

# Enterprise Risk Management Adoption and Financial Benefits Creation: Examining the Contributions of COSO ERM Maturity and Board of Directors

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## Abstract

Studies on Enterprise Risk Management (ERM) have been extensively done in recent years. But, in effect exploit of ERM in order to make business value has been confused many firms. Consequently, the aim of this paper is to propose a conceptual framework for COSO ERM adoption and ERM maturity which were not documented well in the literature. This paper by spread over previous studies, theories and conceptual frameworks try to extant a new conceptual framework that add value to the ERM to becoming empirically linked to the expected financial benefits of ERM deployment and discourses the effect of this new approach on board of directors' monitoring and ERM maturity to improved business performance, enhanced financial results, and risk modification. The paper make a bridge to fill up a research gap in how ERM deployment and ERM maturity impact financial performance and similarly the need to a conceptual model prearranged to offer approach into expected financial benefits of ERM.

Keywords: Enterprise risk management, COSO ERM adoption, Board of directors' monitoring, ERM maturity, Firm financial performance

## 1. Introduction

Because of occurrence of earthquake in Japan and the financial crises in Europe, there has been an upward trend in deploying risk management and specifically Enterprise Risk Management (ERM). Meanwhile, ERM has been the subject of interest among business practitioners and academic. Therefore, the need for improved ERM has received significant attention in recent years due to the terrible failures of firm governance processes (Hoyt and Liebenberg, 2011; Bertinetti *et al.*, 2013). ERM potentially provides an improved approach to understanding, quantifying, and managing the risk of an organization (Lai *et al.*, 2010; Teoh and Muthuveloo, 2015). Alvinjussen and Jankensgard (2009) stated that acceptance of ERM means leaving behind the silo thinking related to risk management, where the respective department, normally responsible for that part of the business activity manages each category of risk separately. The objective of ERM is to consider all relevant risk, which may have an impact on future cash flows (Servaes *et al.*, 2009). ERM generalizes this concept beyond financial risks to include all risk facing an organization. Thus, there is a distinct contradiction in the literature on whether ERM creates or destroys shareholder value. Assuming that, the firm resource is allocated to establishing, implementing and maintaining ERM. Therefore, there is a need for more studies on the relationship between ERM and firm financial performance.

Enterprise risk management literature, recently focus on the role of the board of directors and executive management in the design and implementation of risk management processes that identify, assess, manage, and monitor risks affecting the enterprise. Consistent with these expectations and the COSO definition of ERM, the board and executive management play a major leadership role at the enterprise level. Thus, the focus on the role of the board of directors and executive management is an important component of recent developments in risk oversight and an important motivator for research about the role of boards and executive management in ERM adoption and firm financial performance as examined in this study. There are many risk management frameworks reported worldwide, among which COSO 2004 received more attention by researchers (Olsen and Wu, 2008; Teoh and Muthuveloo 2015). COSO is a leading accounting standards organization, and focuses on aiming to identify board of directors, evaluate and manage all measure corporate risks in and integrated framework (Dickinson, 2001). COSO ERM adoption in this study includes each of the eight components of the COSO ERM integrated-framework. Maturity levels for ERM components were reported by using the Capability Maturity Model (CMM) approach, which was first developed by Carnegie Mellon University in the 1980s. Each of the components of the COSO ERM integrate-framework in this maturity model is evaluated based on the five levels of the CMM (initial, repeatable, defined, managed, and optimized). Considering previous

studies, organizations are devoting to implementing and maturing ERM processes, but there is an obvious need for additional empirical research into the relationship between ERM maturity and a firm's financial performance.

In other words, there are so many researches on ERM, but a clear understanding about the association between ERM adoption, ERM maturity, and firm financial performance is not properly investigated in literature (Tavakoli and Noraini, 2014). The necessity of such approach to find maturity level and its relation with financial performance is related to the fact that the primary goal of ERM is to maximize shareholder value. While there has been significant growth in the number of ERM implementations, there is not still a clear understanding about the value created by deploying and maturing ERM. In fact, in spite of existence of strong theoretical basis for the benefits of ERM, previous studies fail to make a general statement regarding to the benefit or cost of implementing ERM across all types of entities (Tavakoli and Noraini, 2014). Thus, this research tries to fill this gap by finding the relationship between COSO ERM adoption and firm financial performance. Additionally, prior empirical studies completed have not attempted to measure ERM adoption maturity based on a formal integrated framework. For this study, the extent of ERM Maturity, as measured by the eight components of the COSO integrated framework, was examined to investigate the association of ERM adoption maturity with firm financial performance. Prior studies have treated ERM adoption as a binary variable (i.e., adopted vs. not adopted) and the extent of ERM maturity, as measured by the COSO ERM framework has not been clearly specified. Hence, this study expands the scope of study done on ERM and financial performance by investigating the relationship between COSO ERM adoption and ERM maturity on firm financial performance by considering the moderating effect of board of director.

The benefits of ERM considered in this study (capital efficiency, volatility reduction, shareholder return, firm value, and profitability) which are not comprehensively considered and evaluated theoretically and empirically. Specifically, stakeholders with risk management oversight responsibility (i.e. senior management and the board of directors) are likely to have the greatest interest to this mentioned benefits and outcomes. Therefore, as senior management considers whether to commit the necessary resources into implementing ERM, an understanding of the expected future benefits of such an implementation must be obtained.

The rest of this research structured in following sections. Section 2 introduces the theoretical support. Section 3 elaborates on literature review, the conceptual research model and develops the propositions. Section 4 describes the validation methodology of the conceptual model. Section 5 explains the contribution of the study. Section 6 discusses the limitation and future research and Section 7 concludes this paper.

## 2. Theoretical Foundations

To support and observe the assortment of relation connecting COSO ERM adoption components, ERM maturity and firm financial performance, contingency theory and Capability Maturity Model (CMM) is widely accepted and applied. In the following part contingency theory, CMM and its comprehensive discussion will be presented.

### 2.1 Contingency Theory

Considering the point that this study deals with handling the risk and referring to the fact that there is not any certain best approach to control risk, this study adopts contingency theory as the underlying theoretical foundation, on which the relationships are drawn. This is related to the contingency theory's emphasis on the view that there is not any certain best approach for managing risk. Contingency theory can explain why certain management practices perform properly in some situations, while are ineffective in other circumstances. (Longenecker and Pringle, 1978). With regard to application of contingency theory in organizational studies, Kast and Rosenzweig (1973) have stated that the theory adopts a middle position between two points of an spectrum:

- i. Existence of universal baselines for management and organizations.
- ii. Uniqueness of each organization requiring separate analysis of each situation.

Such moderate orientation from contingency theory matches with the aim of this study, as the related theory of risk management, on one hand, addresses the complicated situation existing in the process of risk management in the construction projects, and on the other hand tries to exploit the facultative factors to mitigate the negative effect of risk. Contingency theory suggests that that there is one most proper approach for handling a particular situation through considering the contingency factors around that specific condition. With regard to description of contingency in projects, it is the matter of relationship between external environmental origins of risk as the external contingency factors and the internal components of a system (Longenecker and Pringle, 1978).

### 2.2 Capability Maturity Model (CMM)

Several researchers have successfully developed risk management maturity models that can be used for assessing and understanding an organization's risk maturity level. Most risk maturity models are based on the Capability Maturity Model (CMM), which was first developed by Carnegie Mellon University in the 1980s. The CMM was developed to assess the engineering and management practices for software organizations (Zou *et al.*, 2009). The CMM' framework defines a progress path from an ad-hoc,

immature process to a mature, disciplined process concentrated on constant enhancement. The CMM classifies software organizations into five levels of maturity: initial, repeatable, defined, managed, and optimized.

**Level one**, initial phase: The process based on software is an ad hoc process, which is chaotic. At this phase, accomplishment relies on individual attempt. At this stage, using a former process makes problems for staff to fulfil their commitments. Products are produced beyond the projected budget and big variations are evident in cost and quality objectives. Capability is implied as an individualized feature not an organizational characteristic.

**Level two**, repeatable phase: At this phase, process management developed to monitor timetable, prices and applicability. The necessary process baselines are provided in order to repeat earlier achievements on projects in similar applications.

**Level three**, defined phase: The process based software is profiled, uniformed and embedded into a standard software process for the firm in both management and engineering functions. All firms are to apply an appropriate form of the establishment's standard software process for ensuring the functionality of software.

**Level four**, managed phase: In this phase software process and product quality with scale details are composed and quantitatively implied and monitored. The difference in performance of the process is narrowed down to lie in reasonable quantifiable boundaries and exceeding bounds are identified. Corrective actions can be taken measureable and expectable.

**Level five**, optimizing phase: Constant enhancement in process is empowered by quantifiable feedback from the development, conducting inventive designs and knowledge.

### 3. Literature Review

#### 3.1 Enterprise Risk Management

There are various definitions for Enterprise Risk Management (ERM). For example, it is implied as an integrated framework that can be applied for handling credit risk, market risk, operational risk, economic risk, political and social risk to enhance the value obtained by firms (Lam, 2000). Casualty Actuarial Society (CAS) (2003) refers to ERM as rules and baselines, with which a firm is capable of assessing, controlling, financing and monitoring risks from all origins in order to rise the firm's short and long run value to its stakeholders. Additionally, the Committee of Sponsoring Organization of the Treadway Commission (COSO) in 2004, released the Enterprise Risk Management Integrated Framework (ERM-IF). COSO explains ERM as a technique, influenced by an entity's board of directors, administration and other

employees, functional in strategy setting and all the through the firm, intended to recognise possible dealings that may affect the firm, and manage risk to be within its risk appetite, to deliver rational pledge regarding the accomplishment of firm objectives. Makomaski (2008) defines ERM as a decision-making discipline that addresses variation in firm goals.

According to the conceptualization presented by Alviuinessen and Jankensgard (2009), ERM is deals with adopting a holistic view for handling risk, in which the information from different parts are centralized. Accordingly, the term "Risk Universal", has appeared meaning that risk is likely to influence on the future cash flow, profitability and gaining sustainable competitive advantage. This advantage can be achieved through risk mapping process, in which accessing the probability and consequence of risk on the firms' objectives is assessed. Thus, ERM can be implied as integrative system for controlling risk, which guarantees that firms will achieve their projected objectives.

#### 3.2 Board of Directors Monitoring

Enterprise risk management literature, recently focus on the role of the board of directors and executive management in the design and implementation of risk management processes that identify, assess, manage, and monitor risks affecting the enterprise. Consistent with these expectations and the COSO definition of ERM, the board and executive management play a major leadership role at the enterprise level in influencing management of specific risks (i.e., operational, compliance, reporting risks, etc.) by other managers and employees at lower levels of the organization. This view is confirmed by recent research that finds the level of top-down executive engagement and the resultant cascade of ERM culture throughout the firm is the most important aspect explaining valuation premiums for firms with more mature ERM (Farrell and Gallagher, 2014; Teoh and Muthueloo, 2015). Thus, the focus on the role of the board of directors and executive management is an important component of recent developments in risk oversight and an important motivator for research about the role of boards and executive management in ERM adoption and firm financial performance as examined in this study.

#### 3.3 ERM Maturity

For this paper, in order to measure ERM maturity (as defined by the COSO ERM framework), the Protiviti COSO ERM model was leveraged and incorporated. The Protiviti COSO ERM maturity model identifies the maturity level of each process using the CMM framework. The CMM framework defines an enhancement route from an ad-hoc, immature process to a mature, disciplined process concentrated on constant development. The CMM has five levels of maturity: initial, repeatable, defined, managed, and optimized. Therefore, the COSO ERM framework was selected to measure the extent to which organizations have adopted and matured ERM processes

with applying Protiviti COSO risk maturity model by deploying component of COSO ERM as bellow:

- i. Internal Environment.
- ii. Objective Setting.
- iii. Event Identification.
- iv. Risk Assessment.
- v. Risk Response.
- vi. Control Activities.
- vii. Information and Communication.
- viii. Monitoring.

### 3.4 Firm Financial Performance

#### 3.4.1 Capital Efficiency Metrics

Capital efficiency measures how efficiently a firm uses capital to generate profits (Moyer, McGuigan, and Kretlow, 2009). For this study, Return On Assets (ROA), Return On Equity (ROE), and Return On Invested Capital (ROIC) were evaluated over a one, three, and five year time-horizon. ROA was calculated as Net Income divided by Total Assets, ROE was calculated as Net Income divided by Total Equity, and ROIC was calculated as Net Income divided by (Equity + Long Term Debt).

#### 3.4.2 Profitability Metrics

In General, profitability reflects a firm's ability to produce a good or provide a service at a low cost or high price (Ross *et al.*, 2002). For this study, Net Profit Margin (NPM), Operating Profit Margin (OPM), and Gross Profit Margin (GPM) measured profitability over a one, three, and five year time-horizon. NPM was calculated as Net Income divided by Total Revenue, GPM was calculated as Gross Profit divided by Total Revenue, and OPM was calculated as Operating Income divided by Total Revenue.

#### 3.4.3 Shareholder Return and Firm Value

Financial metrics related to shareholder return and firm values were used for this analysis. For this study, Total Shareholder Return (TSR), Tobin's Quotient, and Price-to-Earnings (P/E) metrics were used. TSR was measured over a one, three, and five year time-horizon. TSR is defined as the total return realized by shareholders once dividends, stock splits, and capital appreciation have been accounted for. TSR was calculated as (ending price - beginning price + dividends) divided by beginning price. Tobin's quotient was used as a measure of firm value as it is the most commonly applied scale value of firm in practical ERM researches (Smithson and Simkins, 2005). Tobin's quotient was calculated as (market value of equity + book value of liabilities) divided by (book value of liabilities + book value of equity) as of the end of FY14. Finally, P/E ratio was calculated as of the end of FY14. P/E ratios provide a measure of market perception of a firm (high values being favourable and low values being unfavourable). P/E ratio

was calculated as stock price-per-share divided by earnings-per-share.

#### 3.4.4 Volatility

Based on the review of literature conducted in chapter two, an indirect relationship is expected to exist between firm volatility and ERM maturity. For this study, volatility was measured as the standard deviation of daily stock price returns for one, three, and five-year time horizons, where standard deviation is defined as:

$$\text{Standard deviation of rd} = \sqrt{\text{variance (rd)}}$$

Whereas: Variance (rd) =  $1 / (N-1) * (rd_t - rd)^2$ ,  $rd_t$  is the daily stock return in period t,  $rd$  is the mean of the values of  $rd_t$  and N is number of observations (days).

## 4. Developed Conceptual Framework and Propositions

The conceptual framework (see Fig. 1) illustrated relationship between COSO ERM adoption and ERM maturity to firm financial performance by moderating effect of board of director between COSO ERM adoption and firm financial performance. Therefore, following propositions are recommended by this paper for further research on.

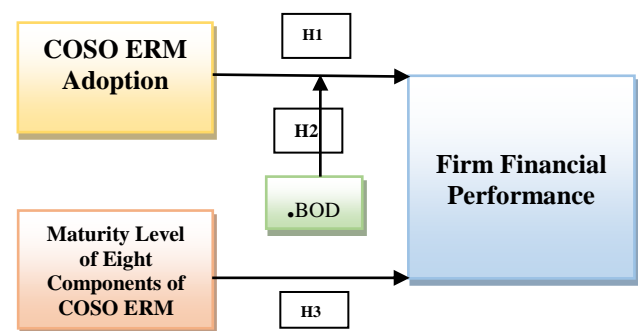


Fig. 1. Proposed Conceptual Framework

P1: COSO ERM adoption has positive effect on firm financial performance.

P2: The relationship between ERM adoption and firm financial performance is moderated by board of directors' monitoring.

P3: ERM maturity has positive effect on firm financial performance.

#### 4.1 COSO ERM Adoption Influence Firm Financial Performance

While, separate outcomes of different risk management actions are obvious, there are shortcomings in related to the traditional "silo" attitude to risk management. Handling risk in each distinct class of silo forms incompetence owing

to shortage of organization among various risk management departments (Hoyt and Liebenberg, 2008). Through join in decision making across all risk classes, entities are capable to escape repetition of risk management expenses by exploiting natural hedges. Firms, which implement ERM are capable to well collective risk essential in different business activities (Hoyt and Liebenberg, 2011). Referring to COSO, ERM is projected to support consciousness of the homes of risks and statement them by improving strategic and operational decision-making. In consequence of enhanced competence, firm outcomes would growth, volatility have to reduction and cost of capital would be reduced, hence firm value have to growth (Beasley *et al.*, 2008; Bertinetti *et al.*, 2013). In spite of the theoretical incentives, if and to which extent ERM adds value is yet to be proven. In fact, there is little evidence in literature of empirical studies on the effect of ERM on firm value and most of the available studies target only financial institutions. The few studies available generally report positive correlation between ERM adoption and firm financial performance. To be able to provide a more detailed scholarly explanation about the relationship between ERM adoption and firm financial performance the following proposition is formulated.

P1: COSO ERM adoption has positive effect on firm financial performance.

#### *4.2 Moderating Effect of Board of Directors' Monitoring Between COSO ERM Adoption and Firm Financial Performance*

Implementation of ERM is require to the involvement from most of the groups from different levels in a firm. COSO (2004) acknowledged several groups of control governance that perform inevitable character in order to give insurance that the implementation of ERM could result in to success in make business value. The board of directors performs a crucial character in checking managerial board activities on behalf of the shareholders. CEO and the board of directors are in charge for strategic direction setting of the entity and forming the surroundings for an effective ERM deployment. In effect ERM deployment has need of the robust guarantee from top management and the board of directors. (Kleffner *et al.*, 2003b; Shenkir and Walker, 2006; Daud and Yazid, 2009). It is mentioned that an effective ERM deployment is hooked on lively partaking by entities' board of directors (Sobel and Reding, 2004; Teoh and Muthuveloo, 2015). Consistent with COSO 1992 and 2004, setting up a risk management commission on the board confirmations a countless anxiety of the significance of risk management and control. Above discussion recommends that there should be a positive relation between the boards of directors' monitoring with ERM deployment and creation value of entities. For that reason, the recommended proposition is presented as below:

P2: The relationship between ERM adoption and firm financial performance is moderated by board of directors' monitoring.

#### *4.3 ERM Maturity Influence Firm Financial Performance*

The increment of types and complexity of risks and uncertainty push entities to distinguish the importance of them in order to realise the recognized objectives and benefits. Deployment of an Enterprise Risk Management (ERM) framework promote and supports the risk consciousness at all entities' level, from operative to strategic, and personnel to top management. ERM cannot be considered as a standing one-phase process, nevertheless it should be drive in the organization and with dynamism improved to the changing external and internal environment. By adopting a new mind set for control governance, organizations can spread over a risk-based process framework of identify, assess, evaluate, mitigate and monitor within each business process. The risk maturity model measures the degree to which these events are prevalent inside business processes. Various managers misjudge these processes as single to ERM, when in fact the phases are iterative, continuously reoccurring within organizations but without any defined standardizations and process. Scholars have generally failed to report studies to propose robust and rigorous models to evaluate the quality, or maturity, of ERM deployed by firms (Monda and Giorgino, 2013). For a deeper understanding and as well as providing scholarly explanation on the relationship between ERM Maturity and Firm financial performance the following proposition is formulated.

P3: ERM maturity has positive effect on firm financial performance.

### **5.0 Validation Methodology of the Conceptual Model**

This paper is proposed a conceptual model which is shade a light for both scholars and practitioners to make a clear understanding about real financial benefits of COSO ERM adoption and role of board of directors' monitoring on them. This paper add value to the knowledge by preparing a theoretically supported conceptual model that presents on the relationship of COSO ERM adoption and board of directors' monitoring, some of which have been empirically validated and as some which have not. Additionally, this study offered an overview into other presented firm values and benefits in the literature that their relationship by COSO adoption is not examined previously. The paper offered to practitioners a framework which calls firm value and benefits and theoretically supported COSO ERM adoption, ERM maturity and board of directors' monitoring, which practitioners can apply as tools to promote and optimize firm financial performance. On the other hand, current paper only formulates the first step in presenting a model for optimization firms' value creation by ERM and does not examine their relationship in previous. In this paper the offered model is rationally validated by making discussion about characteristics of the framework with comparing them with other previous ERM adoption model. This study focuses on studies in the past

20 years which are more significant in ERM adoption. Several papers from 1995 to 2015 were reviewed by searching the key words “ERM adoption”, “ERM maturity” and “ERM and firm financial performance”. The final research model provided in current study is depicted in Fig 1.

## 6. Contribution of the Study

This paper offer a new perspective to ERM adoption by highlights the significant role of ERM adoption on firm financial performance and benefits. Furthermore, this study proposes the relationship between the quality and maturity level of ERM and firms’ value creation by deployments of ERM. In summary, this study makes several contributions to the ERM frameworks. The first contribution is related to COSO ERM adoption. However, there are still debates among academics that how enterprise risk management can assist organizations in achieving their financial goals. At least part of the debate is which framework of enterprise risk management (e.g. COSO ERM) is appropriate for industries to achieve their financial benefits. This study attempts to theoretically, empirically and comprehensively facilitate toward a better understanding of the effect of COSO ERM adoption on firm financial performance. The second is related to the relationship between ERM maturity and firm financial performance. Previous studies in literature failed to address the clear understanding of link between levels of COSO ERM maturity and achieving financial benefits. This study by presenting comprehensive discussion, tried to present clear understanding of level of ERM maturity based on capability maturity model also make a bridge between them and financial performance. The third is related to the role of board of directors’ monitoring to the effectiveness of ERM adoption framework. This study expands upon previous studies into the benefits of COSO ERM adoption by examining the moderating effect of board of directors’ monitoring between COSO ERM adoption and firm financial performance.

In addition, this research paper provides a new conceptual framework for ERM adoption and maturity. The study by synthesizing COSO ERM adoption, ERM maturity, firm financial performance and moderating effect of board of directors’ monitoring will try to provide a comprehensive model for ERM integrated framework. Therefore, the results of the study may provide a new platform for ERM approach. Likewise, practitioners whom experienced collapse in their ERM activities and have struggle with their financial values’ difficult situation can have a much better reaction to come out with its difficulty to speed up the value creation of the ERM adoption and the achievement of its benefits.

## 7. Limitation and Future Research Directions

The conceptual model that is proposed in this paper has not been empirically examined yet. Although some ERM framework presented to evaluated the relationship between

ERM adoption and firm performance but mostly focus of organizational performance and a comprehensive component of financial performance and benefits which can result in from effective deployment of ERM has not been presented previously, so further studies must be established to examine this relationship empirically. Further limitation of the study is that the behavioral perspective in ERM adoption and how they can promote ERM adoption outcome have not been assessed yet. Future studies may focus on preparing how different kinds of behavior i.e., personal or group, more precisely in the ERM field, could affect value creation at different levels. In addition, while there are some researches that observe the force of ERM adoption on firm financial performance and benefits, there are still need to investigate the impact of some antecedents of ERM adoption. Given the lack of research on ERM maturity, firm financial value creation and benefits, this paper suggested that future works could not only focus to examine the impact of presented framework on firm financial performance empirically, and must go further and explore what are the antecedent of these construct, and what can impact on those? Additionally, are there any mediator or moderator factors that can impact on strength or weakness of this relation? While some questions left unanswered, the researcher of this study wish that future researchers fit in these recommendations to contribute improvement in knowledge in the area of COSO ERM adoption.

## 8. Conclusion

The financial crisis of 2008-2009, which is widely considered the greatest global economic crisis since the great depression of 1929-1933, has led to the widespread adoption of ERM. While there has been significant growth in the number of ERM implementations, there still fails to be a clear understanding of the association between ERM and firm financial performance. This paper expands upon previous inquiries into the financial benefits of ERM adoption by preparing initiatives for empirical testing the association between COSO ERM adoption and ERM maturity, as defined by the COSO ERM framework, and firm financial performance. Additionally, this study attempts to understand if specific components of ERM, based on the COSO ERM framework, are associated with firm financial performance. Finally, the study investigated the moderating relationship of board of directors’ monitoring and firm financial performance. The results of this study are important to the growing research on ERM, as previous research has not investigated the association between ERM adoption and maturity, as defined by the COSO ERM framework, and firm financial performance. Additionally, previous research has not investigated the association between individual COSO ERM component maturity and financial performance. Finally, previous research has not tested such a robust set of financial metrics. The findings of this study provide new insights to organizations and business leaders as they determine the

most effective ways to manage enterprise risks in the future.

This study strongly provide a deeper understanding of how contingency theory works in practice and modifying the theory from a conceptual theory to a more tangible and meaningful theory. Results of this study highlighted the effect of COSO ERM adoption and maturity and board of director's monitoring on firm financial performance. Finally, the study could be used as guide to encourage managers to focus more on COSO ERM to obtain more financial benefits in organizations.

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