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# ENTERPRISE RISK MANAGEMENT PRACTICES IN LISTED CROATIAN COMPANIES

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## **Abstract**

The purpose of this research is to (1) explore Enterprise Risk Management (ERM) practices in Croatian companies, (2) establish ERM maturity Index, (3) define level of ERM development of Croatian companies, (4) analyse organizational aspect of risk management, methods of risk assessment and types of risk managed in Croatian companies. With that aim, conceptual research combined with survey among top management in Croatian listed companies was conducted. Based on the results it can be concluded that ERM is mainly underdeveloped in Croatian companies. Most of the analysed companies have low values of ERM Index, with intimidating 38% of companies not having any of ERM system elements. The most worrying result is that even 28% of analysed companies do not manage risks at all. Many important types of risks are neglected, so as methods of risk measurement are simple and outdated. Contribution of this paper is twofold. This is the first research conducted to explore ERM practices in detail, in which ERM Index as a measure of the maturity of ERM process is developed. Secondly, this paper brings recommendations to Supervisory and Management Board, as well as to Regulators, which could initiate broader ERM implementation and development in Croatian companies.

**Keywords:** Enterprise Risk Management; ERM maturity Index; Risk Management practices.

*Jel Classification:* G320; G390

## **INTRODUCTION**

There is a belief among increasing number of scholars (e.g., see Cumming and Hirtle 2001; Lam 2001, 2003; Meulbroek 2002; Liebenberg and Hoyt 2003; Nocco and Stulz 2006; Beasley et al. 2005) that Enterprise Risk Management (ERM) offers companies a more comprehensive approach toward risk management in comparison to the Traditional

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Risk Management (TRM). Where TRM is applied different types of risks are managed separately, in different parts of the organization, without assessing the correlation between risks and their total impact on the company's goals. Contrary to TRM, ERM is a systematic and integrated approach to managing all of the risks confronting an organization that directly or indirectly may affect a business's strategy execution, including the ultimate impact on the company's value. It encompasses activities and strategies which enable the company to identify, measure, reduce or exploit, as well as to control and monitor the exposure to various types of corporate risks – strategic, financial and operational – as well as to assess correlations between identified risks (COSO 2004). For ERM to bring benefits it should be integrated in the most important business processes, such as strategic management, strategic planning, as well as in the finance and investment decisions in order to ensure the consistent evaluation and management of risks that arise from business initiatives and plans (Meulbroek 2002; Nocco and Stulz 2006; Beasley et al. 2005).

Severe consequences of the global financial crisis resulted in re-thinking the risk management processes and approaches. OECD paper (June 2009) reports that risk management systems failed, not only because of weaknesses of risk assessment models and unrealistic assumptions underlying these models, but also because of inadequate corporate governance procedures. In many cases information about risk exposures did not reach the members of the board, hence major corporate risks were not included in the decision making process. It is clear now that, unless the transmission of information is effective, risk measurement and management will not affect company's performance even if it is well implemented in the technical sense. Research conducted among 1378 top managers of USA, Europe, Asia, Middle East and Australia (CGMA 2015) revealed that in 60% of surveyed companies, members of Supervisory Board and Audit Committee expect top management to implement and execute ERM system in their companies. Further, due to higher expectations of regulators and other stakeholders, in 70% of surveyed companies, ownership of risks was clearly distributed among managers and therefore direct responsibility is placed on top management for ERM system implementation success. Consequently, an increasing number of companies are moving from Traditional Risk Management (TRM) toward Enterprise Risk Management (ERM).

Motivated by aforementioned findings, we wanted to examine risk management practices in Croatian companies. In order to be competitive on European, and more widely, on the global market, Croatian companies should follow new trends and incorporate new value-added practices in their corporate governance procedures. Research question that is in the focus of this study is if Croatian companies are following the new integrated approach in managing corporate risks, more specifically do they implement ERM practices in their organization. This question should be answered through some indicators of risk management features valid for Croatian companies, or put in another words, through the evaluation of ERM system maturity measured by: (1) ERM Index, and (2) detailed analysis of risk management practices.

With that aim, research was conducted on the sample of 149 large Croatian non-financial companies belonging to different industries like food and beverage, pharmaceutical, tourism, energy, etc. All of them were established more than 10 years ago and were listed on the Zagreb Stock Exchange (ZSE). Survey questionnaire was mailed in February 2015 to the firm's chief risk officer (CRO) or, more often, to the

financial director, controller or chief executive officer (CEO). Survey response rate was 41 per cent, what can be considered more than satisfactory for statistical generalisation (Bodnar et al. 1998). Additionally, companies that did not answer the questionnaire do not differ from our final sample, according to their characteristics such as age, size, industry, etc. In that manner, based on the answers from companies in our final sample, we are able to make conclusions about ERM practices of large, non-financial listed Croatian companies in total.

This study contributes to the existing knowledge on the state and perspectives of Enterprise Risk Management system development in Croatian companies. The paper builds on and continues the analysis shown in Milos Sprcic, Kozul, and Pecina (2015, 2017) where different factors based on Risk Management Theory as well as ERM literature were tested as a rationale behind the determinants of ERM system development. As in the mentioned papers, ERM Index as quantitative measure constructed to evaluate the level of maturity and quality of ERM systems and practices has been used. Based on 14 closed-end questions on risk management practices, final scores for observed companies are calculated. This paper extends the analysis shown in Milos Sprcic, Kozul, and Pecina (2015, 2017) by presenting broader set of enterprise risks like strategic risks, financial risks, operative risks and other risk categories. The paper aims to investigate what are the most assessed types of risk in Croatian companies, and on the other hand, what are the most neglected types of risk that should be incorporated in suggested Enterprise Risk Management manner. Further, the implementation of different risk measuring techniques is investigated in order to get comprehensive view of risk management system state and deployment. Finally, the paper concludes with the recommendations for both regulators and managers how to improve risk management practices in Croatia for a better protection of stakeholders and more responsible behaviour of Croatian companies.

## **1. DETERMINANTS OF ENTERPRISE RISK MANAGEMENT SYSTEM DEVELOPMENT**

In respect to determinants of ERM implementation, previous empirical studies (Dolde 1995; Mian 1996; Geczy, Minton, and Schrand 1997) have found that firms with more assets are more likely to hedge. These studies contend that the positive correlation between size and hedging can be attributed to significant economies of scale in information and transaction costs of hedging. The same explanation can be offered for the level of development of ERM. It can be claimed that larger companies have larger exposures to different types of corporate risks, and that these risks are, to a certain extent, mutually correlated, so the benefits of managing risks in an integrated way are expected to be larger. Beasley et al. (2005) revealed that the stage of ERM implementation is positively related to the presence of a Chief Risk Officer (CRO), board independence, CEO and CFO evident support for ERM, the presence of a Big Four auditor, as well as companies in the banking, education and insurance industry.

Liebenberg and Hoyt (2003) and Pagach and Warr (2011) find that financial leverage is positively associated with ERM implementation, but Hoyt and Liebenberg (2011) find, using a broader set of indicators, that ERM has a negative relation to leverage. Because of the inconsistency of the results, the effect of leverage as a determinant of ERM should be further employed. However, it should be mentioned that research done on the

determinants of hedging as the financial risk management technique has confirmed that companies that are more leveraged hedge more intensively to decrease the costs of financial distress (Campbell and Kracaw 1987; Bessembinder 1991; Dolde 1995; Mian 1996; Haushalter 2000). Based on presented results, it can be concluded that ERM is positively associated with company's level of indebtedness. Pagach and Warr (2011) also find that firms that are more volatile, and have greater institutional ownership are more likely to adopt ERM. In addition, when the CEO has incentives to take risk, the firm is also more likely to hire a CRO. Drivers of ERM implementation are summarised in Figure 1 (source: authors) and categorised on the basis of their background, depending whether they are related to external or internal environment of the company or company's characteristics.

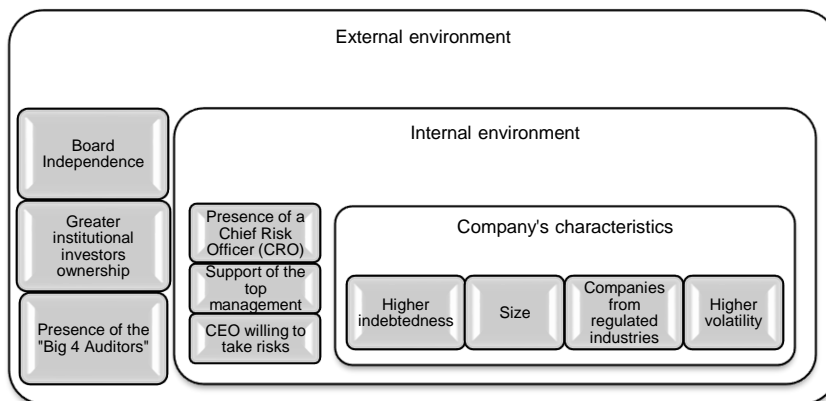


Figure 1. Drivers of ERM implementation

## 2. DEVELOPMENT OF ERM MATURITY INDEX

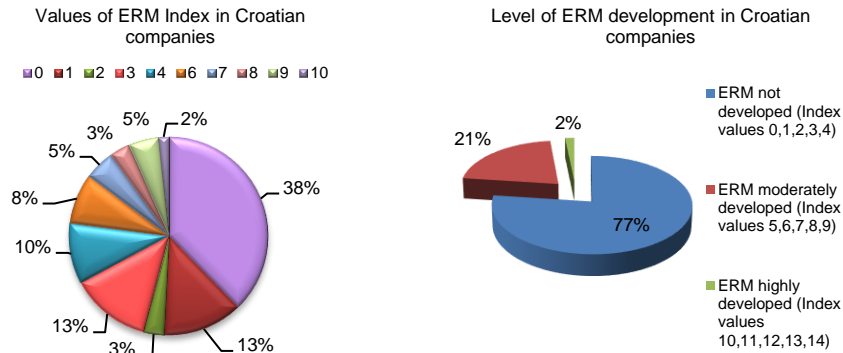
By conducting a thorough ERM literature review, following characteristic are recognised as integral components of a mature ERM systems (table 1, source: authors). In Meulbroek (2002), Beasley et al. (2005), Nocco and Stulz (2006), COSO (2004a), Paape and Speakle (2012), Mikes and Kaplan (2014), and Lundqvist (2014), these ERM components have shown important in measuring ERM quality and effectiveness, as well as influential in improving corporate performance and risk governance. 14 closed-end questions are listed on the basis on which ERM Index for Croatian companies has been calculated. One point for each positively answered question is attributed, and 0 points otherwise. Final score for a company is calculated by simply summing up assigned points, so the possible range of this Index is 0-14. Accordingly, the highest the ERM Index value, ERM system is considered to be more developed.

**Table 1.** Criteria for identification of company's level of ERM system maturity

<i>Characteristics of a mature ERM system</i>
Is there a Chief Risk Officer (CRO) in your company, responsible for risk management?
Is there a special department/division in your company dedicated to risk management?
Does your company have a written statement of the firm's risk appetite?
Are there official risk management policy and procedures in your company?
Do you apply COSO Integrated Framework for ERM in your company?
Do you apply ISO 31000 risk management standard in your company?
Is risk managed with an integrated analysis and management of all identified corporate risks (e.g. financial, strategic, operational, compliance and reporting risks)?
Do you determine correlations and portfolio risks effects of combined risks?
Do you determine quantitative impacts risks may have on key performance indicators?
Do you organize workshops in your company where managers discuss exposures to different types of risks and risk management strategies (so-called Risk management workshops)?
Does your company create a risk map indicating position of risks the company is exposed to, considering probability of occurrence and significance of identified risk to the business activity?
Do you have a risk response plan for all significant events?
Do you submit formal report on risk and risk management to the management board at least annually?
Do you monitor key risk indicators aimed at emerging risks (not past performance)?

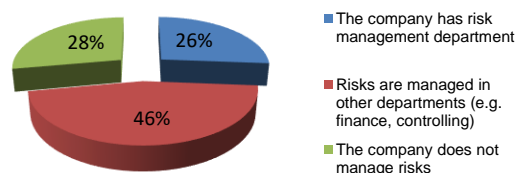
ERM Index creation was an attempt to overcome the shortcomings of binary ERM variable used in the work of Gordon et al. (2009), Hoyt and Liebenberg (2011), and Eckles et al. (2014). Their work is based on the search for evidence of ERM (through databases; such as Lexis Nexis and Dow Jones) by entering key words, such as “Chief Risk Officer”, “Enterprise Risk Management” and “Risk Committee”. These studies were criticized as measuring ERM by using single 0 - 1 dummy variable of ERM adoption is too simple measure of a complex process and it does not capture how ERM is actually implemented (Mikes and Kaplan 2014). Therefore, the attempt to create a comprehensive ERM measure that addresses common characteristics of a mature ERM process tries to contribute to the ERM theory building. However, it should be emphasized that the list of characteristics of ERM Index presented in this study is not exhaustive and that future ERM research should make improvement and amendments in order to create a better measure of ERM maturity.

Based on the obtained results the state of Enterprise Risk Management system of Croatian companies is graphically presented with respect to the achieved values of ERM Index (figure 2, source: authors). Minimum possible value of ERM Index is 0, while the maximum is 14. Panel of experts was formed consisting of 4 academics and 3 top managers working in the field of risk management and corporate governance. Experts discussed the results obtained on the value of the ERM Index and decided that companies should be categorised into three groups representing not developed, moderately developed or highly developed ERM system. After having group discussions, based of the expert knowledge and experience in risk management, what should be the value of the Index to categorise the company into one of the groups, consensus is obtained that companies with the value from 0 to 4 are in the category “ERM is not developed”, from 5 to 9 “ERM is moderately developed“, and values from 10 to 14 are in the group “ERM is highly developed”.



**Figure 2.** Values of ERM Index and level of ERM development in Croatian companies

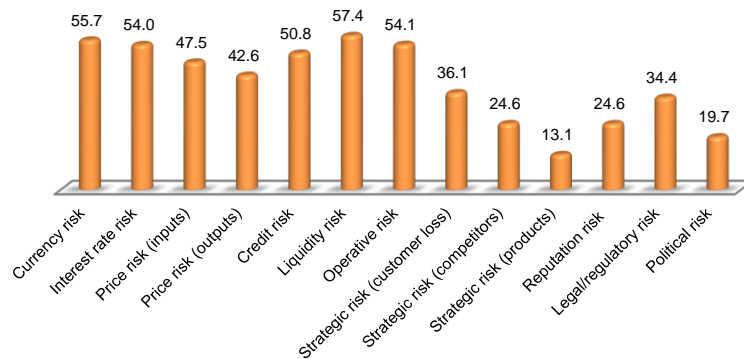
As shown in the figure 2, highest percentage of observed Croatian companies (38%) has null value of ERM Index, while the maximum value (14) of ERM Index is not reached among Croatian companies. Highest obtained value of ERM Index is 10, with only 2% of observed companies reaching that value. Companies with Index values of 0, 1, 2, 3 and 4 are put in a group characterised as "ERM not developed", which actually attribute to the most of Croatian companies, even 77% of them. Companies in that group have underdeveloped ERM system or corporate risk management in general, with almost 40% of them that do not manage corporate risks at all. In the "ERM moderately developed" group are 21% of the observed companies, meaning they have some components of ERM system. Last group "highly developed ERM" counts only 2% of Croatian companies, with the highest value of Index 10. Higher values (11, 12, 13, or 14) are not obtained in observed companies, so although in the top group, it cannot be considered that ERM system of these companies is truly (maximally) developed.



**Figure 3.** Risk management within the organisation

In order to manage risks in integrated manner as ERM proposes, one of the assumptions is to have specific department dedicated only to risk management. Only suitable organizational culture can assure needed development of ERM system in companies. In such organisation, it is possible to attribute responsibility over different types of risk in appropriate way that will enable functional and successful risk assessment and management. Unfortunately, such need is not recognized in Croatian companies. Based on reached results, as shown in figure 3 (source: authors), only 26% of Croatian companies have risk management department, while in most of them risks are managed

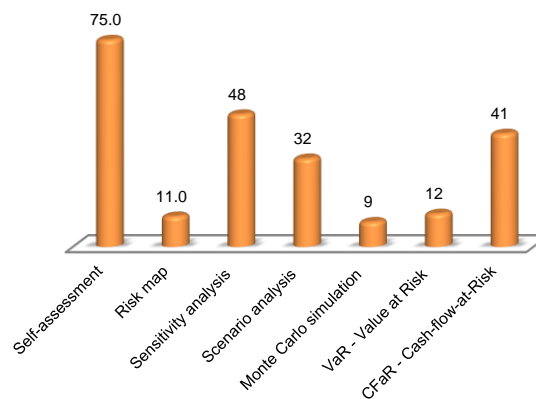
in other departments as one of many assignments of a specific department. In that way, it can be assumed that risks are not properly managed, nor are all needed risks covered, because time and energy is sparse over many different, unrelated tasks in department. Worrying result is that even 28% of Croatian companies do not manage risks at all, not even as partial task of one department.



**Figure 4.** Types of risk managed by Croatian companies (in %)

Enterprise Risk Management proposes integrated and interactive management of all types of risk a company is exposed to. In order to achieve that, company must put strongest effort in monitoring and governing the most influential risks for their business, but other categories must not be neglected - on contrary, one should pay great attention to them as well. Regarding the types of risk managed, figure 4 shows that financial types of risk like currency risk, interest rate risk, credit risk, liquidity risk, are taken care of in more than 50% of analysed companies. The same situation is with operational risks. However, it should be emphasised that the group of operational risks is the most-varied of all basic risks categories. They are difficult to manage because of their diversity, but also the lack of standardized approaches and instruments to minimize exposure. Some of them, like fire, flood, accidents at work and similar adverse events, can be controlled by transferring risk to insurance companies, but most of other types of operational risks, e.g. errors of internal control and audit, fraud or computer system error, require "in-house" management by developing internal procedures that will define business processes and responsibilities of employees. It should be ensured that all employees are qualified and competent to perform their tasks in order to avoid losses caused by human error, negligence or the hazardous conduct of individuals. Due to diversity of operational risk subcategories, the result that 54% of analysed companies is managing it should be treated with caution and should be further explored in the future. Hence, this result can be treated as one of the limitation of this research. In continuation of the results presented in the figure 4 (source: authors), concerning result relates to the negligence of strategic risks such as customer loss risks, which is the core risk for every profit organization, risks related to product innovation, reputational risk, legal/regulatory risks and political risks. One must ask how is it possible that the business operates successfully if managers do not analyse, measure and manage risks that can negatively affect strategic plans and strategic goals. Results presented in figure 4 confirm the finding that ERM system is not

developed in Croatian listed companies. If ERM exists, different types and categories of corporate risks would be equally important and the total risk exposure would be a relevant measure for risk management decision making.



**Figure 5.** Methods of measuring risk exposure used in Croatian companies (in %)

ERM system existence and maturity can be assessed based on methods used to measure risk exposure. For example, Risk Map serves to identify, evaluate and determine the significance of different types of risks to which the company is exposed to, and which can have a significant impact on the ability of the company to achieve its business objectives. Process of risk mapping unites identification and quantification of different risks at one place and is considered as an important element in effective ERM system (Milos Sprcic 2013, 103). Figure 5 (source: authors), presents methods of measuring risk exposure used in Croatian companies. Risk Map is not significantly present – only 11% of surveyed companies use it as a method of measuring risk exposure. This is in line with previous conclusions about underdevelopment of ERM system of most Croatian companies. Next confirmation of that conclusion can be found in high rate of use of the simplest method – sensitivity analysis. Even 48% of Croatian companies use this method although it has major downside that it cannot measure combined effect of changes in different variables on expected cash flow distribution. This confirms that most Croatian companies cannot manage risk in an integrated manner, the one that is required in dynamic global business environment.

Monte Carlo simulation, an advanced method of sensitivity analysis that enables simultaneous assessment and interactions of different risk type's effects on company's cash flows, is used less than sensitivity analysis – only in 9% of Croatian companies. Highest percentage, 75%, of observed Croatian companies claims they use self-assessment as a method of risk exposure measure. As it enables the classification and quantification of the effects of various risks by using subjective assessment of the group of experts that have the experience and knowledge about the company and its strategic and operational plans, it should be careful with interpretation of this obtained (high rate) result. Combined with the obtained results that 74% of companies do not have adequate organizational structure nor culture (figure 3) for integrated risk management, it can only



be assumed that it may be self-assessment of risk exposure, but not from risk management experts.

Two most used quantitative measures of risk exposure are Value at Risk (VaR) and Cash-flow at Risk. VaR is defined as the maximum expected loss over a period of time and within statistically defined area. The greatest advantage of VaR is its capability to compress the expected distribution of negative business results in one number. Still, it has shortage that it cannot be calculated for long-term period. Also, it is mostly used for financial institutions rather than companies from real sector. With that in mind, it can be understood why this measure is used by a small percentage of observed (non-financial) companies. Cash-flow at Risk (CFaR) is an alternative to VaR. It enables the estimate of probability of the occurrence of financial difficulties or bankruptcy of the company in the long-term. This measure is significantly more used by Croatian companies, 41%; however, taking into account the level of ERM maturity, this result should be treated with caution.

As comprehensive ERM theory still does not exist, ERM system is implemented in many ways that can significantly differ from company to company. However, several semi-regulatory bodies have published frameworks to help organizations in implementing and designing their ERM, from which the best-known and widely used is the COSO ERM framework (COSO 2004) that provides key principles and concepts, together with an annex to the framework, which intends to provide practical illustrations that might be useful to companies which implement ERM. The second framework offered to companies is Risk Management ISO 31000–2009 standards, which is not so focused on the integrated risk management. Based on results reached through survey, there is a small use of these frameworks by Croatian companies. Only 7% of them use ISO 31000 Standard, while even less, 5% of analysed companies use COSO ERM framework to shape their risk management systems. These results are not surprising because it is already shown that most of the observed Croatian companies do not manage risks in an integrated manner, and in today's conditions unimaginable large number of companies does not manage risks at all.

## CONCLUSION

Enterprise Risk Management, a discipline worldwide recognized as important element of an effective corporate governance system for increasing shareholders wealth, is mainly underdeveloped in Croatian companies. Based on ERM Index, developed to determine the level of maturity of ERM systems, more than 75% of analysed Croatian companies do not manage risks in an integrated manner, and even 40% of these companies do not manage corporate risks at all. Croatian companies do not have structural nor cultural organization suitable for implementation of ERM. Only 26% of analysed companies have risk management department, while in rest of them risks, if managed, are responsibility of other departments, such as finance, controlling etc. Thus, in such organisation, it is not possible to attribute responsibility over different types of risk in appropriate way that will enable functional and successful risk assessment and management.

It is not surprising that, because of lack of time and resources, this way of managing risks cannot assure that all risk types are covered. In more than 50% of analysed companies, financial and operational risks are taken care of, but other types such as strategic, legal, or

political risks are neglected. Methods of risk exposure measurement used in Croatian companies correspond to the level of ERM development. Namely, 48% of analysed companies use the simplest methods to measure risk exposure, such as sensitivity analysis, while methods that enables risk integration, such as Risk Mapping or Monte-Carlo simulation, are not significantly present in Croatian companies. Self-assessment is, according to the results, the most common method of risk exposure measure with 75% rate. This method enables the classification and quantification of the effects of various risks by using subjective assessment of the group of experts that have the experience and knowledge about the company and its strategic and operational plans. Defined like this, only companies with high maturity of ERM systems are expected to use this method, so this result should be taken with caution. Taken together with the obtained result that 74% of companies do not have adequate organizational structure nor culture for integrated risk management, it can only be assumed that it may be self-assessment of risk exposure, but not from high-profile risk management experts. Although different frameworks to help implement ERM in a company exist, they are not used in Croatian companies. This is not surprising, but on the contrary it is expected as it is in line with the fact that ERM in analysed Croatian companies is underdeveloped.

All of these findings bring great concern because of a fact that only large companies, listed on Zagreb Stock Exchange (ZSE) are analysed. One would expect that managers in listed companies have greater sense of responsibility for their shareholders regarding risks a company is exposed to. Further, large companies are more likely to have mature ERM systems due to larger exposures to many different risks (Milos Sprcic Kozul, and Pecina 2015). If this kind of companies do not have ERM systems developed, and many of them do not manage corporate risks at all, question is raised “*What would be the results if other companies, apart from large and listed, were involved in the study?*”.

Based on this research, few recommendations are proposed which could initiate broader ERM implementation and development in Croatian companies. As Croatia is following Two Tier corporate structure system where dual board exists, members of the Supervisory Board should ask the Management Board to provide the analysis of a current state and assessment of effectiveness of existing risk management system within a company. They also have the responsibility to control and supervise risk management process in the best interest of shareholders; hence, they are able to demand implementation and application of ERM system. The Supervisory Boards, as well as the Audit Committee, are playing an important role in improving risk management systems in Croatia, but also in other countries. Research conducted among 1378 top managers of USA, Europe, Asia, Middle East and Australia (CGMA 2015) revealed that in 60% of surveyed companies, members of the Supervisory Board expect top managers to implement and execute ERM system in their companies.

Other recommendation on improvement of risk management system goes toward the managers' attention as the key driver of ERM system maturity. Milos Sprcic, Kozul, and Pecina (2017) have proven that managers' support is, together with the size of the company, the most important determinant of ERM system maturity in Croatian companies. Results are suggesting that the more managers pay attention and give support to the risk management system, the more developed it gets within the company. This is in line with Beasley, Clune, and Hermanson (2005) who found CEO and CFO evident support for ERM positively affects the stage of ERM implementation i.e. its maturity. Hence, top managers in Croatian listed companies should understand better the

importance of an integrated risk management. The responsibility of every top manager is to be aware of the 10–15 key risks a company is exposed to, and to identify and manage strategic risks, not only financial and operative risks. Another recommendation goes toward the improvement of Croatian Corporate Governance (CG) Code, which could be used as a form of a soft-law to motivate managers to improve risk management systems as well as to encourage good practices of integrated risk management. Current CG Code does not emphasise enough the importance of corporate risk management. It only requires that listed companies must report on types of risk that they are exposed to, resulting in almost 30% of listed companies, which do not manage risks at all. If listed companies are obliged to report in more details how they manage risks, then managers would probably take it more seriously and advance risk management systems.

We acknowledge there are some limitations of our study that should be diminished in future research. Firstly, we recommend including other companies in the sample, for example large non-listed companies, as well as small and medium sized firms. Further, it would be interesting to analyse similarities and differences of risk management practices between Croatian companies and companies of neighbouring countries by using the same methodology. In that case, the validity of ERM Index developed and used in this study could be further tested. However, it should be emphasised that the list of characteristics of ERM Index presented in this study is not exhaustive and that future ERM research should make improvement and amendments in order to create better measure of ERM maturity. We are aware using a questionnaire has some limitations, such as subjectivity of respondents and their interpretation of the questions. Still it is a helpful tool to gain large amount of information from a large number of companies and get a more detailed view of the research topic. We suggest repeating the survey in the next 2–3 years and obtaining a panel data about development progress of ERM practices in Croatian companies. In that way, more information about characteristics of risk management systems, types of risk managed as well as data on tools and techniques used to identify, evaluate and manage different corporate risks would be collected. This would reveal if Croatian companies have been able to turn risk management into competitive advantage needed for company's success in a dynamic business environment.

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