make the performance measures in an organization for specific individual department that will make sure that ultimate outcomes remain consistent with main objectives of an organization's.

3. Reasonable and clear objectives for an employee: It is essential for the employee have some reasonable and clear objectives, I.e. delivery count or customer satisfaction. And also ensure that these objectives must be achievable and significant (Kittipat Laisasikorn & Nopadol Rompho, 2019).

4. Encourage the performance measurements for an employee's consistently: for the purpose of performance measurement in an organization employees training is provide, it is make sure that about the important objectives employees have understanding and awareness about their individual objectives which remain consistent with an important objects of the firms as well.

5. Clear and modest tracking system: this system has required a good process of tracking that is shows clear results in this way for the comparison against to their targets an employees

are used (Kittipat Laisasikorn & Nopadol Rompho, 2019) are developed the model for measure PMS success, which is classified success into following two aspects.

1. Success design: by considering completeness and validity of PMS there is measured the success level of PMS. It is necessary for the PMS to measure those aspects which are consistent the important issues and also complete all the main objectives in the firms. Furthermore, the all number should be possessing accountability and measurement must be appropriate, it is not too many or too few.

IMPLEMENTATION SUCCESS:

even when the PMS is designed properly, if the produced report is not providing effective picture as well as good analysis PMS is not perform successfully. The report should be used on the actual basis in the place of work and it must be timely, easily understandable and consistent. Therefore, the reporting system is individual variable which used to measure the PMS success level.

Attributes of the successful PMS is used in this paper of research as stated method of the (Arena, Arnaboldi, & Azzone, 2010) and with method of the (Hoyt & Liebenberg, 2011; Kittipat Laisasikorn & Nopadol Rompho, 2019) are measure the PMS success.

Research Hypothesis

The following research hypothesis of the study are formulated:

H:1. There is significant association between the enterprise risk management system and financial performance in the pharmaceutical industry of Thailand.

H:2. There is significant association between the enterprise risk management system and performance management system in the pharmaceutical industry of Thailand.

H:3. There is significant association between the performance management and financial

performance in the pharmaceutical industry of Thailand.

H:4. Performance management system is significantly mediating in the relationship of enterprise risk management system and financial performance of the pharmaceutical industry of Thailand.

RESEARCH METHODOLOGY

This study employed quantitative approach, employed self-administered questionnaire, and cross-sectional research design to examine the research framework and proposed hypotheses. This techniques in primary study is considered an important practical approach for providing the data which could be used for the wider generalization of the study (Truter, 2007; Zikmund, 2003). For this purpose, all the respondents were selected from the pharmaceutical industry and get the responses from the multiple industries that has been listed through works industrial work department and Ministry of Industry of Thailand. For the current study, the researcher asked questions from the 609 managers of the pharmaceutical industry to through the self-administered questionnaire which is consist of the all the study variables. Responses that were received from the respondents were 251 which is consist of 41.2% of the total response. All of the managers in pharmaceutical industry were selected by using a purposive sampling technique.

1.8 Questionnaire Description

The independent variable which is consist of enterprise risk management which is measured by four dimensions, one is culture that has five items, second is process which has nine items, third is structure which has five items, fourth is infrastructure which also has five times. The mediating variable is performance management system (PMS) which have five dimensions. One is clear objective that has five items, second is PMS completeness that has eight items, third one is PMS availability which has six items, fourth one

is complementary of managers and staff to implement the system that have five items, fifth one is The ease of application of the reporting system that has six items. All of these are adopted from the study of (Kittipat Laisaikorn & Nopadol Rompho, 2019). The dependent variable is financial performance which is measured by ten items which were adopted from the study of (Sharabati, Naji, & Bontis, 2010). The questionnaire was comprising of demographic and 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree) to collect the responses from the respondents to each mode of the hypotheses.

1.9 Analysis of the study

Several prior studies adopted partial least square – structural equation modelling (PLS-SEM) approach in testing the direct and indirect relationship of variables (Buil, Martínez, & Matute, 2018; Lim & Loosemore, 2017; Singjai, Winata, & Kummer, 2018). Therefore, the research hypotheses of present research were assessed through PLS-SEM. The measurement and structural model of the study were assessed by using Smart PLS 3 software. PLS-SEM approach is appropriate in case of non-normal data or small sample size (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). This study is in line with the study of (Ahmad, Bin Mohammad, & Nordin, 2019) who also used the Smart PLS for analyzing their results. The following measurement and structural model has been explained in the following discussion below.

1.10 Measurement model

To test the model, we used the structural equation modelling (SEM) technique through using the partial least squares (PLS) with Smart PLS 3.0

(Hair Jr, Hult, Ringle, & Sarstedt, 2016) software. This software is called a second generation software that could be used to test the complex model along with the latent variables. Table 1 is shows the results which were obtain by the measurement model. Based on the table 1, it could be clearly seen that all of the loading are above the 0.70 that is called the threshold value that is suggested by (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). The AVE (average variance extracted) of all the constructs which has exceeding value 0.5 (Bagozzi & Yi, 1988). As it is explained by that minimum value of composite reliability (CR) should be 0.70 (Hair Jr et al., 2016). So, we can conclude that convergent validity has been achieved. Table 2 and 3 further shown the discriminant validity results. Hence, it is explored by Fornell, Johnson, Anderson, Cha, and Bryant (1994) and Fornell and Larcker (1981) that minimum value of AVE in the measurement model should be minimum higher than the cross loading. As it is shown in the table 6.3 all values meet the criteria of discriminant validity.

Each construct AVE should always be higher than the correlation between all of these. It is clearly shown in the tables that all the constructs fulfill the criteria for the discriminant validity. Accordingly, it is suggested by (Soltanzadeh, Abdul Rasid, Mottaghi Golshan, & Wan Ismail, 2016) that measured variable loading should always be higher than the cross loading through at least 0.1 that is considered sufficient for the discriminant validity. As such we can conclude that discriminant validity is achieved.

Table 1: Measurement Model Results

Constructs	Items	Loadings	Alpha	CR	AVE
Culture	CUL1	0.837	0.851	0.9	0.693
	CUL2	0.785			
	CUL3	0.879			
	CUL4	0.825			
	CUL5	0.758			
Process	PRO1	0.543	0.758	0.839	0.512
	PRO2	0.702			
	PRO3	0.793			
	PRO4	0.679			
	PRO5	0.654			
	PRO6	0.675			
	PRO7	0.875			
	PRO8	0.874			
Structure	STR1	0.703	0.774	0.847	0.526
	STR2	0.701			
	STR3	0.705			
	STR4	0.814			
Infrastructure	STR5	0.796	0.834	0.798	0.654
	INFR1	0.795			
	INFR2	0.809			
	INFR3	0.839			
	INFR4	0.768			
Clear objective	INFR5	0.567	0.876	0.80	0.645
	CLO1	0.806			
	CLO2	0.786			
	CLO3	0.719			
	CLO4	0.657			
	CLO5	0.567			
PMS completeness	CLO6	0.732	0.898	0.917	0.704
	PMSC1	0.591			
	PMSC2	0.786			
	PMSC3	0.704			
	PMSC4	0.679			
	PMSC5	0.567			
	PMS6	0.54			
	PMSC7	0.782			
Managers competency	PMSC8	0.873	0.75	0.50	0.83
	MAC1	0.758			

Note: CUL- Culture, PRO-Process, STR-Structure, INFR-Infrastructure, CRO-Clo Objective, PMSC- PMS completeness, MAC-

Managers competency, RAS- Reporting Application System, PMSA-PMS Availability, FP-Financial Performance

Table 2: Fornell and Larcker Criterion for Discriminant Validity

	CUL	PRO	STR	INFR	CLO	PMSC	MAC	RAS	FP
CUL	0.755								
PRO	0.436	0.722							
STR	0.522	0.437	0.736						
INFR	0.434	0.51	0.563	0.709					
CLO	0.353	0.686	0.407	0.472	0.722				
PMSC	0.51	0.473	0.463	0.563	0.654	0.655			
MAC	0.51	0.563	0.709	0.540	0.454	0.434	0.81		
RAS	0.686	0.407	0.472	0.322	0.320	0.353	0.686	0.707	
FP	0.560	0.340	0.234	0.560	0.459	0.450	0.560	0.340	0.834

Note: CUL- Culture, PRO-Process, STR- Managers competency, RAS- Reporting Structure, INFR-Infrastructure, CLO-Clear Application System, PMSA-PMS Availability, Objective, PMSC- PMS completeness, MAC- FP-Financial Performance.

Table 3: HTMT Analysis for Discriminant Validity

	CUL	PRO	STR	INFR	CLO	PMSC	MAC	RAS	FP
CUL									
PRO	0.436								
STR	0.522	0.437							
INFR	0.434	0.51	0.563						
CLO	0.353	0.686	0.407	0.472					
PMSC	0.51	0.473	0.463	0.563	0.654				
MAC	0.51	0.563	0.709	0.540	0.454	0.434			
RAS	0.686	0.407	0.472	0.722	0.320	0.353	0.686		
FP	0.560	0.340	0.234	0.560	0.780	0.450	0.560	0.340	

Note: CUL- Culture, PRO-Process, STR- Structure, INFR-Infrastructure, CRO-Clear Objective, PMSC- PMS completeness, MAC- Managers competency, RAS- Reporting Application System, PMSA-PMS Availability, FP-Financial Performance.

1.11 Structural Model

After the measurement model, the SEM direct effect model has shown that enterprise risk management system (ERMS) has a positive and significant ($\beta=0.383$, t -statistics=3.983, $p=0.000$) association along with the financial performance (FP) which supported to the hypothesis (one). In addition, the ERMS also has a positive and significant ($\beta=0.178$, t -statistics=3.003, $p=0.003$) association with the performance management system (PMS) which supported to the hypothesis (two). Furthermore, key findings also show that PMS also has a positive and significant ($\beta=0.209$,

t -statistics=2.637, $p=0.009$) association with the FP. On the other hand, the indirect effect also shown that PMS is partially mediates ($\beta=0.154$, t -statistics=2.686, $p=0.007$) on the relationship ERMS and FP in the pharmaceutical industry of Thailand. These findings have shown that ERMS is directly and indirectly effect to FP of the pharmaceutical industry of Thailand. These findings further also shown that PMS is considered to be significant mediator because it also effects to FP directly and the FP is effected by indirectly.

Table 4: Structural Model Results

Hypothesis	Beta	SD	T Statistics	P Values	Decision
ERMS -> FP	0.383	0.096	3.982	0.000	Supported
ERMS -> PMS	0.178	0.059	3.003	0.003	supported
PMS -> FP	0.209	0.079	2.637	0.009	supported
ERMS ->PMS->FP	0.154	0.057	2.686	0.007	Supported

Note-ERMS-Enterprise Risk Management System, PMS-Performance Management System, FP-Financial Performance.

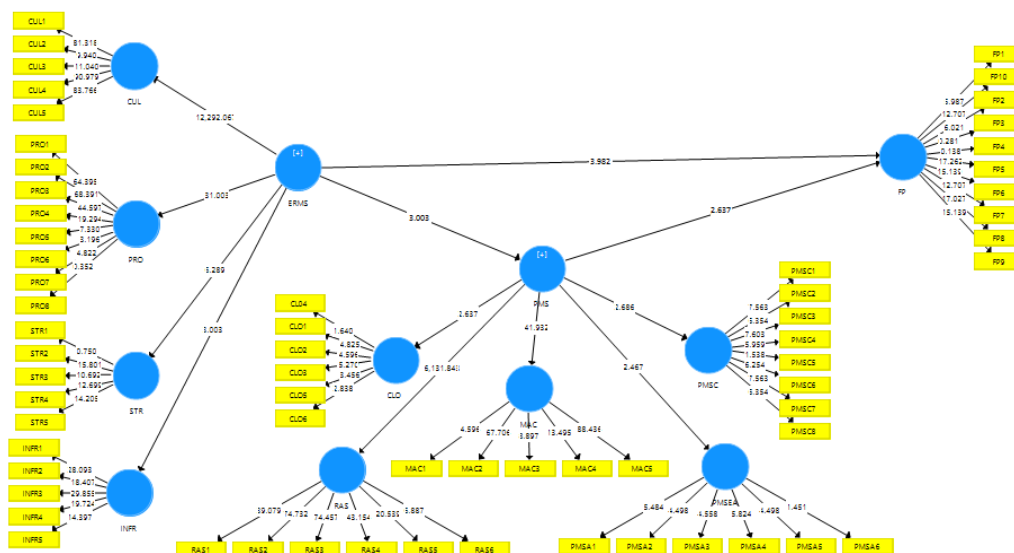


Figure 1. Structural Model of the Study

CONCLUSION

The of the current study is to investigate the mediating effect of performance management system (PMS) on the relationship of enterprise risk management system (ERMS) and financial performance (FP) of the pharmaceutical industry of Thailand. To achieve this objective several hypothesis was formulated. The study analysis was conducted on two effects, one is direct and other one is indirect. The direct effect of the findings has shown that ERMS has a positive and significant association with the FP and also with the PMS. In addition, the key findings have also

shown that the PMS also has a positive and significant association with the FP in the pharmaceutical industry of Thailand. These findings have shown that ERMS has directly

affected to the PMS and also to the FP. Also, findings further shown that PMS similarly directly effect to the FP. On the other hand, the indirect effect also shown that PMS is partially mediates on the relationship of ERMS and FP of the pharmaceutical industry of Thailand. These findings have shown that PMS is considered to a significant mediator which is partially mediates within the relationship of ERMS and FP. Therefore, it could be explaining that pharmaceutical industry of Thailand is properly managed to the ERMS to enhance their FP. Based on the findings of the study, the could contribute a body of literature in the form of empirical findings which could become a new area of research in future. Moreover, the current study could also provide help to the policy maker and risk managers to know about them to increase their

performance. Moreover, the current study also contributed a mediating impact of PMS which could become a big contribution of this study. The current study has some limitations which could become a new area of research in future. Firstly, the current study was limited one industry, therefore, the generalizability is also limited. In this regards, a future research could be established on more sectors. Secondly, current study is limited on mediating effect, hence a future research could be established along with any organization level moderating variable. Thirdly, the current study is conducted cross sectional research design in which data is collected only one time, thus, a future research could be established on longitudinal research design. Fourthly, the current study was limited on individual unit of analysis, a future research could be establishing on organization level analysis.

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