



(RESEARCH ARTICLE)



## Enterprise Risk Management Practices in India: A Case Study of Select Indian Companies

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### Abstract

Enterprise Risk Management (ERM) has grown to be a crucial tool for identifying, evaluating, and managing risks inside an organisation. ERM enables organisation to manage risks and reduce the possibility of business fraud and failure, maximising the value of stakeholders. ERM assists management in coordinating risk appetite and strategy, improving risk response, integrating the risk management perspective, enhancing cooperative governance, minimising operational surprises and losses, taking advantage of opportunities, and lowering unacceptable performance variability. This paper has been prepared to understand the ERM practices of firms in India and to analyse the relationship between ERM and Firm Performance. Four Indian Companies listed at BSE has been considered for an in-depth analysis of their ERM practices across 15 years i.e., from 2007-08 to 2021-22. The quality of the disclosures has been analysed based on the components of COSO framework by way of content analysis of the four companies for the period of study. The study finds that the disclosures in terms of quality of ERM practices of Infosys have been better than the other select companies both in overall terms as well as in terms of most of the components considered for the study. The study also finds that firm performance like ROA has a significant but negative relationship with ERM while in contrast EPS, also a measure of firm performance, has a significant and positive association with ERM practices of the firms.

**Keywords:** Enterprise Risk Management (ERM); COSO; Disclosure Score

### 1. Introduction

The annual report of a company is the primary means of conveying both financial and non-financial information relating to the company. Stakeholders of the company depend on the disclosures made in the annual reports for taking various decisions. Over the years, there have been many corporate scandals and accounting frauds which has made it crucial for the requirement for more disclosures. There have been calls for expanded disclosures, especially in respect of non-financial information relating to the companies. A business is susceptible to numerous kinds of risks which may adversely affect the organisation, which in turn will affect the stakeholders. The exposure to the variety of risks also gives rise to the necessity of risk management in an organisation. A corporation can choose between two approaches for managing risks: a compartmentalized and decentralized approach or an enterprise risk management (ERM) approach. The latter is the purpose of the current study. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2004b) defines Enterprise Risk Management as follows: “*Enterprise risk management is a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives*”. ERM allows organisation to maximize the value of the stakeholders by managing risks and preventing the likelihood of business frauds and failures. However, the implementation of ERM practices have been quite limited given the fact that in India, there has been no mandate on such implementation.

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Research relating to ERM and its impact on a firm's performance has also been limited due to the absence of specific indicators for such studies. Despite the growing recognition of the importance of ERM in organizations, there are still several challenges and areas of research that need to be addressed. ERM involves assessing and quantifying risks to make informed decisions. However, there is a lack of consensus on quantitative risk measurement methodologies and tools. While ERM aims to align risk management with strategic objectives, there is a need for research on how ERM can effectively support strategic decision-making processes.

### 1.1. Review of Literature

Onder, S., et.al., (2012), in their paper, have attempted to determine the level of application of ERM and the factors affecting such levels in companies listed in the Istanbul Stock Exchange. The existence of ERM was evaluated in relation to having a senior manager in charge of risk management. A Logistic Regression model was established to assess the ERM application in the select companies. The results of the study showed that about 50% of the financial companies studied have appointed a Chief Risk Officer denoting the existence of ERM culture in the organisations. In terms of ERM application, it has been found that leverage and company size were significant factors whereas profitability has no significance in ERM application. An analysis of the factors which influence the adoption of ERM by public listed companies in Malaysia has been undertaken by Golshan, N.M., et.al., (2012), in their paper. Content analysis was undertaken for the purpose of the study along with descriptive statistics and an independent sample t-test has been done to determine the significance of the mean variables. The findings of the study indicated that firms with greater financial leverage and better auditors were most likely to have adopted ERM practices. The implementation of ERM in the top 200 companies listed in the Australian Securities Exchange has been analysed in the paper by Ahmad, S., et.al., (2014). The study is based on primary data which were analysed using descriptive statistics and percentages. The findings of the study show that the majority of the select companies have implemented ERM and their corporate strategies also include ERM practices. This has been the scenario in companies for over a period of 5 years. Soliman, A., et.al., (2017) investigates how ERM practices impact banking performance. Enterprise Risk Management model for the banking sector and an integrated model for measuring ERM index have been used for the purpose of analysis where ERM index was taken as the independent variable and Return on Average Equity, Share Price Return and Firm Value as the dependent variables. It has been found from the study that there is a strong positive relationship between implementation of ERM and firm's performance. Those firms which have implemented ERM have performed better financially than those which have not implemented ERM. Yazid, A.S., et.al., (2011) in their paper have tried to determine the level of ERM adoption in the Government-Linked Companies (GLCs) in Malaysia. An attempt has also been made to find out the impact of Chief Risk Officers and Board of Directors on ERM implementation. The questionnaire was developed for the purpose of data collection to determine the level of ERM adoption, the role of Chief Risk Officers in these companies and the quality of the Board of Directors. The study concluded that it was the more established companies which adopted ERM, and those companies were found to appoint Chief Risk Officers to look over the ERM practices in the company. Moreover, the Board of Directors also has a significant role to play in the implementation of ERM in the companies. The review of implementation of ERM in Thailand's listed companies, examination of impact of ERM implementation on firm's performance and determination of factors influencing ERM implementation are the main objectives of the study taken up by Sithipolvanichgul, J., (2016) as a part of their doctoral research. The implementation of ERM has been measured and compared to cluster analysis (CA), principal components analysis (PCA) and partial least square analysis (PLS). as a measure of firm's performance, Return on Equity, Return on Asset and Tobin's Q have been taken. Additionally, a firm's size and characteristics, effects on industry sales growth and the external environment, such as technological, market and economic variables have been taken as the control variables. The findings of the study show that the selected companies realise the benefits of risk management and have implemented ERM. It was also found that implementing ERM can improve firm performance in terms of Tobin's Q, ROE and ROA. The results show that a firm's size and economic factors have a statistically positive relationship with the high level of ERM implementation. In the article, Meulbroek L.K (2002) has explained the essential features of integrated risk management. The author states that there are three fundamental ways a firm can implement risk management objectives namely, modification of firm's business operations, adjustment of its capital structure and making use of targeted financial instruments. The paper highlights the framework of integrated risk management using various examples and illustrations to depict that risk management process affects the firm value in different dimensions. Kloman H.F (2002), in their paper comments that making evaluation based on risk silos does not help the firm in meeting its risk management activities. The firm should be able to look at the risks in a holistic manner and thereby evaluate the possibility of any positive or negative relationship in between the risks. The author justifies various ways of addressing the risks faced by firms like incorporating all forms of risks, including all elements of risks, assessment at the bottom etc. The financial crisis at the early 1990's can be considered as drivers to the rise of enterprise-wide risk management as has been highlighted in the paper of Clarke S (2002). The paper identifies the major risks namely, market risk, credit risk, operational risk, legal risk and liquidity risk and highlights how it can be measured by business firms and make provision for uncertainties. The author critically comments that initially the risks are difficult to integrate even though they are having a relationship

but after the measurement the firms can go for integration of the risks. The paper further discusses the benefits of integrated risk management approach. It discusses some features of risk management systems like internal audit unit, appointment of CRO, creation of a corporate risk culture etc. Mustapha M, Adnan A (2015), in their paper, describes the implantation of Enterprise Risk Management in the Malaysian Construction Companies with the help of case study method of research. Interviews were conducted to collect data from risk owners, top management, executives and employees of the construction companies. The study finds that the firms need to continue educating and communicating information about ERM to its employees to increase their awareness and understanding. The employees should be made to understand that the risks are not only for the top management or the risk owners but all working in the firm. The study suggests that although the firm classify themselves as ERM adopter still more need to be done. From the working paper of Ghosh A (2013), identified the companies which have adopted ERM & impact of ERM on the firm value. Also, the determinants of ERM adoption for top 100 NSE Indian Companies. The variables used were Size, Leverage, Profitability, Liquidity, Asset Characteristics, Volatility of Stock Returns, Global customers, Firm complexity, board independence & Institutional Ownership. Sample comprises of top 100 NSC companies by Market Capitalisation as on 31<sup>st</sup> March 2012. The findings suggest that firm size, leverage, profitability & firm complexity influence the likelihood of ERM adoption. Also, the firms which embrace ERM experience a positive impact on their firm value. Scope for Future: - Developing an index to capture the level of ERM implementation in companies. Beasley M, Pagach D and Warr, R in their study, had basically undertaken to study the equity market reactions to announcements of appointments of senior executive officers overseeing the enterprise risk management process. Sample was 120 firms and the announcement of appointments of CRO in these firms from LEXIS-NEXIS library. Three industries were considered namely Financial Services, Insurance & Energy Services. Variables of market reaction to firms' announcements of appointment of CRO were Growth options, Intangible assets, Cash ratio, earnings volatility, Leverage, size, beta or market risk. Findings suggest that univariate average two-day market response is not significant. It cannot be generalised over all firms but depends on certain firms' specific characteristics. The scope for future study has been established as ERM adoption and its impact on long-term future cash flows, how ERM affects risk reporting to stakeholders such as creditors, employees, suppliers etc., and ERM adoption and managerial characteristics. Hoyt R.E and Liebenberg A.P (2006) made a study to measure the extent to which specific firms have implemented ERM programs and then, to assess the value implications of these programs. Sources of information regarding implementation of ERM by each insurer for the existence of a CRO/Risk Management Committee and ERM framework. Sample of 275 insurance companies were considered from the period 1995 to 2004. Tobin Q had been used to valuing the firm. Determinants were Institutional Diversification, Institutional Ownership, Size, Leverage, Profitability, Industrial diversification, Access to financial markets and Insider ownership.

### *Objective of the Study*

- To analyse the Enterprise Risk Management practices of the select firms.
- To analyse the relationship between ERM practices and firm performance of the firms.

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## **2. Material and methods**

### **2.1. Method of Collection of Data**

The study shall be based on secondary data due to the nature of its study. The data shall be collected from the websites of the respective websites for a period of 15 years i.e., from 2007-2008 to 2021-2022. BSE Sensex comprises of 30 listed stocks which are well established and financially sound companies. It is designed to measure the performance of the 30 largest and most liquid companies across key sectors of the Indian economy that are listed at BSE Ltd. The Sensex is a free-float market-weighted stock market Index. The index comprises companies from 12 sectors. Of these 12 sectors two are dominating i.e., Finance and Information Technology in terms of Free Float Market Capitalisation [53]. Thus, based on this justification the companies for the study have been selected from these two sectors. Four companies (two from each sector) shall be selected based on the Market Capitalisation [54] of the specific companies. Therefore, the four companies that shall be selected for the study based on their Market Capitalization are Tata Consultancy Services Ltd and Infosys Ltd from Information Technology Sector and HDFC Bank and State Bank of India from the Finance sector.

### **2.2. Content Analysis**

To perform content analysis, a sentence is selected as the coding unit, following several similar studies, such as Mousa and Elamir (2013), Everaert, et. Al (2007) who employed sentences to code risk disclosures. Thus, based on previous literature eight parameters have been considered to evaluate the ERM practices in the select companies.

There are eight connected parts that make up enterprise risk management. These are interwoven into the management process and are generated from how management manages an organisation. These components are: **Internal Environment:** The internal environment sets the foundation for all other components. It encompasses the overall attitude, awareness, and actions of the board of directors, management, and employees regarding the importance of internal control. It includes factors such as integrity, ethical values, competence, and organizational structure. **Objective Setting:** Clear and well-defined objectives are necessary for organizations to achieve their mission and vision. This component involves setting objectives at the strategic, operational, and individual levels. Objectives should be aligned with the organization's mission and be consistent with its risk appetite. **Event Identification:** This component involves the identification of events, both internal and external, that could affect the achievement of the organization's objectives. Events can be risks, opportunities, or significant changes that require attention. This component helps ensure that all relevant events are considered in the risk assessment process. **Risk Assessment:** Organizations need to assess risks to identify and analyze potential events that could impact the achievement of objectives. This component involves evaluating the likelihood and impact of risks and prioritizing them based on their significance. Assessment helps in developing appropriate risk responses and control activities. **Risk Response:** Once risks are assessed, organizations need to determine how to respond to them. This component involves selecting risk responses, which can include accepting, avoiding, mitigating, or transferring risks. The objective is to align risk responses with the organization's risk appetite and objectives. **Control Activities:** Control activities are policies, procedures, and practices designed to mitigate risks and ensure that objectives are achieved. This component involves implementing control activities across the organization, such as approvals, authorizations, verifications, and reconciliations. These activities help safeguard assets, prevent fraud, and ensure the accuracy of financial reporting. **Information and Communication:** Effective information and communication systems are vital for the success of internal control. This component involves identifying and capturing relevant information and ensuring timely communication with appropriate parties. It includes both internal and external communication, and it supports decision-making, performance monitoring, and compliance with laws and regulations. **Monitoring:** Monitoring activities are essential to assess the effectiveness of internal control over time. This component involves ongoing monitoring and periodic evaluations of the system of internal control. It helps identify deficiencies and ensures that necessary corrective actions are taken.

These eight components collectively provide a comprehensive framework for organizations to design, implement, and assess the effectiveness of their internal control systems.

The parameters were evaluated and analysed from the annual reports for a period of 15 years, from 2007–2008 to 2021–2022, to ascertain whether they were pertinent. Based on the content analysis, the parameter has been evaluated. In respect to coding, four codes—"0," "1," "2," and "3"—have been established. A code of '0' is given if the specified item related to ERM practices is not fully disclosed; a code of '1' is given if it is partially disclosed in the published report; a code of '2' is given if it is fully disclosed in descriptive form; and a code of '3' is given if it is fully disclosed in quantitative form. After obtaining the item-wise score based on quantity and quality, total disclosure score (Maji, 2022) for Quality of ERM and its components are computed by employing the following formula:

$$ERM_{Disc jt} = \frac{\sum_{i=1}^n X_{ijt}}{N_j}$$

where,

**N<sub>j</sub> = maximum score for each category (or overall),**

**j = company,**

**i = items and**

**t = time.**

**X<sub>ijt</sub> = assumes the code 0–3** in the case of assessment of the disclosure quality.

Here, the number of elements is multiplied by 3 for quality to determine the maximum score. In the beginning, we figure out the score for each item for every year of a specific company. Finally, we utilise a basic arithmetic means to determine the average score for a country for a given year.

The researcher has further considered four parameters for the purpose of understanding the factors influencing the ERM practices of the select companies. Based on the literatures Önder and Ergin (2012), Tahir and Razali (2011), Ghosh A (2013) Beasley M, Pagach D & Warr, R Hoyt R.E and Liebenberg A.P (2006) etc. the parameters that have been selected for this purpose are Profitability, Leverage, Company Size, and Volume of Fixed Assets.

### 2.3. Summary of Parameters

- Dependent: ERM Disclosure Score
- Independent (Accounting Measure): Return of Assets (ROA), Earnings per share (EPS)
- Other Independent variable: Debt Equity Ratio (Leverage)
- Control Variable: Total Assets (Company Size), Fixed Assets

To understand the parameters and their basic relationship Descriptive Statistics and Correlation are used. Further, Panel Data analysis with the help of Random Effect-GLS Model (Robust) has been used to interpret the association of the Dependent Variable and the Independent Variables. The robust model is expressed as:

$$y_{it} = x_{it}\beta_i + \alpha + (\mu_i + \epsilon_{it})$$

The specific regression used in the present context are:

$$\text{ERM Disclosure Score} = \alpha + \beta(\text{ROA}) + \beta(\text{Leverage}) + \beta(\text{Company Size}) + \beta(\text{Fixed Assets}) \dots(i)$$

$$\text{ERM Disclosure Score} = \alpha + \beta(\text{EPS}) + \beta(\text{Leverage}) + \beta(\text{Company Size}) + \beta(\text{Fixed Assets}) \dots(ii)$$

### 3. Enterprise Risk Management Practices (ERM) of Companies

The disclosure scores of the selected companies in the study have been considered for analysis and a comparison has been made to evaluate the quality of ERM practices of the firms.

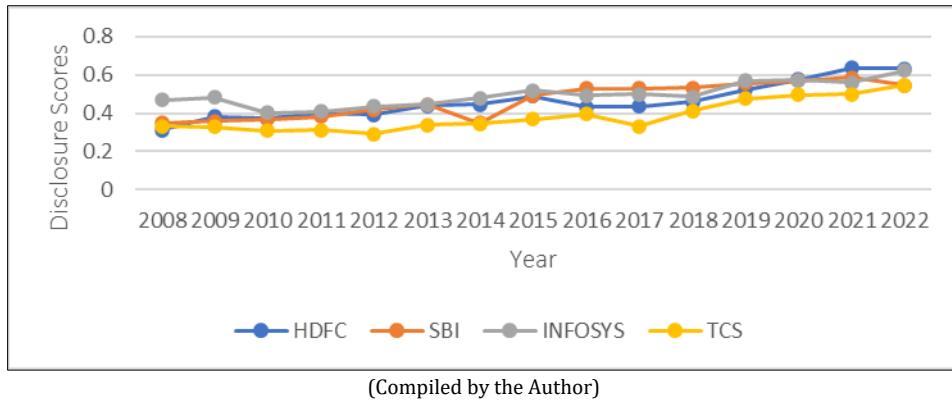
**Table 1** Overall Comparison of Firms based on the Disclosure score.

	HDFC	SBI	INFOSYS	TCS
Internal Environment	0.45278	0.41667	0.411111111	0.33333
Objective Setting	0.47556	0.53333	0.582222222	0.40444
Event Identification	0.48889	0.51111	0.538888889	0.45
Risk Assessment	0.38444	0.39556	0.431111111	0.34444
Risk Response	0.39259	0.42963	0.444444444	0.32963
Control Activities	0.53056	0.525	0.555555556	0.41944
Information and Communication	0.48611	0.43333	0.508333333	0.38056
Monitoring	0.48056	0.49167	0.5	0.39444

(Compiled by the Author)

Table 1 shows the quality of disclosure of ERM practices in respect to the eight parameters for the four select companies for 15 years from 2007-08 to 2021-22. It is to be noted that, except for disclosure relating to internal environment, the disclosure scores of Infosys for the remaining 7 parameters have been higher than that of the other companies. It is found that the quality of disclosure for SBI, although less than Infosys, has been high for almost all the parameters except disclosure on risk assessment. TCS has the lowest disclosure scores of all the parameters. So, from the point of view of quality of disclosure over the study period, Infosys has been leading among the four select companies. Sector-wise, SBI has higher disclosure scores than HDFC Bank in the case of the financial sector. In the case of the IT sector, Infosys has better scores than TCS.

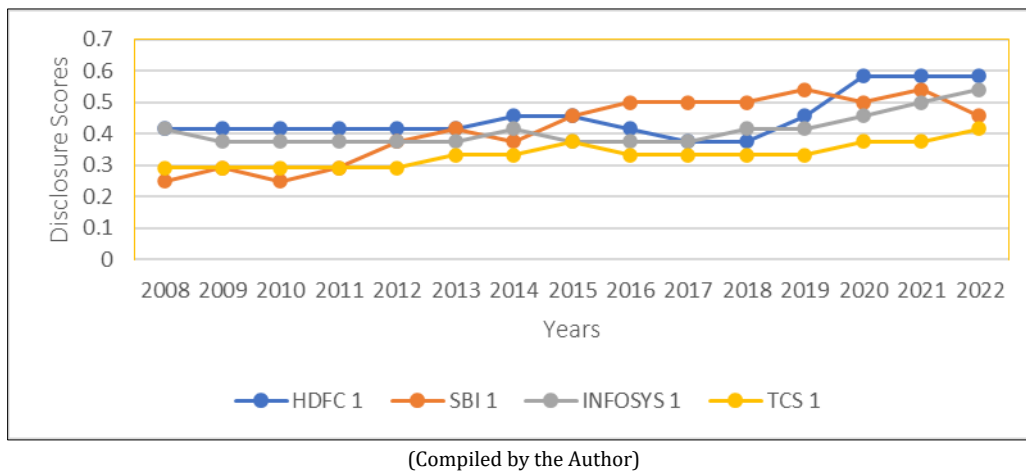
An examination of Figure 1 which shows the disclosure score in terms of all the variables on a yearly basis for a period of 15 years, it is found that the four select companies all show a mixed trend in terms of the disclosure scores. For HDFC Bank, it is seen that from 2007-08 to 2015-16, the movement of the scores has been mixed. But from 2016-17 to 2021-22, HDFC has seen an upward movement in the quality disclosure scores. For SBI, the disclosure scores have mostly shown an upward movement over the years. But it is to be noted that in 2013-14, the overall quality disclosure score of SBI went down considerably to 0.34722.



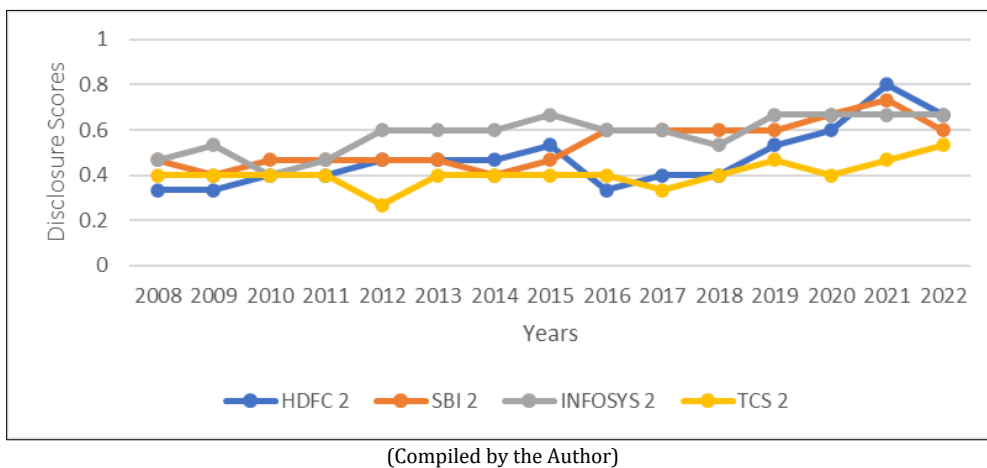
**Figure 1** Disclosure score in terms of Quality for a period of 15 years

In the case of the IT sector companies, it has been seen that the overall 15 years' score for quality of disclosure has been higher in the case of Infosys. But a year-wise analysis shows that although the scores have been higher, the movement of the scores for Infosys has not been consistent. TCS, on the other hand, has lower scores in comparison to all the select companies. But if the movement of the scores from 2007-08 to 2021-22 is investigated, it is found that initially from 2007-08 to 2012-13, the movement has been downwards, but, from 2013-14 to 2021-22, the quality disclosure scores of TCS have gradually been increasing.

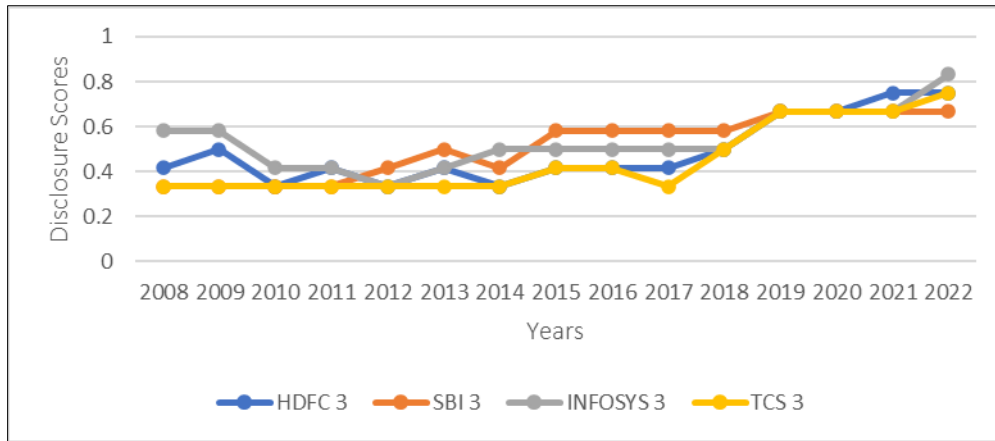
The study has further analysed parameter-wise ERM practices in terms of quality of all firms.



**Figure 2** Internal Environment Parameter

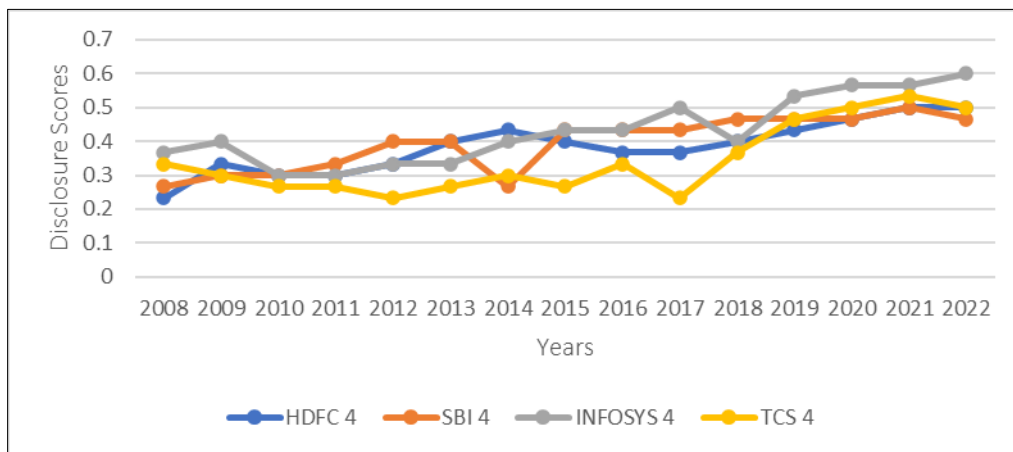


**Figure 3** Objective Setting Parameter



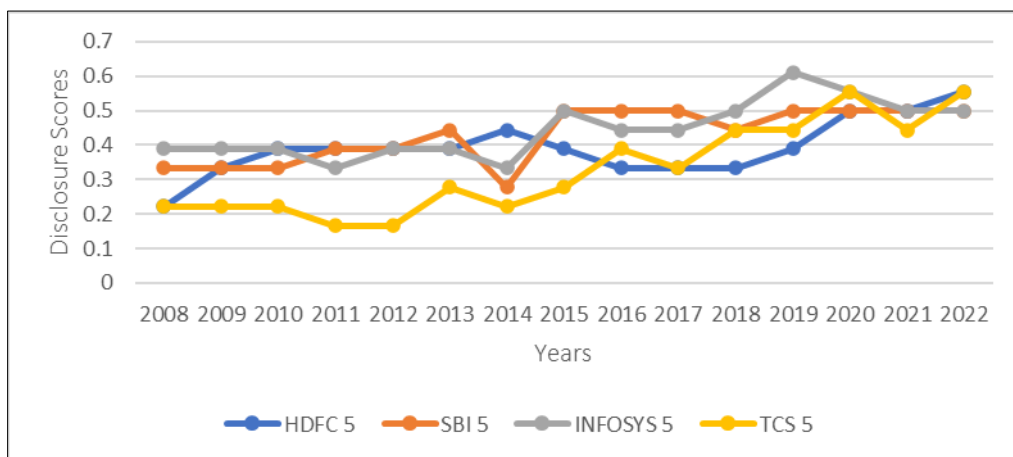
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**Figure 4** Event Identification Parameter



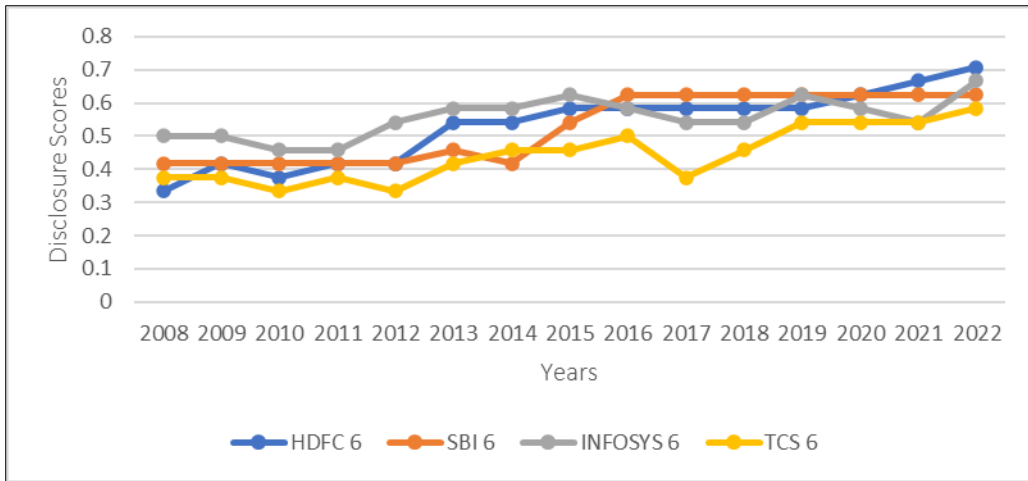
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**Figure 5** Risk Assessment Parameter



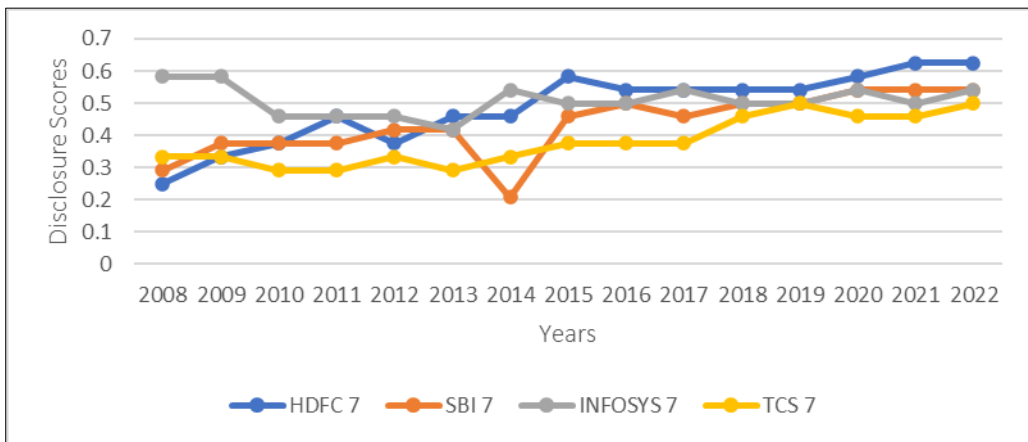
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**Figure 6** Risk Response Parameter



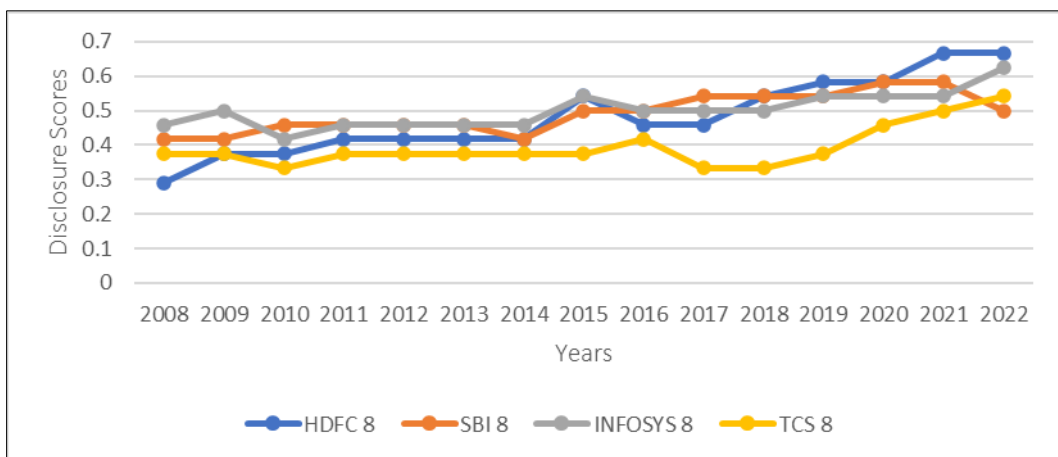
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**Figure 7** Control Activities Parameter



(Compiled by the Author)

**Figure 8** Information and Communication Parameter



(Compiled by the Author)

**Figure 9** Monitoring Parameter



A comparison of the quality disclosure scores for the eight parameters namely, Internal Environment, Monitoring, Objective Setting, Risk Assessment, Risk Response, Control Activities, Event Identification and Information and Communication for 15 years from 2007-08 to 2021-22 have been shown in figures shown above. It has been observed that for all the eight parameters, the quality disclosure scores of TCS have been lower than those of the other companies. Although, towards the later part of the study period, the quality disclosure scores in the case of all the parameters of TCS have mostly shown an upward movement, yet the scores have remained less than that of the other companies.

Another thing to be noted is that towards the end of the study period, that is during 2019-20 to 2021-22, the quality disclosure scores of HDFC Bank for all the parameters, except Risk Assessment and Event Identification, have been higher than that of the other companies. This indicates that over the years, the ERM disclosure practices in the case of HDFC Bank have improved considerably.

On the other hand, the scenario in the case of SBI has been the opposite. The quality disclosure scores of SBI for almost all the parameters have decreased during the later part of the study period. The disclosure scores of SBI during 2021-22 have been less than HDFC Bank and Infosys and less than its own scores of the previous years.

Infosys has mostly shown a stable or an upward trend in respect of the quality disclosure scores for all the parameters. But, for disclosure relating to Information and Communications, the disclosure scores of Infosys have varied considerably over the years.

All in all, in terms of quality disclosure, Infosys has been better than the other select companies both in overall terms as well as in terms of most of the parameters. Among the four select companies, TCS has shown a considerably poor picture in respect to the quality of disclosure relating to ERM practices. For SBI and HDFC Bank, the quality disclosure scores have mostly been at par with one another. But overall, SBI has higher disclosure scores than HDFC Bank.

#### 4. ERM Practices and Firm Performance

To understand the factors influencing the ERM practices of the select companies' further analysis has been made with the help of statistical and econometric tools.

**Table 2** Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
ERM Disclosure Score	60	0.452523	0.090865	0.291667	0.636458
ROA	60	13.6985	13.19827	-0.12	39.26
EPS	60	78.625	55.83153	-5.11	261.92
D/E Ratio	60	0.640667	0.709404	0	2.02
n_log of Total Assets	60	12.29726	1.904719	9.166247	15.49464
n_log of Fixed Assets	60	9.66212	0.854711	7.580536	11.19735

(Compiled from Ace Equity, Stata)

Descriptive statistics showing mean, standard deviation, minimum and maximum for the variables have been computed. From Table no. 2, it is seen that the mean value for EPS is very high in comparison to the remaining variables. On the other hand, with a mean value of 0.452523, the ERM Disclosure Score has the lowest average among the variables. The average D/E Ratio is also very low. The standard deviation shows that the EPS is the least consistent variable with a value of 55.83153. The most consistent variable is the ERM Disclosure Score with the lowest deviation. All other variables except EPS, are considerably quite consistent over the study period. An observation of the minimum and maximum values of the variables shows that in case of EPS there is a huge difference between the minimum and maximum values which may be a reason for the high level of deviation. For the ROA, the minimum value is negative and the maximum value, although much less than that of EPS, is quite high. For the rest of variables, the difference between the minimum and maximum values is low due to which these values are more consistent.

**Table 3** Correlation Analysis

	ERM Disclosure Score	ROA	EPS	D/E Ratio	N_log of Total Assets	N_log of Fixed Assets
ERM Disclosure Score	1					
ROA	-0.1339	1				
EPS	0.2765	0.1002	1			
D/E Ratio	0.0227	-0.8723	-0.0615	1		
N_log of Total Assets	-0.1633	-0.8873	-0.061	0.933	1	
N_log of Fixed Assets	-0.5716	-0.0853	-0.0667	0.2683	0.4402	1

(Compiled from Ace Equity, Stata)

An analysis of Table no. 3 shows the correlation between the study variables. ERM has a negative correlation with ROA, n\_log of total assets and n\_log of fixed assets. Whereas the correlation between ERM and EPS and ERM and D/E Ratio is positive. ROA had a positive correlation only with EPS which again has negative correlation with all the other variables. D/E Ratio has a positive correlation with all the variables except ROA and EPS. For the n\_log of total assets and n\_log of fixed assets, they have a positive correlation with only one another and with D/E Ratio. The highest positive correlation is between n\_log of total assets and D/E Ratio and the highest negative correlation is between n\_log of total assets and ROA.

**Table 4** Random-effects GLS regression with Firm Performance (ROA)

Random-effects GLS regression						
Group variable: Company						
R-squared:			Number of obs	60		
Within	0.5121		Number of groups	4		
Between	0.4903					
Overall	0.5073					
ERM Disclosure Score	Coefficient	Robust std. error	z	P>z	[95% conf. interval]	
ROA	-0.006974	0.00108	-6.44	0	-0.0091	-0.0049
D/E Ratio	0.118343	0.02078	5.7	0	0.07762	0.15907
N_log of Total Assets	-0.090257	0.0242	-3.73	0	-0.1377	-0.0428
N_log of Fixed Assets	-0.007769	0.02226	-0.35	0.727	-0.0514	0.03585
Constant	1.657218	0.16058	10.32	0	1.34249	1.97195

(Compiled from Ace Equity, Stata)

The above Table 4 depicts the Random Effects Analysis GLC regression of the relationship between the Independent Variables and the Dependent Variable. It can be found that the accounting measure of firm performance i.e., ROA has significant but negative association on the dependent variable that is ERM Practices that is proxied by ERM Disclosure Score. The leverage ratio that is being measured as Debt Equity Ratio has a significant and positive association with the Dependent Variable. It can also be noticed that the control variables that are Total Assets and Fixed Assets have a contrasting scenario. Total Assets have a negative but significant association with the Dependent Variable whereas, Fixed Assets can be found to be insignificant association with the Dependent Variable.

**Table 5** Random-effects GLS regression of Firm Performance (EPS)

Random-effects GLS regression						
Group variable: Company						
R-squared:						
Within	0.5702		Number of obs	60		
Between	0.1002		Number of groups	4		
Overall	0.4723					
ERM Disclosure Score	Coefficient	Robust std. error	z	P>z	[95% conf. interval]	
EPS	0.0004123	0.0000778	5.3	0	0.00026	0.000565
D/E Ratio	0.1101591	0.02204	5	0	0.06697	0.153346
N_log of Total Assets	-0.035768	0.0114	3.14	0.002	-0.0581	-0.01342
N_log of Fixed Assets	-0.048419	0.01627	2.98	0.003	-0.0803	-0.01654
Constant	1.25721	0.14114	8.91	0	0.98058	1.533839

(Compiled from Ace Equity, Stata)

The above Table No. 5 depicts the Random Effects Analysis GLS regression of the relationship between the Independent Variables and the Dependent Variable. It can be found that the other measure of firm performance i.e., EPS has significant and positive association on the dependent variable that is ERM Practices that is proxied by ERM Disclosure Score. The leverage ratio that is being measured as Debt Equity Ratio has a significant and positive association with the Dependent Variable. It can be also noticed that both control variables, Total Assets and Fixed Assets have a negative but significant association with the Dependent Variable.

It can be understood that the ERM practices are significantly associated with the firm performance measures, but the relationship is contrasting in the two cases. ROA is found to be negatively associated with the ERM practices of the firms. This may be because the companies are utilising financial resources in implementing risk management practices that have become an important tool for investors to understand the safety of the companies and their solvency. However, the relationship with EPS was found to be positive which means the contribution per share has a positive impact on the ERM practices of the firms.

## 5. Conclusion

ERM allows organisations to maximize the value of the stakeholders by managing risks and preventing the likelihood of business frauds and failures as such ERM is an important component of any business organisation. In this paper an attempt has been made to determine the ERM practices of four select Indian companies and evaluate the disclosure relating to the same. Additionally, the factors affecting the ERM practices in a company have been analysed. The study shows that of the four companies selected Infosys has the highest scores in terms of ERM disclosures which has been evaluated taking into consideration 8 parameters over a period of 15 years from 2007-08 to 2021-22.

Further, it has been found that both accounting measures of performance of firm has significant association with the ERM practices of the firm. In depth we can understand that the accounting measure that is ROA has a significant but negative relationship with the ERM practices of the firms. Whereas the other measure i.e., EPS has a positive and significant relationship with the dependent variable.

With so many business frauds and scandals happening all around the world, ERM has become the need of the hour. As such focus needs to be given on the implementation and disclosure of ERM practices for protecting the stakeholders' interests.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

The Authors proclaim no conflict of interest.

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