A Study of the Relationship Between a Successful Enterprise Risk Management System, a Performance Measurement System and the Financial Performance of Thai Listed Companies

Kittipat Laisasikorn
Thammasat Business School

Nopadol Rompho
Thammasat Business School

In this era of globalization, managers are constantly facing uncertainties. To meet all risks successfully, substantial investments have been made in setting up an enterprise risk management system (ERMS) and a performance measurement system (PMS) with the aim of ensuring sustainable growth. At the same time, it remains unclear whether the success of ERMS and PMS does truly enhance the financial performance of an organization. This research arose out of the desire to examine this relationship by collecting data from persons directly involved with these two systems. The results of the study indicate that success of the ERMS and PMS have a weak positive correlation with the financial performance of an organization as measured by return on assets (ROA), return on equity (ROE) and earnings per share (EPS). It does, however, prove to be essential that managers develop, improve and utilize both systems in order to gain a competitive advantage and sustain the growth of an organization.

INTRODUCTION

Under the theory that a company is set up in order to create maximum value for all stakeholders, all activities related to operations are as of necessity exposed to risk (Calandro et al., 2006). The Enterprise Risk Management System (ERMS) is a tool managers can utilize to respond to impending risks, uncertainties and opportunities. It efficiently and effectively increases the value of a firm (COSO, 2004). Added to this is the Performance Measurement System (PMS), another important tool, that managers can use in the management of their organizations to ensure that the company's strategies are competently and wholly implemented in order to sustain the organization's growth (Rompho, 2011). The desire to manage and organize their firms has led managers to invest in both ERMS and PMS.

ERMS and PMS are tools managers can use to create strategies to achieve their objectives. The PMS is known as a tool to assist managers in the control and monitoring of their businesses, while the ERMS, especially the COSO ERM (COSO, 2004) is a globally accepted tool that helps managers look at both positive and negative factors that may affect the achievement of organizational objectives (Beasley, et al., 2006). Although the communication of both systems to employees may be different, it is eminently possible to do so and thereby accomplish the organization's objectives in the same way (Woods, 2007).

There is a link between ERMS and PMS arising out of shared components (Beasley et al., 2006). They have a similar framework (McWhorter et al., 2006) and support each other (Beasley et al., 2006; Calandro et al., 2006; Nagumo et al., 2006; Miyake et al., 2009; Palermo, 2010; BRC Resolver Inc., 2011). An organization that implements the PMS will, arguably, employ ERMS more efficiently. The PMS helps managers identify and assess important risks that come with their organization's objectives. An organization that implements the ERMS will use the PMS more efficiently as well. The ERMS makes employees in an organization aware of possible risks ahead rather than narrowing the focus to improving performance alone. Additionally, an efficient ERMS leads to improvement in internal business processes by reducing or eliminating risks that normally occur in business operations. Ultimately this improvement increases customer satisfaction and thus the organization's financial performance.

Although conceptually ERMS and PMS should be integrated and should lead to organizational success, it is still unclear whether the utilization of both ERMS and PMS will indeed eventually lead to financial success. To answer this question, this empirical study aims to investigate the relationship between the success level of the ERMS and the PMS and the organization's financial performance.

This research will focus on the performance of Thai firms listed on the Stock Exchange of Thailand. The reason behind the selection of solely listed firms is that they are large and have access to greater resources, making them able to use both ERMS and PMS, which require extensive resources to implement.

The following sections will deal with the definition of a successful ERMS, PMS, and financial performance followed by research methodology, findings and results, and conclusions.

A DEFINITION OF SUCCESSFUL ENTERPRISE RISK MANAGEMENT SYSTEM (ERMS)

The framework of Enterprise Risk Management (ERM) that has been most extensively used worldwide was developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The ERM process was designed to identify every possible situation that could conceivably affect an organization and manage risk down to an acceptable level so that the company could be reasonably sure it would achieve its overall mission (COSO, 2004). The Stock Exchange of Thailand (SET) is aware of the importance of the ERM framework and has supported the publication of the ERM framework as set out by COSO in cooperation with PricewaterhouseCoopers to suggest guidelines for excellence in ERM for listed companies in Thailand (PricewaterhouseCoopers and The Stock Exchange of Thailand, 2003). This guide helps identify the level of success of the ERMS. In line with this, we classify the components of a success ERMS into four main sections: culture, process, structure, and infrastructure.

Culture

According to COSO, the culture of an organization is the internal environment, which acts as a foundation that will allow other components to arise and sustain. It is also an essential basis from which to determine the company's risk management policy, which emphasizes quality of personnel. The ERMS cannot succeed if it lacks accountability and encouragement from the management level. Therefore, management must build a good internal environment in their organization by determining policies, objectives, and strategies in risk management and define the acceptable risk level for the organization. The process also needs to be consistent with current operations. Management must support and participate in risk management and communicate this risk management process to their employees so that they will also be aware of the importance of risk management.

Process

A successful ERMS would not be sustainable without systematic compliance. Also the process needs to regularly be improved and made applicable for specific operations. According to the COSO ERM framework, the process of ERM consists of seven steps: 1) objective setting, 2) event identification, 3)

risk assessment, 4) risk response, 5) control activities, 6) information and communication and 7) monitoring.

Structure

An organization that has successfully implemented an ERMS needs to determine a suitable structure for risk management and clearly identify responsibilities in the risk management process. All employees, up to and including top management, need to be involved and participate in the ERMS. However, there is no best standard structure of an ERMS that works for every company. Each company's management should design a structure that best suits their organization and operations to obtain the most efficient ERMS, according to the contingency theory (Morgan, 2007). In general, an efficient structure should be composed of: 1) a committee that is directly responsible for the ERMS, for instance, the audit committee, 2) a committee to take responsibility for developing the ERMS process (this committee should be made up of individuals at the top executive level), and 3) a department designated as responsible for applying the ERMS to determine the policy and its implementation.

Infrastructure

Infrastructure is the foundation of the ERMS and is the driver and support for an efficient ERM process. This implies that an organization that has a successful ERMS has a good infrastructure, comprised of: 1) competent personnel, 2) efficient evaluation system, 3) proper employee training, 4) internal and external communication channels, and 5) quality of risk management process review.
This research is applied using all four of the above components as variables to evaluate the success of an ERMS in an organization.

DEFINITION OF A SUCCESSFUL PERFORMANCE MEASUREMENT SYSTEM (PMS)

Over the years, there has been much research done on a Performance Measurement System (PMS), though each study defines PMS differently. Franco-Santos et al. (2007) studied the various definitions of PMS and categorized them into three aspects: 1) The composition of the PMS, which has two main components: the measures and the infrastructure that supports the system; for example, the system that gathers, compares, categorizes, analyzes, translates, and distributes information, including the personnel system. 2) The role of the PMS, which includes performance measurement, strategy management, communication, influence on behavior and learning and improvement. 3) The process of the PMS, i.e. the selection and design of measures, information collection and adjustment, data management, evaluation and reward, and system review.
According to Carney (1999), the five attributes of a successful PMS are as follows:
1. *Clear objectives*: A PMS should start from clear and easily understood objectives and ensure that everyone in the organization understands and is aware of the objectives.
2. *Performance drivers which are consistent with the main objectives*: After the employees understand and are aware of the main objectives, the PMS then needs to create performance measures for each specific department in the organization that will ensure the ultimate outcome is consistent with the organization's main objectives.
3. *Clear and reasonable objectives for the employee*: Employees need to have clear and assessable objectives, for example customer satisfaction or delivery count. These objectives also must be fair and achievable.
4. *Encourage performance measurements for employees consistently*: As the company provides training to employees with regards to performance measurements, it should ensure that the employees have a good understanding of the main objectives and that their individual goals are consistent with the main objectives of the organization as well.
5. *Clear and simple tracking system*: The system needs to have a tracking process that shows a clear outcome so that employees can use it for comparison against their targets.

Rompho and Boon-itt (2012) also developed a model to measure the success of PMS, which categorizes success into two aspects as follows.

1. *Design success*: The level of PMS success can be measured by considering PMS validity and completeness. The PMS needs to have measures that are consistent with the main objectives and complete in addressing all the important issues in an organization. Additionally, the number of measures should be appropriate, not too few or too many, and all must possess accountability.

2. *Implementation success*: Even when a PMS has been designed properly, it cannot be successful if the report produced cannot provide an accurate picture or a good analysis. The report should be easily understandable, timely and consistent, and actually used in the workplace. The reporting system thus is one of variables used measure the level of PMS success.

This research paper has used the attributes of a successful PMS according to the method of Carney (1999) along with the method of Rompho and Boon-itt (2012) to measure the success of a PMS.

**DEFINITION OF SUCCESS OF FINANCIAL PERFORMANCE OF AN ORGANIZATION**

In this study, the successful financial performance of organization is measured from the perspective of an organization's operations by considering the profit generated by its resources. The reason to select only financial performance from operations is that this performance is easiest for managers to control. Market-based financial performance, such as price to earnings ratio or stock return, on the other hand, can be affected by various external factors. This means the relationship between the success of ERMS and PMS and the financial performance of a company cannot be verified if market-based financial performance measures are used.

In this study, the financial measures selected as dependent variables are as follows:

1. *Return on Assets (ROA)*. This is a ratio between net profit and the average value of an organization's assets for the whole year. This measure shows the organization's efficiency in managing its assets in the generation of revenue and indirectly affects the value of a firm.

2. *Return on Equity (ROE)*. This is a ratio between net profit and the average value of common shares for the whole year. It demonstrates the organization's profitability from the perspective of the owners.

3. *Earnings per Share (EPS)*. This is a ratio between net profit and the number of common shares for a specific year. This shows the return for shareholders generated by profits per share.

In line with the literature reviews above, a conceptual model is then created as shown in Figure 1 below.

FIGURE 1
CONCEPTUAL MODEL OF THE STUDY
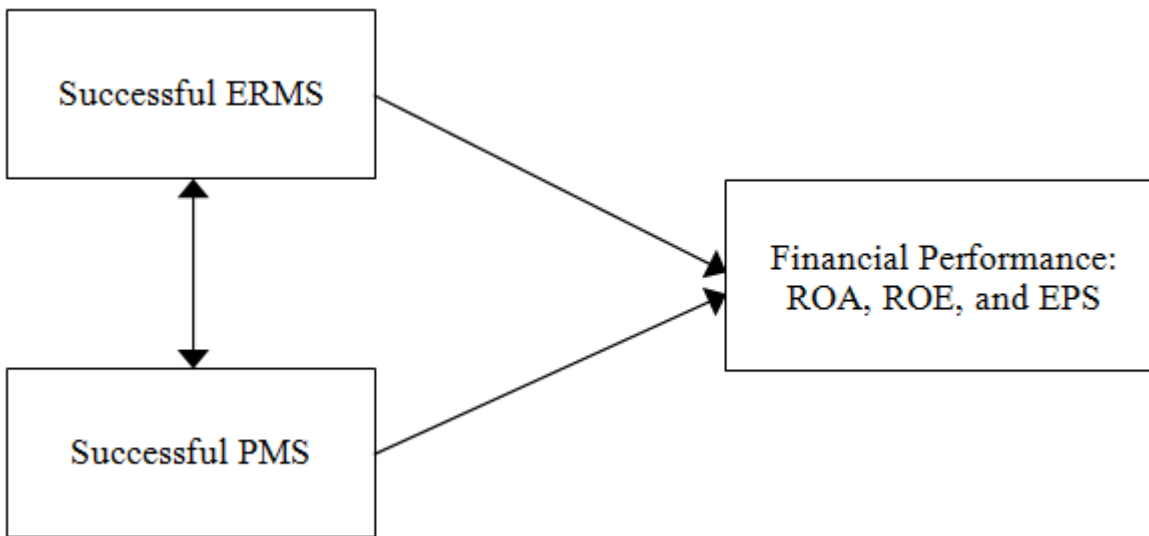
RESEARCH METHODOLOGY

This study applied a quantitative approach by collecting the primary data from a questionnaire sent to management directly involved with ERMS and PMS in companies listed on the Stock Exchange of Thailand. The questionnaire consists of three parts:

1. *Part one* is related to the characteristics of a successful ERMS. Each respondent was asked to evaluate the level of success of their organization's ERMS in four aspects: culture (5 questions), process (9 questions), structure (5 questions), and infrastructure (5 questions).

2. *Part two* is related to the characteristics of a successful PMS. Each respondent was asked to evaluate the level of success of their organization's PMS in two aspects: design and implementation. The design aspect can be categorized into three attributes: clear objectives (6 questions), PMS completeness (8 questions), and PMS availability (6 questions). The implementation aspect can be categorized into two attributes: competency of mangers and staff in the implementation of the system (5 questions) and the ease of using the reporting system (6 questions)

A five-point Likert scale is used in parts one and two. Each respondent was asked to rate overall ERMS and PMS success score using a scale of 1–5, where 5 means the most successful and 1 means the least successful.

3. *Part three* is related to the demographic data of respondents. Each respondent was asked to supply general information, i.e. gender, age, education, current position, time with current organization, and industry of organization.

Before being used, this questionnaire was tested for validity and reliability. Content validity was confirmed by asking two experts in the field whether or not the questions were clear and measured what they were intended to measure. A reliability test was also performed and found no problem, as Cronbach's alpha was well above the appropriate range of 0.8.

Out of 520 questionnaires posted to all companies listed on the Stock Exchange of Thailand, 50 were returned within two months. Those not returned were resent by post again and 51 were returned within

next two months. The total 101 questionnaires returned contained no missing data, thus these 101 questionnaires were used for further analysis.

For dependent variables ROA, ROE, and EPS, secondary data was retrieved from the Stock Exchange of Thailand's online database (SETSMART). Once all data was collected, data analysis was performed by applying the structural equation modeling (SEM) technique. This technique was chosen to empirically test the proposed model as shown in Figure 1 and the results are shown in the following section.

RESULTS FROM QUESTIONNAIRE

The demographic data for questionnaire respondents is shown in Table 1. Most respondents are male, ranging in age from 36-45, have obtained Master's degrees, currently work as a senior manager and have spent more than ten years in their current organization. Most came from the financials service and services sector.

TABLE 1
DEMOGRAPHIC DATA OF QUESTIONNAIRE RESPONDENTS

Demographic data	No.	Percent
Gender		
Male	52	51.5
Female	49	28.5
Total	101	100.0
Age (years)		
< 25	3	3.0
25-35	28	27.7
36-45	36	35.6
> 45	34	33.7
Total	101	100.0
Education		
Bachelor	24	23.8
Master	77	76.2
Total	101	100.0
Current position in organization		
Junior staff	18	17.8
Supervisor	21	20.8
Senior manager	45	44.6
Top executive	17	16.8
Total	101	100.0
Time with organization (years)		
< 3	29	28.7
3-5	13	12.9
6-10	21	20.8
> 10	38	37.6
Total	101	100.0
Industry		
Agro & Food Industry	8	7.9
Consumer Products	5	4.9
Financials	20	19.8
Industrials	15	14.9
Property & Construction	11	10.9
Resources	12	11.9
Services	20	19.8
Technology	10	9.9
Total	101	100.0

Tables 2 and 3 show the descriptive statistics of components of a successful ERM and PMS.

TABLE 2
AVERAGE SCORE AND STANDARD DEVIATION OF
CHARACTERISTICS OF SUCCESSFUL ERMS

Components of successful ERMS	No.	Mean	Standard deviation
Culture			
- Managers clearly set policies, objectives and strategies for risk management.	101	4.03	0.854
- ERMS is consistent with and included in the current company's operations.	101	3.91	0.789
- Managers encourage the use of ERMS regularly.	101	3.95	0.829
- Managers participate and are involved in the use of ERMS.	101	4.03	0.780
- Employees realize the importance of the risk management.	101	3.56	0.780
Process			
- The process of risk management is applied consistently.	101	3.85	0.841
- The process of risk management is consistently improved to respond with the company's operations.	101	3.81	0.821
- Managers set objectives, which are aligned with the mission, vision, and goal of the company, for all departments.	101	3.89	0.871
- There are appropriate tools and methods for managers to identify internal and external factors that may affect achievement of the company's objectives.	101	3.70	0.794
- Managers assess both inherent risk and residual risk.	101	3.71	0.817
- Managers respond to risk with an action plan that reduces its likelihood and impact to an acceptable level.	101	3.88	0.765
- To effectively respond to risk, the policies and procedures for each control activity are clearly written.	101	3.79	0.816
- The information used for decision making is reliable, accurate, and timely.	101	3.79	0.779
- There is a plan to monitor and evaluate ERMS regularly.	101	3.86	0.800
Structure			
- The board of directors and managers participate and are involved in the development of ERMS.	101	3.81	0.891
- There is a committee that is directly responsible for ERMS.	101	4.06	0.846
- There is a committee that is directly responsible for developing ERMS.	101	3.88	0.864
- There is a department that is responsible for applying the vision of ERMS in determining the policy and its implementation.	101	3.87	0.821
- All employees follow the same risk management framework.	101	3.55	0.842
Infrastructure			
- There is an expert in risk management working in the company.	101	3.70	0.933
- There is an effective process to evaluate risk management.	101	3.62	0.936
- The company provides employees with appropriate knowledge sharing sessions and training sessions about risk management.	101	3.49	1.016
- There are both internal and external communication channels for risk management.	101	3.49	0.955
- There is a regular review for the quality of risk management.	101	3.63	1.007

TABLE 3
AVERAGE SCORE AND STANDARD DEVIATION OF
CHARACTERISTICS OF SUCCESSFUL PMS

Components of successful PMS	No.	Mean	Standard deviation
Clear objectives			
- The company's objectives are clear and easy to understand.	101	4.14	0.735
- All employees acknowledge and understand the company's objectives.	101	3.83	0.895
- Employee performance measures are aligned with the company's objectives.	101	3.79	0.898
- Objectives set for employees are clear and unambiguous.	101	3.68	0.871
- Objectives set for employees are achievable and reasonable.	101	3.71	0.779
- The company provides consecutive training to employees about performance measurements.	101	3.60	0.838
PMS completeness			
- There is a measure for operational efficiency in the PMS.	101	3.96	0.848
- There is a measure for quality of products and services in the PMS.	101	4.00	0.812
- There is a measure for market potential in the PMS.	101	3.76	0.885
- There is a measure for customer satisfaction in the PMS.	101	4.03	0.866
- There is a measure for shareholder satisfaction in the PMS.	101	3.61	1.058
- There is a measure for satisfaction of other stakeholders in the PMS.	101	3.53	1.101
- There is a measure for employee satisfaction in the PMS.	101	3.47	1.035
- The PMS includes benchmarking the company's performance with main competitors' performance and with average industry performance.	101	3.71	0.983
PMS availability			
- The PMS is complete and covers all important issues.	101	3.61	0.969
- The PMS does not have too few or too many measures.	101	3.51	0.808
- The PMS is able to provide the information that employees request.	101	3.41	0.982
- The PMS is able to generate reports on a timely basis.	101	3.43	0.931
- The PMS is able to timely report unusual results.	101	3.39	0.948
- The PMS is accurate and reflects the company's actual performance.	101	3.62	0.835
Competency of mangers and staff to implement the system			
- Top management personnel realize the importance of a PMS.	101	4.02	0.836
- Managers communicate about the PMS to employees.	101	3.74	0.924
- Employees realize the benefits of using a PMS.	101	3.66	0.920
- Employees understand all measures related to them.	101	3.50	0.955
- Employees accept the PMS.	101	3.59	0.874
The ease of application of the reporting system			
- Reports generated from the PMS are easy to understand.	101	3.66	0.852
- Reports generated from the PMS are necessary and essential to related employees.	101	3.66	0.863
- Reports generated from the PMS clearly reflect actual performance.	101	3.78	0.782
- Reports generated from the PMS present the comparison between actual performance and target.	101	3.84	0.833
- Reports generated from the PMS are timely and consistent.	101	3.65	0.854
- Reports generated from the PMS inform users about weakness of their performance so that they can make further improvement.	101	3.77	0.859

From Table 2, it can be observed that most respondents perceive that the ERMS in their organization is moderately successful with a mean score ranging between 3 and 4 in most cases. The most successful attribute is the fact that there is a committee who is directly responsible for the ERMS (with the highest mean score of 4.06) and the lowest is the fact that the company does not provide employees with appropriate knowledge sharing and training sessions about risk management and there is a lack of both internal and external communication channels for risk management (with the lowest mean score of 3.49).

As with the PMS, it can be observed in Table 3 that most respondents perceive that the PMS in their organization is moderately successful with a mean score ranging between 3 and 4 in most cases. The most successful attribute is the fact that the company's objectives are clear and easy to understand (with highest mean score of 4.14) and the lowest is that the PMS is unable to report an unusual result in a timely manner (with the lowest mean score of 3.39).

Structural Equation Modeling (SEM) technique was also applied to test the relationship between the success of ERMS and PMS and the financial performance of the firm. The tested model fit with the empirical data with the following measure fit indicator as shown in Table 4 below.

TABLE 4
MODEL FIT SUMMARY

Indicator	Criteria	Value obtained in the model	References
Probability of Chi-Square	> .05	0.192	Hair et al. (2006), Bollen (1989), Joreskog and Sorbon (1993)
CMIN/DF	< 3	1.480	Hair et al. (2006)
GFI	> .90	0.969	Hair et al. (2006), Browne and Cudeck (1993)
AGFI	> .80	0.906	Durande-Moreau and Usunier (1999), Harrison-Walker (2001)
NFI	> .90	0.959	Hair et al. (2006), Mueller (1996)
IFI	> .90	0.986	Hair et al. (2006), Mueller (1996)
CFI	> .90	0.986	Hair et al. (2006), Mueller (1996)
RMSEA	< .08	0.073	Hair et al. (2006), Browne and Cudeck (1993)

The result from the test model is shown in Figure 2

FIGURE 2
TESTED MODEL OF THE STUDY
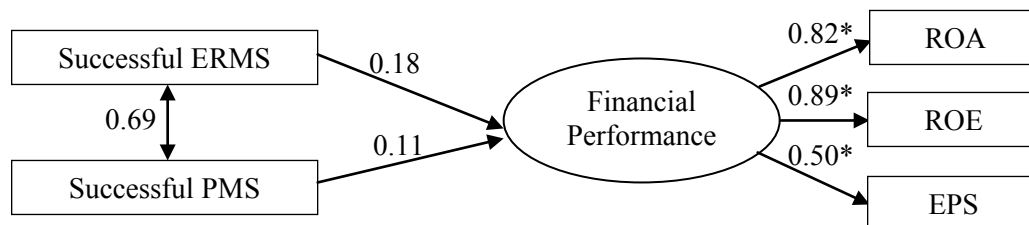
indicates the significance level of 0.05

Figure 2 shows that there is a positive relationship between a successful ERMS and a successful PMS with a correlation coefficient of 0.69. This result indicates that firms with a successful ERMS tend to have a successful PMS and vice versa. The results also show that there is only a weak positive relationship between a successful ERMS and financial performance (with standardized regression weight of 0.18) and also a weak positive relationship between a successful PMS and financial performance (with standardized regression weight of 0.11). It can be interpreted that firms with successful ERMS and PMS tend to have good financial results as measured by ROA ROE and EPS. However these relationships are found to be statistically insignificant thus the results cannot be generalized to a wider population with confidence.

It was also found that ROA and ROE are the two main components measuring a firm's financial performance with loadings of 0.82 and 0.89. EPS seems to have a lower loading of 0.50 as shown in Figure 2 above.

CONCLUSIONS

This study investigates the relationship between success in the application of ERMS and PMS and the financial performance of a firm. The results suggest that financial success can be measured by ROA, ROE and EPS, which can be grouped into one factor. ERMS and PMS seem to have moderate correlation as firms that successfully implement an ERMS are apparently also successful in implementing a PMS. The reverse is also true. The results support the argument that ERMS and PMS are concepts that can align with and support each other.

At the same time, only a weak relationship was found between these two frameworks (ERMS and PMS) and a company's financial performance. The relationship was not statistically significant, opening the question as to whether companies that successfully implement these two frameworks are in the end helped to achieve a good financial performance. The insignificant relationship found in this study can be due to the fact that financial performance can be affected by various uncontrollable factors such as the economic condition or political situation. An alternative explanation is that time lag can also be a major factor, i.e. those firms with successful ERMS and PMS may require some time until improvement in their financial indicators can be observed. Finally, cost-benefit issues can be another explanation: ERMS and PMS can consume a substantial amount of a firm's resources. Firms with a successful ERMS and PMS may spend a large amount of money and other resources trying to implement these two frameworks and although they are in the end put to use, the cost of designing and implementing them may initially outweigh the financial benefits gained.

As with any other study, this study is not without limitations. The sample size is quite limited because the number of firms that use both of these two frameworks is quite small. Thus any generalization of these findings can be limited and should be used with caution.

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