THE RELATIONSHIP BETWEEN RISK MANAGEMENT AND FIRM PERFORMANCE - EVIDENCE FROM THE GEORGIAN MANUFACTURING INDUSTRY

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Abstract

This paper investigates the existence of the relationship between risk management (RM) and the financial performance of Georgian manufacturing firms. By looking into risk management information disclosures of manufacturing companies in Georgia for the year 2021, seven factors were studied to assess the RM level they used. RM factors were chosen based on the Enterprise Risk Management (ERM) requirements of two leading risk management standards: ISO 31000:2018 and COSO (2017). The Risk Management Disclosure score (RMD) was designed and calculated. The study analysed performance measures of a firm represented by: Operating Profit Margin, Non-operating Profit Margin, Net Profit Margin, ROA and ROE. OLS regression was used to reveal the relationship between RMD and performance. The results show a positive linkage between RMD and Operating and Net Profit Margins. On the other hand, no linkage is found between RMD and other measures. The study highlights how effective risk management enhances firm performance, aiding managers and policymakers. From the theoretical aspect, the study contributes to the literature by reinforcing the link between risk management and firm performance and offering an updated framework for further empirical research using RMD.

Keywords: enterprise risk management, risk management disclosures, financial performance, emerging economies

JEL Classification: G32, L60, M41

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1. Introduction

Business has to deal with uncertainty, and unpredicted and unexpected events. Risk management presumes to reduce negative effects of adverse events. Because of rapidly developing economic environment, risks become more complex and not easily avoidable by organizations. Most risks can be reduced to some extent, but can never be eliminated (Przetacznik, 2022). Those risks can threaten companies with financial and reputational losses and loss of competitive advantage.

In the 1970s, financial risk became an important concern for firms because of interest rate volatility, changing prices, and unpredictable exchange rates. Afterwards, financial risk management and mitigation tools were developed (D'Arcy & Brogan, 2001). Firms and institutions mainly focus on mitigating risks and minimizing the harm that occurs after the occurrence of the harm. Not every company has a proper system and enough competence to handle unexpected events. Florio and Leoni (2017) outline that business failures and collapse of high-profile corporates such as Enron, WorldCom once again highlighted the importance of managing risks and readiness for them anytime. Later, the 2007-08 financial crisis stimulated activities to reduce risks in the financial system by closer regulation of financial firms and institutions (Balasubramanian & Cyree, 2012).

Nowadays, most successful organizations place a greater emphasis on establishing proper risk management system to identify potential risks, evaluate and prioritize them and take appropriate actions in a timely manner. Risk management is an integral part of an organization's corporate strategy, and its main task is to prevent or mitigate the risks to a minimal level in order to survive in today's competitive environment (Iswajuni, Manasikana and Soetedjo, 2018).

Traditional Risk Management (TRM), although widely practised, has limitations that make it less effective in today's complex business environment. Firstly, it has a silo approach to risk management, which means it assesses and manages risks in isolation, and while mitigating the risks, it focuses on the impact on individual business units rather than focusing on the entire organization (Lundqvist, 2015). For years, companies managed their risks through a non-systemic approach, and each department was responsible for its own risk and had its own risk terminology and methodology despite the fact that each dealt with the risk that the organization as a whole was

facing (D'Arcy & Brogan, 2001; Widjaja, 2019). TRM is more reactive, as it focuses on minimizing the impact of the risk that has already occurred (Przetacznik, 2022).

Because of those limitations, a new approach - Enterprise Risk Management (ERM) emerged. Its scope is far beyond the TRM (Kennedy, 2008). According to ERM, each company member should be aware of and responsible for company-wide risks. It helps organisations to identify and manage multiple and cross-enterprise risks by providing the proper response to the interrelated impacts of these risks (Kbiltsetskhlashvili & Mamedova, 2017). The main purpose of ERM is to take a more holistic approach and develop a portfolio view of significant risks to the achievement of the entity's organizational objectives.

ERM is considered the method to shift focus from "cost/benefit" to "risk/reward", and it sees a system as a language for communicating an organisation's efforts to create and maintain a manageable risk profile. Standard and Poor's has included a risk management system as a significant factor in its overall rating system (Dreyer & Ingram, 2008). Lam (2014) describes ERM as balancing risk and reward, art and science, and processes and people. He explains that the challenge for every leader is to take intelligent risks that bring opportunity.

Although ERM has been a widely debated topic for a long time, most Georgian firms are still not familiar with it. In the report "Enterprise Risk Management Survey Risk Intelligence in Banking on the Georgian Market" (2016), Deloitte presented the first enterprise risk management survey in Georgia that was concentrated on Georgian banks. As outlined in the survey, ERM is still in the stage of an early stage of development in the Georgian market, though it is a rather rapidly developing field in Georgian banks than in other industries. Avalishvili (2011) conducted a survey in the non-financial sector to evaluate how risks are managed and if there is any sign of ERM adoption. The conclusion was that ERM is not even at the initial stage of its maturity (Avalishvili, 2011).

Kbiltsetskhlashvili and Mamedova (2017) have conducted a study to investigate the role of risk management in the economic growth and development of companies in the insurance sector. As their results show, risk management is still in the developing stage in Georgia, though it plays a vital role in the insurance industry and its economic growth.

No other survey about risk management in different sectors in Georgia could be found at the time of our study (May 2024). What we know today is that only a few banks have partially or fully adopted ERM and the insurance sector is only in the developing stage.

This paper concentrates on the manufacturing industry of Georgia. Pirveli et al. (2022) investigated the sectoral efficiency of Georgia. As their findings show, manufacturing is one of the most efficient sectors in Georgia and plays an essential role for country.

The objective of the current study is to investigate risk management practices that are common in the Georgian manufacturing industry, the degree of risk management disclosure, and last but foremost, if there is any relationship between risk management and the financial performance of a firm through studying disclosed information in financial and management reports.

With its results this paper gives limited but necessary insights about ERM and performance measures linkage. Firstly, the paper, by considering two world-known risk management standards, combines ERM determinants and adds some new measures for assessing risk management in firms, and, secondly, it strives to provide evidence about the relationship between risk management degree and its effect on firms' performance.

2. Literature review

2.1 Enterprise risk management

Companies admit that ERM gives them a competitive advantage. The result of ERM is assessed based on the company value or its performance (Naik & Prasad, 2021). The main benefit of ERM is that it increases shareholder value by improving capital efficiency and reducing expenses on risks. Additionally, by considering risks in the decision-making process, companies are able to stabilise their financial performance and build investor confidence (Quon, Zeghal and Maingot, 2012).

Naik and Prasad (2021) identified the following benefits of ERM adoption in their study: increased profitability, efficient resource allocation, stabilised earnings, better risk communication, enhanced firm performance, competitive advantage, and increased cost-effectiveness.

Stroh (2005) admits that for organisations that possess a strong enterprise risk management capability and discipline, it is a valuable source of competitive advantage and may become the key to survival.

Effective risk management systems can help companies avoid operational surprises, and companies are less likely to encounter direct and indirect costs such as bankruptcy and reputational effects (Pagach & Warr, 2010). Firms can avoid duplication of risk-related expenditure by integrating the decision-making process across all risk classes and exploiting natural hedges (Hoyt & Liebenberg, 2011).

2.2 Positive linkage between ERM and firm performance

In the study of Baxter et al. (2013), the correlation between ERM quality and firm performance and value was investigated using a sample from the banking and insurance sectors. The final result revealed a strong positive linkage between ERM and the firm's financial performance (measured by the company's ROA) and its value (measured by Tobin's Q).

A broader industry analysis was conducted by Callahan and Soileau (2017). The study found that companies with more sophisticated ERM processes have higher operating performance than their peers with less mature ERM. Thus, regardless of industry, adopting ERM is positively associated with operational performance measured by ROA and ROE (Callahan & Soileau, 2017).

Gates et al. (2012) covered several UK industries and suggested that the ERM framework allows the management of the company to be more effective; therefore, ERM implementation may help companies improve their performance. Soliman and Adam (2017) provide strong evidence of a positive correlation between ERM adoption and performance in the Nigerian banking sector. The study investigated whether firms with high ERM ratings or maturity stages of ERM implementation perform better than the ones with low ERM ratings or the ones that are still at the foundation stage.

The study, which evaluated Italian non-financial companies' ERM systems, also demonstrated that companies with more sophisticated ERM show healthier financial performance with better operational and strategic decisions and are more appreciated by investors. On the contrary, companies with rudimentary or no ERM show less profitability and are negatively evaluated by financial markets (Florio & Leoni, 2017).

Other authors have found a positive relationship between ERM adoption and company performance: Pan et al. (2023) in China, Malik et al. (2020) in the UK, and Ai Ping and Muthuveloo (2015) in Malaysia. Suttipun et al. (2019) demonstrated that no matter whether the firm is an SME in a developing country or a large firm in a developed one, both are getting the same benefit from adopting ERM.

While some researchers use appointing Chief Risk Officer (CRO) as a sign of ERM implementation (Pagach and Warr, 2010; Hoyt and Liebenberg, 2011; González, Santomil and Herrera, 2020), others employ the ERM index, which was developed by Gordon et al. (2009) in their study (Gordon, Loeb and Tseng, 2009; Widjaja, 2019). The index suggested risk management objectives for ERM implementation, including strategy, operating, reporting, and compliance. Widjaja (2019) concluded that the ERM index is positively associated with the profitability performance of banking industry firms. The result coincides with Gordon et al.'s (2009) finding that the ERM index is positively linked with the performance of non-financial firms.

2.3 Controversial suggestions about ERM and the firm's performance

There are several opposite views that found no linkage between ERM and an organisation's performance or found some negative relationship. The implementation and adoption of ERM take some resources, and if not used efficiently, those resources may cause significant expenditures and have a negative effect on the company's profitability and performance. Apart from this, some firms adopt ERM only for the purpose of complying with the law rather than adopting it to gain economic and non-economic benefits and opportunities.

PricewaterhouseCoopers carried out research of Finnish companies between October 2005 and January 2006 and, as research revealed, the main motivation for adopting ERM is tightening corporate governance pressures, as over 85 per cent of participants admit (Enterprise Risk Management (ERM) Benchmarking Survey 2006, 2006).

Tekathen and Dechow (2013) argue that ERM is not oriented on improving performance or compliance.

Quon et al. (2012) surveyed 156 non-financial firms during 2007 and 2008 years. Operational, accounting and financial market performance and risk reporting of each firm were examined during the

crisis. Researchers concluded that ERM does not have any considerable effect on business performance.

Agustina and Baroroh (2016) assessed the influence of ERM on the firm value through its financial performance. By sampling banking companies listed on the Indonesia Stock Exchange, the data was analysed, and the result indicated that ERM has no significant influence on firms' value and profitability.

Şenol and Karaca (2017) attempted to determine the influence of ERM on a firm's financial performance and to study the main determinants of ERM in Turkey. As they conclude, ERM does not affect firm value, ROA, Market-Book Value and Price Stability.

By studying the sample of 45 banking companies listed on the Colombo Stock Exchange (CSE), Alawattegama (2018) revealed that none of the ERM elements suggested by the COSO ERM integrated framework indicated a significant impact on firms' ROE. What is more, empirical evidence reveals that some elements, such as objective setting, event identification, control activities and monitoring, have negative but not significant effects on firm performance.

The study of Ramlee and Ahmad (2015) find no significant relationship between ERM adoption and the performance of non-financial Malaysian firms.

Gonzalez et al. (2020) examined if the financial stability of firms was associated with their ERM implementation level. The annual and management reports of Spanish non-financial companies from 2012 to 2015 were evaluated. Results exhibited no linkage between ERM and performance measured by ROA, ROE, and Tobin's Q. The study also found no evidence to conclude a positive relationship between companies with risk committees and their financial performance. Interestingly, the study found that hiring a CRO has a negative effect on a company's ROA and ROE.

2.4 Enterprise risk management components

The most popular and recently revised standards for ERM are ISO 31000:2018 Risk Management Guidelines (Risk Management - Guidelines, 2018) and Committee of Sponsoring Organizations ERM - Integrated Framework (Enterprise Risk Management - Integrated Framework, 2017). Both provide information about how a proper risk management framework should be implemented and what key factors should be considered. They emphasise the role of embedding risk management into an organisation's decision-making.

The ERM framework of COSO released in 2017 includes 20 principles that is divided into five groups and support different aspects of the framework. Those five components are the following: Governance and Culture, Strategy & Objective-setting; Performance; Review and Revision; Information, Communication and Reporting.

According to ISO 31000:2018 risk management is based on principles, framework guidelines and the process. It proposes the following eight principles that should be taken into consideration when establishing a company's risk management framework: Integrated, Structured, Comprehensive, Customized, Inclusive, Dynamic, Best Available Information, Human and cultural factors, and continuous improvement.

Both COSO and ISO 31000 frameworks require direct support from top management in order to be successfully implemented (Rampini & Berssaneti, 2022). Like in COSO framework, ISO 31000 (2018) puts a great emphasis on the risk culture and its role in the risk management system.

Apart from principles and guidelines, COSO defines the exceptional role of Chief Risk Officers (CRO) when establishing an enterprise risk management system. Several studies agree that the existence of CRO is essential to ERM implementation (Dickinson, 2001; Pagach and Warr, 2010; Hoyt and Liebenberg, 2011). As shown in the survey by Ramlee & Ahmad (2015), CROs existed in 86.3% of ERM-established firms.

Having a separate committee, such as an Audit or Risk Committee, can be another signal of a healthy enterprise risk management system. Many companies delegate risk oversight to Audit Committees, which periodically assess, monitor and communicate the effectiveness of the risk management system. Nevertheless, with the increasing duties and responsibilities of the Audit Committee, some companies doubt the effectiveness in the assessment of risk management and prefer to have a separate committee, namely the Risk Management Committee, that will only deal with the oversight of enterprise risk management (Badriyah, Sari and Basri, 2015). The presence of the Risk Management Committee is a critical resource for the board of directors in order to meet the company's risk management responsibilities (Subramaniam, McManus and Zhang, 2009). Halim et al. (2017) also state that having a Risk Management Committee will increase the oversight of risk management and make it more sophisticated.

2.5 Financial performance measures

Most researchers use several metrics to measure the financial performance of companies.

Return on Asset - ROA is used as a financial performance indicator in most of the studies (Badriyah et al., 2015; Bailey, 2022; Baxter et al., 2013; Bertinetti et al., 2013; Callahan & Soileau, 2017; Florio & Leoni, 2017; González et al., 2020; Hoyt & Liebenberg, 2011; Manab & Ghazali, 2013; Mohammed & Knapkova, 2016; Pan et al., 2023; Ramlee & Ahmad, 2015; Setiawan et al., 2021; Widjaja, 2019).

Quon et al. (2012) took a comprehensive look by examining operational, accounting, and financial market performance with respective measurement metrics: sales changes, operating profit changes, and changes in Tobin's Q.

Operating Profit Margin of a company is used to measure internal operational risk management and is a significant variable that shows the company's financial condition (Manab & Ghazali, 2013). Kbiltsetskhlashvili and Mamedova (2017) call operating profit as the principal sign of the effectiveness of the company.

Alawattegama (2018) suggests that the most popular and useful indicator of financial performance for a company is Return on Equity - ROE. It is used by several other researchers (Pagach & Warr, 2010; Agustina & Baroroh, 2016; Kbiltsetskhlashvili & Mamedova, 2017). Soliman and Adam (2017) include ROAE – Return on Average Equity in their three major performance measuring metrics together with share price and firm value. Manab and Ghazali (2013) used Net Profit Margin as an indicator of financial performance and ROA and ROE.

Tobin's Q is used by many researchers to investigate how ERM affects the market value of a company (Pagach and Warr, 2010; Hoyt and Liebenberg, 2011; Baxter et al., 2013; Badriyah, Sari and Basri, 2015; Ramlee and Ahmad, 2015; Florio and Leoni, 2017; González, Santomil and Herrera, 2020; Malik, Zaman and Buckby, 2020; Pan et al., 2023). Even though Tobin's Q is widely used, it is not a useful metric in Georgia because no information of market values of Georgian companies' is obtainable.

2.6 Hypotheses development

By considering the mixed results that different researchers worldwide concluded, our study hypothesises that there is a positive linkage between the company's Risk Management Disclosure (RMD)

in its financial and management statements and its financial performance. 5 performance measures of companies were chosen as dependent variables to one independent variable - assessed RMD score. Thus, five formulated hypotheses are indicated below:

- H1: There is a positive relationship between RMD and Operating Profit Margin.
- H2: There is a positive relationship between RMD and Non-operating Profit margin,
- H3: There is a positive relationship between RMD and Net Profit margin.
- H4: There is a positive relationship between RMD and ROA.
- H5: There is a positive relationship between RMD and ROE.

Considering the benefits outlined in the study, companies with proper risk management are expected to make better operational and strategic decisions and have better financial performance.

3. Research methodology

3.1 Risk management disclosure score

The study analysed suggestions made by both COSO and ISO 31000:2018 frameworks and chose the ones that will fit Georgian manufacturing industry and their risk management implementation practice. As a result, seven focus areas were developed, which were considered as a proxy for ERM adoption degree in Georgian firms. Information from the annual management report was collected and judgment was made according to ISO 31000:2018 and COSO general risk assessment requirements.

First is the presence of CRO or Head of ERM responsible for the implementation of an integrated risk management system across the organisation.

The second focus area is the risk assessment depth and frequency, which plays a significant role in the risk management process according to ISO 31000:2018 and is one of the most important components of COSO framework.

The next aspect under consideration is the completeness and appropriateness of mitigating activities and risk management monitoring according to ISO 31000:2018 and COSO. Establishing proper policies and procedures to proactively mitigate the exposure

and minimise the loss that it can bring to the business is one of the main tasks of risk management. As for monitoring, simultaneous review and control are suggested by both standards in order to find any gaps in internal control and fill them in a timely manner.

Fourth, the research checks if there is any sign of integrated risk management. It is investigated if terms associated with risk culture and its significance are mentioned in the reports. Additionally, any term related to ERM is explored, like risk management framework, system, principles or guidelines and their role in the company's risk management.

Because ERM is still not a popular practice in Georgia, some components that are specific to Georgian firms and may be a sign of ERM practice were added. For example, it was investigated if the list of the risks mentioned in the management reports is complete if companies consider not only financial but also other (operational, strategic, etc.) risks, and (as a sixth measure) how much attention is paid to risks in management report of companies.

Finally, as concentrating on financial risks is standard practice in Georgia, as a seventh focus area, it was analysed if all probable financial exposures related to the business are considered and fully elaborated in the report.

Considering all revealed ERM components in companies' annual and management reports, the Risk Management Disclosure score was calculated, showing at what stage of maturity the company's risk management is. Simple Yes/No measures, or not comprehensive ones, were scored by 0 or 1. More complex measures, or ones that have distinguishable subcomponents were scored by 0, 1 or 2.

Five performance measures were used in the study: ROA and ROE, the most popular performance measures; Operating Profit Margin and Net Profit Margin, which some researchers use as indicators of operational and financial performance. Additionally, this paper checks the linkage between the non-operating profit margin and risk management, as this margin includes extraordinary losses that may be minimised if there is proper risk management in the company.

Table 1

RM disclosure score components and definitions

Measures	Definitions and scoring
The Presence of CRO/Head of ERM	Equals one if the company has mentioned in its risk disclosures a chief risk officer or someone responsible for implementing ERM in the company (CFO, Head of ERM), zero otherwise.
Risk Assessment Depth and Frequency	Equals two if the company has mentioned the complete risk assessment process according to standards, equal 1 if it has mentioned some information about risk assessment, and zero otherwise.
Mitigating Activities & Monitoring	Equals one if the company has any necessary mitigating and monitoring activities according to standards, zero otherwise.
Information about Integrated Risk Management	Equals two if the company has mentioned that it has integrated risk management process in place with risk culture and proper framework in place, equal to 1 if the company has mentioned anything about risk culture, risk management framework, principles or system, and zero otherwise.
Complete List of Total Risks	Equals two if the company has included all risks related to its business in its management or annual report (financial, strategic, operational), equal to 1 if the company has included its risk not fully but partially, and zero otherwise.
The attention given to Risks	Equals one if a separate risk section is included in the management report, zero otherwise.
Completeness of Financial Risks	Equals one if the company has fully explained its financial risks and considers all of them, zero otherwise.

Source: own study

The maximum possible RMD score is 10, based on which the study assumes that according to its risk management disclosures, a company has proper integrated risk management in place.

A cross-sectional study was carried out based on Georgia's first and second-category manufacturing firms for 2021. Lower-category companies' reports were not considered because of the absence of the requirement to publish management reports and reduced financial reporting requirements. 118 firms were chosen in this study to observe. Random sampling was used to choose 118 manufacturing firms out of

167. After excluding some companies because of missing necessary data, the final sample size includes 105 observations. Data was collected from the official website of https://reportal.ge (Service for Accounting, Reporting and Auditing Supervision - Reporting Portal, no date), which provides annual and management reports of Georgian companies.

Data used in the study is quantitative and qualitative. Qualitative information was obtained from the 2021 annual reports, management reports, and quantitative data from audited financial statements for the same year.

3.2. Research model

A linear regression analysis was conducted to test the hypotheses. The study follows the approach of Ramlee and Ahmad (2015), who investigated the direct linkage between performance measures and ERM.

This approach is sufficient to reliably uncover links between the variables, which is the primary goal of the research. It is worth mentioning that the study does not try to create a model that fully explains independent variables or is used for forecasting and projections.

Given the variables and research design, a regression model is derived as follows:

$$\boldsymbol{ROA} = \alpha + \beta RMD + e \quad (1)$$

$$\boldsymbol{ROE} = \alpha + \beta RMD + e \quad (2)$$

$$\boldsymbol{Operating\ Profit\ Margin} = \alpha + \beta RMD + e \quad (3)$$

$$\boldsymbol{Non-operating\ Profit\ Margin} = \alpha + \beta RMD + e \quad (4)$$

$$\boldsymbol{Net\ Profit\ Margin} = \alpha + \beta RMD + e \quad (5)$$

Where dependent variables are the above-mentioned performance measures, the independent variable (RMD) is the calculated Risk Management Disclosure score, α is an intercept, β is a slope, and e is an error term.

3.3. Research limitations

The main limitation of the research is that conclusions are made based on risk management disclosures in annual financial and management reports. In contrast, those reports may lack information, or information can be unclear, and the real picture can be different from the one that appears in the reports.

Apart from that, Berishvili and Kavelashvili (2022) describe that up to 5% of financial statements data of Georgian companies contain errors. As a result, our performance measures may not be an exact indicator of a firm's financial and operational performance.

4. Results and discussion

4.1 Summary of companies' RMD disclosures

Table 2 below shows the number of companies with corresponding scores in each component of risk management.

No company is given the highest point (2) in each component. 76 out of 105 companies did not disclose the presence of an appointed manager responsible for implementing an integrated risk management system. Moreover, 68 companies lack proper risk assessment processes, and 93 companies do not disclose any mitigating activities and monitoring of risks, which means that more than half of our sample disregards the requirements of ISO 31000:2018 and COSO risk management standards. 72 companies do not have mentioned any point of risk management, its framework or system and culture in their management and annual reports.

On the other hand, more than half of companies (81) have described potential financial risks in detail. 38 companies have considered all types of risks (financial, strategic, operational) that are company-specific or related to activities, and 49 of them have partially covered other risks together with financial exposures. That means most companies pay attention to disclosing some information about their potential risks and plans to deal with them.

Table 2

Summary of RMD disclosures - number of companies with the corresponding score

RMD Components	0	1	2
1) Presence of a person responsible for reporting risk and implementing an integrated risk management system (0,1)	76	29	-

RMD Components	0	1	2
2) Frequency and depth of Risk Assessment (0,1,2)	68	31	6
3) Mitigating Activities and Monitoring (0,1)	93	12	-
4) Presence of any information about risk management framework, system, culture, etc. (0,1,2)	72	31	2
5) The importance given to risks in the management reports (0,1)	24	81	-
6) The completeness of the list of risks mentioned in reports (0,1,2)	18	49	38
7) The completeness of the financial risks described in reports (0,1)	24	81	-

Source: own study

4.2 Descriptive statistics results

Descriptive statistical analysis was conducted on 105 companies' performance measures. Information about the maximum, minimum, average, median and standard deviation of each variable of the sampled firm can be seen in Table, below.

Table 3

Descriptive statistics of data

	Min	Max	Average	Median	StDev
Net Income*	(9,589)	68,793	7,790	4,277	12,493
EBIT*	(15,256)	73,836	8,116	4,451	14,096
Non-operating Income*	(28,544)	29,714	(326)	(222)	4,913
Sales Revenue*	2,434	797,152	70,599	38,934	105,292
Total Assets*	4,433	461,512	63,531	42,786	70,739
Equity*	497	191,633	30,256	18,331	34,402
Debt*	128	360,172	33,274	17,590	53,519
Operating Margin (%)	-168.9	71.6	6.9	9.9	30.3
Non-Operating Margin (%)	-30.7	328.9	2.6	-0.50	32.9
Net Margin (%)	-128.9	160.0	9.5	9.2	28.1
ROA (%)	-29.3	85.8	11.7	11.4	16.4
ROE (%)	-522.1	4,212	78.6	23.1	435
Leverage (debt/equity) (%)	0.53	18,02	459	93.2	1,895
Total Asset Turnover	0.27	8.90	1.65	1.03	1.73
Relative Market Share (within the sample) (%)	0.03	10.8	0.95	0.53	1.4

*Note: * - in thousands of Georgian Lari*
Source: own study

4.3. Regression results summary

The linear regression results that checked the linkage of the RMD score with the firm's performance measures are presented in Table 4.

As regression results show, Operating Profit Margin and Net Profit Margin (both at p-value < 0.05) show a significantly positive association; thus, H1 and H3 can be supported.

Analysis shows that RMD is positively associated with ROE and ROA. However, the result is insignificant with high p-values. Thus, there is no evidence to support H4 and H5.

Analysis of the Non-operating Margin revealed a negative relationship, but again, with high p-values not significant enough to make confident conclusions.

Table 4

Regression results

Independent Variable	Dependent Variables	Coefficient	p-value
RMD Score	Operating Profit Margin	0.029249	0.0472**
	Non-operating Profit Margin	−0.000218	0.9892
	Net Profit Margin	0.029031	0.0338**
	ROA	0.013377	0.0944*
	ROE	0.026091	0.9030
	"Big Four"	0.039353	0.2565

*Note: ***p < 0.01, **p < 0.05, *p < 0.10.*
Source: own study

One additional variable that was checked in this regression is Audit Reputation to see if there is any linkage between the companies audited by the "Big Four" (Ernst & Young (EY), Deloitte, PricewaterhouseCoopers (PwC), and Klynveld Peat Marwick Goerdeler (KPMG)) and their RMD score. Observations show that 13 firms out of 105 have been audited by the "Big Four". Nevertheless, they do not have better results in risk management disclosures.

These regressions can support the positive linkage between RMD and the company's operational performance. Findings also show that RMD is positively associated with the company's ROA and ROE and negatively with Non-operating Profit Margin. However, the results are insignificant and cannot lead to any conclusions.

5. Conclusion

The study looked into Risk Management Disclosures of 118 manufacturing firms in Georgia for the 2021 year and investigated the level of Risk Management employed by the firms based on best practices and guidelines.

By analysing the annual financial and management reports of each firm, the study investigated the following: do firms have a CRO or some executive responsible for ERM implementation? Is there a proper risk assessment depth and frequency in place, with complete mitigation tools and activities, and if there is mentioned any term or activity related to integrated risk management, how much attention is paid to the risks in annual and management reports, if all risks related to the particular business activity are taken into consideration and if financial risks are adequately described with respective mitigation tools. Based on the findings, the RMD score was created and calculated for each company. Assuming that firms with higher levels of risk management will have higher levels of disclosure of associated information, the relation between risk management level and company financial performance was assessed.

The study analysed performance measures of a firm represented by Operating Profit Margin, Non-operating Profit Margin, Net Profit Margin, ROA and ROE. Results demonstrate that there is a positive linkage between RMD and the financial performance of a firm, represented by Operating and Net Profit Margins. On the other hand, no reliable linkage is found between the RMD level and the Non-operating margin, ROE, and ROA of companies.

This study highlights the RMD score as a structured measure of risk management effectiveness, providing firms with a practical tool for assessing and improving their risk strategies. These insights are particularly valuable for businesses in emerging economies, where structured risk management can enhance stability and resilience.

Apart from that, the study mitigates the reverse opinion that ERM adoption level is negatively associated with performance because no significant negative linkage is found.

As this is the first ERM research made in the manufacturing industry in Georgia, it gives additional information for new adopters and practitioners of ERM.

The current study's main contributions may be stated as follows: it introduces the RMD score as a quantifiable metric for

evaluating a firm's risk management effectiveness, offering a standardized approach for future studies and business applications; it empirically establishes the relationship between RMD and financial performance, demonstrating that firms with stronger risk management practices achieve higher financial results. These findings provide both theoretical and practical insights for improving corporate risk strategies, particularly in emerging economies.

Results open a new room for further investigation to identify new ERM assessment factors, the level of ERM employed by different firms in different industries of Georgia and the relationship between risk management of firms and their performance.

References

1. Agustina, L., & Baroroh, N. (2016). The Relationship Between Enterprise Risk Management (ERM) and Firm Value Mediated Through The Financial Performance. *Review of Integrative Business and Economics Research*, 5(1), pp.128-138.
2. Ai Ping, T., & Muthuveloo, R. (2015). The Impact of Enterprise Risk Management on Firm Performance: Evidence from Malaysia. *Asian Social Science*, 11(22). Available at: https://doi.org/ 10.5539/ass.v11n22p149.
3. Alawattegama, K.K. (2018). The Impact of Enterprise Risk Management on Firm Performance: Evidence from Sri Lankan Banking and Finance Industry. *International Journal of Business and Management*, 13(1), p. 225. Available at: https://doi.org/10.5539/ijbm.v13n1p225.
4. Avalishvili, M. (2011). Benefits of enterprise risk management and its development in Georgia. *Economy and Forecasting*, (2), pp. 105–117.
5. Badriyah, N., Sari, R.N., & Basri, Y.M. (2015). The Effect of Corporate Governance and Firm Characteristics on Firm Performance and Risk Management as an Intervening Variable. *Procedia Economics and Finance*, 31, pp. 868–875. Available at: https://doi.org/10.1016/S2212-5671(15)01184-3.
6. Bailey, C. (2022). The Relationship Between Chief Risk Officer Expertise, ERM Quality, and Firm Performance. *Journal of Accounting, Auditing & Finance*, 37(1), pp. 205–228. Available at: https://doi.org/ 10.1177/0148558X19850424.
7. Balasubramanian, B., & Cyree, K.B. (2012). The End of Too-Big-to-Fail? Evidence from senior bank bond yield spreads around the Dodd-Frank Act. Evidence from Senior Bank Bond Yield Spreads Around the Dodd-Frank Act (June 23, 2012) [Preprint].

8. Baxter, R., Bedard, J.C., Hoitash, R., & Yezegel, A. (2012). Enterprise Risk Management Program Quality: Determinants, Value Relevance, and the Financial Crisis. *Contemporary Accounting Research*, 30(4), pp. 1264–1295. https://doi.org/10.1111/j.1911-3846.2012.01194.x.
9. Berishvili, V., & Kavelashvili, N. (2022). Tools and Models for Ratio Analysis Based on Georgian Companies Data. *Ecoforum Journal*, 11(3).
10. Bertinetti, G.S., Cavezzali, E., & Gardenal, G. (2013). The effect of the enterprise risk management implementation on the firm value of European companies. *Department of Management*, Università Ca'Foscari Venezia Working Paper, 10.
11. Callahan, C., & Soileau, J. (2017). Does Enterprise risk management enhance operating performance?. *Advances in Accounting*, 37, pp. 122–139. Available at: https://doi.org/10.1016/j.adiac.2017.01.001.
12. D'Arcy, S.P., & Brogan, J.C. (2001). Enterprise Risk Management. Journal of Risk Management of Korea, 12.
13. Dickinson, G. (2001). Enterprise Risk Management: Its Origins and Conceptual Foundation. *The Geneva Papers on Risk and Insurance*, 26, pp. 360-366. https://doi.org/10.1111/1468-0440.00121
14. Dreyer, S.J., & Ingram, D. (2008). Standard & Poor's To Apply Enterprise Risk Analysis To Corporate Ratings. Enterprise Risk Management [Preprint].
15. Florio, C., Leoni, G. (2017). Enterprise risk management and firm performance: The Italian case. *The British Accounting Review*, 49(1), pp. 56–74. Available at: https://doi.org/10.1016/j.bar.2016.08.003.
16. Gates, S., Nicolas, J.-L., & Walker, P. (2012). Enterprise Risk Management: A Process for Enhanced Management and Improved Performance. *Management accounting quarterly*, 13(3), pp.28-38.
17. González, L.O., Santomil, P.D., & Herrera, A.T. (2020). The effect of Enterprise Risk Management on the risk and the performance of Spanish listed companies. *European Research on Management and Business Economics*, 26(3), pp. 111–120. Available at: https://doi.org/10.1016/j.iedeen.2020.08.002.
18. Gordon, L.A., Loeb, M.P. & Tseng, C.-Y. (2009). Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy*, 28(4), pp. 301–327. Available at: https://doi.org/10.1016/j.jaccpubpol.2009.06.006.
19. Halim, E.H., Mustika, G., Sari, R.N., Anugerah, R., & Mohd-Sanusi, Z. (2017). Corporate governance practices and financial performance: The mediating effect of risk management committee at manufacturing firms. *Journal of International Studies*, 10(4), pp. 272-289. doi:10.14254/2071-8330.2017/10-4/21

20. Hoyt, R.E., & Liebenberg, A.P. (2011). The Value of Enterprise Risk Management. *Journal of Risk and Insurance*, 78(4), pp. 795–822. Available at: https://doi.org/10.1111/j.1539-6975.2011.01413.x.
21. Iswajuni, I., Manasikana, A., & Soetedjo, S. (2018). The effect of enterprise risk management (ERM) on firm value in manufacturing companies listed on Indonesian Stock Exchange year 2010-2013. *Asian Journal of Accounting Research*, 3(2), pp. 224–235. Available at: https://doi.org/10.1108/AJAR-06-2018-0006.
22. Kbiltsetskhlashvili, T., & Mamedova, I. (2017). The Role of Risk Management and its Related Issues for Companies Economic Growth and Development of Insurance Sector: The Evidence of Georgia. *Journal of Business*, 5(2). Available at: https://doi.org/10.31578/.v5i2.109.
23. Kennedy, P. (2008). Enterprise risk management: effective ERM practices. *Strategy & Leadership*, 36(3).
24. Lam, J. (2014). Enterprise risk management: from incentives to controls. John Wiley & Sons.
25. Lundqvist, S.A. (2015). Why firms implement risk governance - Stepping beyond traditional risk management to enterprise risk management. *Journal of Accounting and Public Policy*, 34(5), pp. 441–466. Available at: https://doi.org/10.1016/j.jaccpubpol.2015.05.002.
26. Malik, M.F., Zaman, M., & Buckby, S. (2020). Enterprise risk management and firm performance: Role of the risk committee. *Journal of Contemporary Accounting & Economics*, 16(1), 100178. Available at: https://doi.org/10.1016/j.jcae.2019.100178.
27. Manab, N.A., & Ghazali, Z. (2013). Does Enterprise Risk Management Create Value. *Journal of Advanced Management Science*, 1(4), pp. 358–362. Available at: https://doi.org/10.12720/joams.1.4.358-362.
28. Mohammed, H.K., & Knapkova, A. (2016). The Impact of Total Risk Management on Company's Performance. *Procedia - Social and Behavioral Sciences*, 220, pp. 271–277. Available at: https://doi.org/ 10.1016/j.sbspro.2016.05.499.
29. Naik, S., & Prasad, C.V. (2021). Benefits of Enterprise Risk Management: A Systematic Review of Literature. *GATR Journal of Finance and Banking Review*, 5(4), pp. 28–35. Available at: https://doi.org/ 10.35609/jfbr.2021.5.4(3).
30. Pagach, D.P., & Warr, R.S. (2010). The Effects of Enterprise Risk Management on Firm Performance. SSRN Electronic Journal [Preprint]. Available at: https://doi.org/10.2139/ssrn.1155218.
31. Pan, G., Zheng, L., Geng, Z., & Liu, M. (2023). Does enterprise risk management benefit manufacturing firms? Evidence from China.

Economic Research-Ekonomska Istraživanja, 36(2). https://doi.org/10.1080/1331677X.2022.2134906
Available at: https://doi.org/10.1080/1331677X.2022.2134906.

32. Pirveli, E., Shugliashvili, T., & Machavariani, N. (2022). Economic policy of COVID-19: an emerging country perspective. *International Journal of Economic Policy in Emerging Economies*, 15(2/3/4), pp. 214-250. Available at: https://doi.org/10.1504/IJEPEE.2022.121348.
33. Przetacznik, S. (2022). The evolution of risk management. *The Małopolska School of Economics in Tarnów Research Papers Collection*, 53(1–2), 95107. Available at: https://doi.org/10.25944/znmwse.2022.01-2.95107.
34. Quon, T.K., Zeghal, D., & Maingot, M. (2012). Enterprise Risk Management and Firm Performance. *Procedia - Social and Behavioral Sciences*, 62, pp. 263–267. Available at: https://doi.org/10.1016/j.sbspro.2012.09.042.
35. Ramlee, R., & Ahmad, N. (2015). Panel Data Analysis on the Effect of Establishing the Enterprise Risk Management on Firms' Performances. In: Proceedings of 4th European Business Research Conference 9 - 10 April 2015, Imperial College, London, UK.
36. Rampini, G.H.S., & Berssaneti, F.T. (2022). Similarities and differences between COSO ERM and ISO 31000 - descriptive and content analyses. In. ENEGEP 2022 - Encontro Nacional de Engenharia de Produção, FOZ DO IGUACU/SP - BRASIL. https://doi.org/10.14488/ENEGEP2022_TN_ST_387_1915_43353.
37. Şenol, Z., & Karaca, S.S. (2017). The Effect of Enterprise Risk Management on Firm Performance: A Case Study on Turkey. *Financial Studies*, 21(2), pp.6-30.
38. Setiawan, A., Manurung, A.H., Hamsal, M., & Soepriyanto, G. (2021). The Analysis of the Effect of Internal Audit, IT Capability and CRO Role in the Enterprise Risk Management Implementation on Firm Performance Moderated by Listed Status among Indonesian State-Owned Enterprises. In Proceedings of the 8th International Conference on New Ideas in Management, Economics and Accounting. Available at: https://doi.org/10.33422/8th.imeaconf.2021.03.63.
39. Soliman, A., & Adam, M. (2017). Enterprise Risk Management and firm performance: an integrated model for the banking sector. *Banks and Bank Systems*, 12(2), pp. 116–123. Available at: https://doi.org/ 10.21511/bbs.12(2).2017.12.
40. Stroh, P.J. (2005). Enterprise Risk Management at UnitedHealth Group. *Strategic Finance*, 87(1), pp. 26–35.
41. Subramaniam, N., McManus, L., & Zhang, J. (2009). Corporate governance, firm characteristics and risk management committee formation in Australian companies. *Managerial Auditing Journal*,

24(4), pp. 316–339. Available at: https://doi.org/10.1108/02686900910948170.
42. Suttipun, M., Siripong, W., Sattayarak, O., Wichianrak, J., & Limroscharoen, S. (2019). The Influence of Enterprise Risk Management on Firm Performance Measured by the Balanced Scorecard: Evidence from SMEs in Southern Thailand. *ASR: Chiang Mai University Journal of Social Sciences and Humanities*, 5(1). Available at: https://doi.org/10.12982/CMUJASR.2018.0002
43. Tekathen, M., & Dechow, N. (2013). Enterprise risk management and continuous re-alignment in the pursuit of accountability: A German case. *Management Accounting Research*, 24(2), pp. 100-121. https://doi.org/10.1016/j.mar.2013.04.005
44. Widjaja, J. (2019). Enterprise Risk Management (ERM) and Bank Profitability Performance in Australian Banking Industry. President University. Available at: http://repository.president.ac.id/xmlui/handle/123456789/10310

Other web sources

- Enterprise Risk Management Survey Risk Intelligence in banking on the Georgian market (2016). Deloitte & Touche LLC. Available at: https://www2.deloitte.com/content/dam/Deloitte/ge/Documents/risk/Enterprise%20Risk%20Management%20Survey.pdf (Accessed: 3 June 2024).
- Enterprise Risk Management - Integrated Framework (2017). Available at: https://www.coso.org.
- Enterprise Risk Management (ERM) Benchmarking Survey (2006). PwC. Available at: https://www.pwc.fi/fi/julka¬isut/tiedostot/erm_study_2006.pdf.
- Risk management - Guidelines, 2018. Available at: https://www.iso.org/standard/65694.html (Accessed: 4 June 2024).
- Service for Accounting, Reporting and Auditing Supervision - Reporting Portal. Georgian Reporting Portal. Available at: https://reportal.ge/.