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Aykut.Bussian@bakertilly.de***Abstract**

Enterprise risk management (ERM) is an integrated approach to manage the risks of companies. Despite the wide adoption of ERM into companies' organizational processes, there are neither clear standards for ERM nor ground based theories about the outcome of it. This paper gives an overview of scientific research in the topic of ERM by comparing recent academic papers which focus ERM in the context of performance evaluation or effectiveness by categorizing and evaluating each source against its limitations. The limitations are used to develop a unified view on the question of how ERM influences performance of organizations. This also involves aspects of measuring the current status of ERM within companies and the effects of ERM on the other side. This paper shows that there is diversity in scientific literature of how to measure performance in the ERM-context. The authors identify reasons for that and suggest approaches to solve the problem by identifying best-practice approaches and a generic framework on how to use them to improve ERM-assessment in practice as well as research.

Keywords: *risk management, ERM, key performance indicators (KPIs) performance measurement, sustainability*

JEL Classification: *M10, M16, M2, L10, Q01*

I. INTRODUCTION

Companies have to face various risks which might have a great impact not only on the business success, but also on their organizational processes. The increasing complexity and interconnection of companies and the environmental factors surrounding them leads to the fact, that companies are more concerned about operational and social issues today. This challenges their business models and risk awareness since new risks from additional areas appear (Global Corporate & Specialty SE, 2016).

Managing of risks and opportunities is a genuine part of companies' activities. Whenever companies deal with potentially gains and losses for their business, they consider and manage risks. Traditional risk management has long been considered as an additional business function or department, even with the installment of a Chief Risk Officer (CRO). However, this approach leads to the major failure of isolating risk management procedures from the operational business processes. Enterprise Risk Management (ERM) provides a framework for an integrated risk management, not just to fulfill local legal obligations or financial risk assessment, but also to apply adequate risk awareness, for risk-based priority setting, and business steering in all relevant business functions. Due to global political, economic and social trends, company's attention towards the social and environmental impact on their business increased, with special regard to the general topic sustainability (Liangrong Zu, 2013).

ERM has an influence on the strategic decision making process and will therefore influence the output of a company (e.g. accepting or mitigating risks will influence products, market diversification, delivery of services etc.). The question of how the influence of ERM to organizations can be measured is not understood and discussed in scientific literature. Within this paper the scientific approaches to identify the influences of ERM on the performance of companies are analyzed by comparing different scientific studies of the last 5 years. On

the basis of the finding the authors suggest a generic approach for assess the level ERM within companies.

II. RISK AND RISK MANAGEMENT

Definitions

Risks occur every day for people, as well as for companies. Taking risks is fundamental for growing and development. Therefore it is crucial to identify and manage risks to minimize their threats and improve their potential (Institute of Risk Management, 2006).

According to ISO 31000:2009 risk is defined as a deviation from the expected which leads to uncertainty on acquiring organization’s objectives. “Enterprise risks” might occur to all functions of a company, whatever the sources or nature is. According to the Committee of Sponsoring Organizations of the Treadway Commission’s (COSO, 2004), enterprise risk management is “A process, ongoing and flowing through an entity, effected by people at every level of an organization, applied in strategy setting, applied across the enterprise, at every level and unit, and includes taking an entity-level portfolio view of risk, designed to identify potential events that, if they occur, will affect the entity and to manage risk within its risk appetite, able to provide reasonable assurance to an entity’s management and board of directors, geared to achievement of objectives in one or more separate but overlapping categories” (COSO, 2004). According to COSO risks can be divided into different categories, e.g. strategic, operations, reporting and compliance.

For the purposes of this paper, risk is defined as any event or circumstance that could adversely affect the achievement of business objectives of one or multiple companies. The objectives can occur on different dimensions, e.g. financial and at different level. Risk is usually expressed the likelihood of the occurrence and impact of an event. Risks can also be seen as opportunities. An opportunity is any event or circumstance that could positively affect the achievement of business objectives of one or multiple companies (Anderson, 2005).

The coordination of activities, which are related to monitor and control risks, are covered with the term “risk management”, whereby main intentions and thoughts are manifest in companies risk management policy. A risk management framework (e.g. the COSO-framework, ISO 31000 etc.) consists of organizational components to implement and execute risk management. The risk management process itself ensures the handling of risks, as identifying, evaluation, monitoring and reporting.

Risk management within companies

Risk management is a constantly ongoing process. The risk management process itself should be iterative and consists of the following steps:



Figure 1: Process steps within Risk Management (Source: own elaboration, according to Anderson, 2005, p.285ff.)

Commonly used techniques for risk identification are divided in quantitative and qualitative methods. Quantitative methods are mainly focused on the computation of certain economic variables and their relation (e.g. sensitivity analysis, scenario analysis), whereas qualitative methods often emphasize the knowledge of risk owners or risk takers (e.g. interviews, cross-functional workshops). Often operational, market or business risks are assessed, which could occur within the next 12 months. Major strategic or liquidity risks can be assessed for a period up to the next 5 years or beyond. Usually risk identification starts from the risk owners’ perspective. The evaluation of risks should be done using impact and likelihood, relative to the prior definition of entity-specific risk thresholds. Impact is the potential effect on companies’ business objectives in case the risk occurs, whereby likelihood of occurrence is the probability that a risk actually occurs. Risk severity is the combination of impact and likelihood occurrence. It also means to visualize (e.g. as risk matrix) the company/specific risk landscape as it defines the position of the individual risk on the risk matrix. Different severity class can be distinguished, whereby different monitoring requirements per risk severity class might apply (Anderson, 2005). Risk response covers the identification of existing risk response as well as definition and implementation of future risk responses (preventive and detective risk measures). Regular and ad-hoc reporting of risks is part of the process step risk monitoring and communication. Adequate training and communication to create risk awareness through the organization should also be covered. The monitoring of risks and the risk management system itself should also be an integrative part of a risk management process to identify and implement measures to continuously improve companies risk management process. A general risk culture needs to be fostered in order to ensure proper risk identification, assessment, reporting and response (Gates et.al., 2012).

Generally, all risks should be evaluated in terms of their qualitative and financial result (positive or

negative). The effects should be assessed in terms of the reporting party and assigned to risk classes. In addition, the qualitative effects of risks must be assessed, such as effects on company's reputation or that of its shareholders, on the safety and health of the employees, the environment, and compliance risks. Not all risks can be evaluated in relation to financial impact due to their nature. Risks might occur which have considerable effects beyond financial impact. In these cases, qualitative impacts might be considered (Anderson, 2005).

Due to the increasing impact of social and environmental issues on business success as well as upcoming European regulation regarding non-financial information on sustainability and social responsibility (EU directive 2014/95/EU), companies are also concerned about sustainability. Therefore, sustainability should also be integrated into the risk approaches and practices (Liangrong Zu, 2013; Kaye, 2014; Smith, 2003) as a newly emerging area in the Enterprise Risk Management field.

Enterprise Risk Management (ERM)

Entrepreneurial success requires the conscious taking of risks. As such, the identification and handling of risks as part of risk management are crucial for achieving business objectives. Enterprise Risk Management is an integrated and joined up approach to control the risks associated with the business activities by providing a pragmatic and consistent framework of methods and processes to monitor and respond to events or circumstances that could affect the achievement of business objectives on company level as much as in an organizational unit (Institute of Risk Management, 2006). Company's approach to ERM should be aligned with core business processes such as business planning, project management and external annual reporting, but also with other relevant corporate governance elements such as Compliance Management, Internal Control System and Internal Audit to ensure effectiveness. Gearing high transparency about available risk information is essential for effective ERM. Generally ERM should aim to comply with regulatory requirements on the one hand and create value for the business organization on the other hand.

The main tasks of ERM are to support strategic and well-informed decision making and to provide a scalable and effective approach for risk and opportunities throughout the enterprise. In general it can be stated, that ERM aims to identify and respond to opportunities and risks affecting the achievement of business objectives in an effective and integrated way (Anderson, 2005). Business success calls for deliberate risk-taking. The approach to risk management helps to appropriately control the risks arising from business activity with a pragmatic and consistent method. Various principles apply to enable effective ERM, but are mostly company-individual. Effective ERM is an integral part of companies' business processes, day-to-day management and corporate culture organized by the board of management.

Existing approaches and frameworks in the ERM context

Risks are inherent to all kinds of organizations and functions. Risk management is therefore methodically elaborated. For implementing traditional risk management systematically and effectively, various standards and regulations exist. They seek to establish a common view on frameworks, processes and also Key Performance Indicators (KPI). A KPI evaluates the success of an organization or of a particular activity in which it engages. Defining KPIs for risk management seems to be a logical step to evaluate ERM within a company. KPIs are also used by different ERM-frameworks. Approaches such as COSO can be named, which established an internal control model for companies to evaluate their internal control system and risk management. Within the framework "internal control" is defined as process, which is affected by people at every level of the organization and geared to archive organizational objectives (COSO, 1992). COSOs framework distinguishes five interrelated components to analyze organizational internal control systems.

1. The "control environment" sets the structural setup (e.g. definition of ethical values).
2. "Control activities" cover regulations, which shall ensure that necessary steps to handle risks.
3. The "assessment of risks" is an essential part of every risk management process and based on the identification of risks.
4. "Information and communication" (e.g. as report regarding operational, financial and compliance-related information) is important in an internal control system to ensure information flow.
5. "Monitoring" assesses the quality of the system's performance over time to assess efficiency and obtain improvement.

The four categories (strategic, operations, reporting and compliance) extend the framework to ensure the achievement of defined organizational objectives (COSO, 2009).

It has to be pointed out, that the COSO framework is limited and is not intended to be exhaustive. ERM itself has to consider the human factor, which might lead to inadequate decision making regarding risks – this is difficult to consider within a theoretical framework, but requires organization individual management (Brünger, 2009).

The ISO 31000 standard can be seen as a collection of risk management practices. It is not focused on ERM but rather a generic universally useable approach to risk management. It defines principles and to design and implement as well as maintaining a risk management process within a company. As other ISO norms as well

it defines a cyclic top-level-process with the following risk specific parts: Commitment of the risk topic, design of a risk management, implementation of the risk management, monitoring of the risk management, and improving of the risk management. Within these processes certain necessary steps are defined as generating of a risk context, risk identification, risk assessment, risk mitigation, risk monitoring.

There are other methods and frameworks which are useful in the context of ERM. The four categories defined by COSO (see above) are similar to other management frameworks or tools which assist enterprises in reach their strategic objectives. The balanced scorecard method is a management tool which measures the organization's progress toward achieving strategic goals. While ERM helps to guide through the various risks while steering toward these strategic goals, balanced scorecard measures the progress toward it. Several reasons exist why the balanced scorecard can be used together with ERM. The balanced scorecard assesses the progress in various dimensions (financial performance, customer satisfaction, internal processes, learning and growth for employees) and with a focus on strategy, similar as the categories suggested by COSO. It assesses a company using performance-measures on an enterprise-wide perspective – the same is true for ERM. Both are top-down and holistically, continuously, and ongoing approaches which pursue a balanced and consistent approach across multiple dimensions of an enterprise (Beasley et al., 2006). The authors demonstrate how to integrate an ERM approach into the balanced scorecard method of a supply chain process of an enterprise given a very good example on how to use both methods together. Similar approaches were made by other authors as well (e.g. Nagumo et al., 2006; Saeidi et al., 2014). Saeidi et al. (2014) suggested using an enhanced Balanced Scorecard approach. This "Risk-BSC" should explicitly covers ERM features and their contribution to achieving financial and non-financial goals of the entity. Acharyya (2008) suggests to use the balanced scorecard as multi-dimensional method together with other single-dimensional approach such as the economic value added (EVA¹³). According to the author ERM is a controlled system which can be assessed using multidimensional objectives of different kinds. EVA can be useful when assessing the effects of ERM (Hawawini et. al., 2003). It is an analysis tool (Young, 1997) which estimates the economic profit of an organization with the shareholder perspective. EVA and Balanced Scorecard have some overlapping topics and can both be used to create performance indicators (Woods, 2007).

Depending on the industry and the focus strategic objectives are different. Therefore a clear set of performance indicators cannot be predefined. Nevertheless each organization should adapt a framework which controls the ERM process through a multi-dimensional measurement approach which is aligned with the strategic objectives.

III. RESEARCH METHOD

The authors identified scientific papers with linkage between ERM and firms performance. The approaches of the studies were compared to identify common elements, differences, and weaknesses. The last chapter is the formulization of a holistic framework based on the findings of the studies (see Table 1 in appendix). This scientific research is focused on the years between 2010 and 2016. Other studies already summarized results with the focus on ERM and value creation of the previous years (e.g. Kraus et al., 2012). An overview of the selected research is given in table 1.

¹³ EVA® is a trademark of Stern Stewart & Co. (US consulting firm)

Table 1: Summary of ERM-studies between the years 2011 and 2015 (source: own elaboration)

Title and authors	Year	Does ERM adds value? (yes, no, both)	Metho-dology	Summary / results	Data used
ERM Determinants, Use, and Effects on the Firm, Pooser David M., Tobin Peter J.	2012	no	Empirical	Firms with an ERM rating have a larger and greater operational diversification and lower levels of liquidity or free capital. No influence on ROA, premium growth, income growth, surplus growth was found.	ERM assessment: Standard and Poor's quality rating related variables Performance: Various variables as Size, Net Premiums Written Scaled by Policyholder, Surplus ratio, Policyholder Surplus Scaled by Net Admitted Assets ratio, Change in Net Income from Prior Year, Direct Premium, Standard Deviation of ROA, ROA, Portfolio Variance and other
Risk Management and Performance in Insurance Companies, Eikenhout	2015	no	Empirical	No significant evidence was found of a positive effects of ERM on performance (before and during the crisis years).	ERM assessment: Existance of Chief Risk Officer and Risk Committee, Presence of an important Auditor firm, firm size Performance values: Data based on Annual reports: ROA, ROE, , Leverage
The Value of Enterprise Risk Management: Evidence from the U.S. Insurance Industry, Hoyt Robert E., Moore Dudley L., Liebenberg Andre P.	2006	yes	Empirical	The use of ERM is positively related to firm size and institutional ownership, and negatively related to reinsurance use and leverage. A positive relation was found between firm value and the use of ERM.	ERM assessment: calculated based on firm size, institutional ownership, diversification, industry Financial value based on: Book Value, One-Year sales growths, Return on Asset, Tobin's Q etc.
Enterprise Risk Management Sophistication and Firm Risk, Barrese, James, Stephen G. Fier, Pooser David M., Walker Paul L	2015	(yes)	Empirical	Sophisticated risk management practices are related to a higher variation in operating cash flows / greater cash flow volatility.	ERM assessment: answers to 25 risk management survey questions taken from RIM database, an international organization for risk management professionals Performance: ROA, Tobin's Q, Size, Liquidity, Sales Growth, Leverage, Dividend Status, Coefficient of Variation of Cash Flows
The Relationship Between Enterprise Risk Management (ERM) And Firm Value Mediated Through The Financial Performance, Agustina, Linda; Niswah Baroroh	2016	no	Empirical	ERM has no significant influence on firm value and profitability.	ERM assessment: ERM measures based on guidelines of risk management for commercial banks Performance: Data from annual reports and Indonesia Capital Market Directory, Price to Book Value, Return on Equity

Does Enterprise Risk Management Create Value, Norlida Abdul Manab, Zahiruddin Ghazali	2013	no	Questionnaire with quantitative analysis	Risk management practices as well as corporate governance compliance have an effect on shareholder value. ERM was not the main factor that led to value creation.	ERM assessment: size of company Performance: Earnings per share, total debt over total asset, cost of financing and taxation, net profit margin, returns on asset, returns on equities in current year, cash and securities in hand, total intangible asset, error terms
A Study of the Relationship Between a Successful Enterprise Risk Management System, a Performance Measurement System and the Financial Performance of Thai Listed Companies, Laisasikorn Kittipat, Rompho Nopadol	2014	no	Questionnaire with quantitative analysis	ERMS and PMS have only a weak positive correlation with the financial performance considering return on assets (ROA) return on equity (ROE) and earnings per share (EPS).	ERM assessment: answers to questions to assess the level of ERM Performance ROA, ROE, EPS
Does Enterprise Risk Management Create Value for Firms?: Evidence from Nordic Countries, Sekerci Naciye	2013	no	Questionnaire with quantitative analysis	Value creation of ERM is not supported.	ERM assessment: a survey with questions of the level of ERM implementation Performance: Tobin's Q, ERM, Size, Leverage, Profitability, Growth Opportunities, Dividends, Geogr. Diversification, industrial diversification
Does Enterprise Risk Management Increase Firm Value? McShane, M. K., A. Nair, and E. Rustambekov	2011	(yes)	Empirical	A positive relationship were found between increasing levels of traditional risk management capability and firm value but no additional value for firms which achieved a higher ERM rating.	ERM assessment: ERM Rating and score based on Standard & Poor Performance: Tobin's Q, Size, Financial Leverage, Systematic Risk, Profitability, Cash-Flow Volatility, Growth Opportunities, Complexity (diversification)
The Impact of Enterprise Risk Management on Firm Performance: Evidence from Malaysia, Teoh Ai Ping, Rajendran Muthuveloo	2015	yes	Questionnaire with quantitative analysis	A significant influence on firm performance through ERM implementation was found.	ERM assessment: 103 questionnaires with an analysis of ERM level based on the components of COSO framework consisting of risk management implementation, influence factors as Board of Directors, firm size and complexity firm performance: 6 financial values, 6 non-financial values
A Proposed Model of the Relationship between Enterprise Risk Management and Firm Performance,	2014	n.a.	Literature reserach	This paper proposes a model that links ERM to both financial and non-financial performance through Balanced Scorecard (BSC).	The proposed models suggests that ERM can be measured not only in financial figures but also in customer satisfaction, learning and growth, and internal business processes

Parvaneh Saeidi, Saudah Sofian, Siti Zaleha Binti Abdul Rasid					
Conceptual Framework for Enterprise Risk Management performance measure through Economic Value Added, Kashif Shad, Lai Fong Woon	2015	n.a.	Literature reserach	This paper proposes a model that links ERM to Shareholder-value creation by proposing that the dimensions structure, governance, and process relate to EVA: Operating Margin, Cost of Capital, and Capital Employed.	The three dimensions are structure, governance and process with 14 elements have impact on operating margin, cost of capital, and capital employed
Panel Data Analysis on the Effect of Establishing the Enterprise Risk Management on Firms' Performance, Roslida Ramlee, Normah Ahmad	2015	no	Empirical	There is no significant relationship between ERM and firms' performances.	ERM assessment: ERM establishment is measured by ERM index based on the COSO framewook and firms' performances: ROE , ROA and Tobin's Q, data taken from ThomsonOne.com database, OSIRIS database and corporate annual reports
An Empirical Investigation into the Association between Enterprise Risk Management and Firm Financial Performance, Ballantyne, Ryan	2013	no	Questionaire with quantitative analysis	ERM adoption is not associated with financial performance. Additionally, the authors find no prove that ERM maturity is associated with capital efficiency, profitability, total shareholder return, or firm value.	ERM assessment: COSO framework variables financial performance: capital efficiency, profitability, total shareholder return, and firm value
Enterprise risk management: A process for enhanced management and improved performance Gates Stephen, Jean-Louis Nicolas, Paul L. Walker	2012	(yes)	Questionaire with quantitative analysis	It is suggested that use of ERM leads to increased management consensus, better-informed decisions, enhanced communication of risk taking, and greater management accountability.	ERM framework: COSO elements incl objective setting, identification, risk reaction, oversight, information and communication, internal environment, management performance performance measurement: benefits of meeting strategic goals, reducing earnings volatility, and increasing profitability based on answers of questionnaire
The Effect of Enterprise Risk Management Implementation on the Value of Companies Listed on the Nairobi Stock Exchange, Waweru Nelson, Kisaka Eric	2013	no	Questionaire with quantitative analysis	No relationship between level of ERM implementation and industry of operation, level of board independence, size of the firm, and growth rate of the firm. But a significant relationship between a company's level or Enterprise Risk Management implementation and the company's value were found.	ERM assessment: Many different factors, e.g. ERM Level (based on research by the Economist Unit Intelligence Ltd 2009) size, industry, ownership, chief risk officer etc., Performance: TobinQ, Size, Leverage, Profitability, Dividend paid, Growth opportunities

Does ERM (Enterprise Risk Management) Help Firm's Performance in Times of Crisis?, Liao, Shin-Wei	2012	no	Empirical	An average firm with ERM program only performed slightly better than the other firms did.	ERM assessment: S&P's ERM rating of insurers between 2007-2012 Performance: Firms size, firms value, ROE, earnings Volatility, Share Return volatility
Enterprise risk management and business performance during the financial and economic crisis, Quon Tony K.	2012	no	Empirical	ERM information has no effect on business performance	ERM assessment: 156 non-financial firms on the Standard & Poor's Toronto Stock Exchange (TSX) Composite Index during 2007 and 2008, their ERM variables takes from annual reports Performance: Tobin Q, Sales, EBIT
Enterprise Risk Management Program Quality: Determinants, Value Relevance, and the Financial Crisis, Baxter Ryan, Bedard Jean, Hoitash Rani	2013	(yes)	Empirical	Higher ERMQ is associated with the following according to the authors: greater complexity, less resource constraint, better corporate governance - associated with improved accounting performance. The authors do not find a relation between ERM quality and market performance prior to and during the market collapse.	ERM assessment: Ratings of financial companies by Standard & Poor's, finer definitions of that ratings, complexity, values of the market Performance: ROA, Tobin's Q, cumulative abnormal returns, buy-and-hold abnormal returns, and several other values
Enterprise Risk Management and Performance in Malaysia, Shima Nickmanesh, Mahmood zohoori, Andira Musriyama Musram, Akbar Akbari	2013	(Yes)	Empirical	The Number of independent non-executive members and the size of the risk management committee positively impact ROA. Board Size and number of independent non-executive directors positively impact Turnover. But there is negative relationship between the existence of risk management committee and ROA.	ERM assessment: board size, number of independent non-executive directors, Number of directors with financial expertise, existence of risk management committee, Size of risk management committee, and Separateness of risk management and audit committee, Age of company, Total assets, Number of Foreign subsidiaries, and Type of Industry as controlling variables Performance: ROA, Turnover

IV. RESULTS OF THE ANALYSIS

The results of the meta-analysis of scientific research show a similar image as other meta-analyses of scientific literature before. There is no consensus of ERM and the value it creates.

No clear correlation is found

Out of 18 studies 16 did not find any evidence of a connection between ERM and company performance. The other studies found some hints that ERM influences certain aspects as performance measured with the values of Tobin's Q, greater cash flow volatility, increased management consensus, better-informed decisions, enhanced communication of risk taking, and greater management accountability, improved accounting performance, better corporate governance etc.

Generally, it can be said that scientists try to identify different aspects of performance, most of them only in a financial dimension. The presented approaches do not find a clear correlation between ERM and performance.

Qualitative approaches needed

Almost all of the selected studies are quantitative studies, mainly trying to identify general “values” and key performance indicators which are available for all companies either taken from databases, annual reports, or questionnaires etc. Due to the fact, that it is difficult to get other quantifiable data, mainly financial values are used to measure performance. But as stated in the first part of this paper ERM is very complex with multiple dimensions. Qualitative measures are also necessary to identify a result of an ERM-process. “ERM is hard to study because companies are not required to disclose their ERM processes” (Gates et al., 2012).

Mostly financial values and no link to SRM

Most studies focus to measure firm’s performance with financial indicators (mainly ROA, ROE, Tobin’s Q, Yearly Sales growth, Leverage, Book Value, Turnover, and Volatility). Only three out of 18 studies take other values into account. One of the studies measures six additional non-financial values but does not reveal further details about them.

Generally, the focus on mostly financial values is a limitation in the analyzed studies. Despite the fact the performance of companies often means financial performance (ignoring other dimensions of performance), ERM is a complex multi-dimensional topic which results have an effect on all related operational level at first (e.g. preventing damage in the production, taking certain financial risks into account, etc.). Whether these “operational effects” have a measurable effect on the overall financial performance of an organization is not clear. Also, depending on the industry each organization deals with very different risks which are most likely not comparable on the generic financial performance-level. Besides economic aspects, ERM has at least two other dimensions: the strategic and operational dimension. Adding other aspects such as sustainability-perspectives it is even more important to assess ERM additionally with an environmental, ethical, political or social perspective as well, depending on the company- specific objectives.

ERM assessment is not standardized

The fact that there is no common definition on ERM in general, makes it hard to assess the quality or level of implementation of ERM (ERM maturity level). Most studies compare organizations according to different level of implemented ERM using various approaches as Standard & Poor’s Risk Management Quality Scale with its categories from weak to excellent, with the existence of a risk management officer and a risk board or committee and with some kind of measurement based on the COSO-framework (COSO, 2016).

There are some limits to the used approaches. Standard & Poor is primarily focused on insurers only concentrating on assessing their solvency. One study found evidence of a positive relationship between increasing levels of traditional risk management capability and firm value. This raises the question of the differences between traditional risk management and ERM and where the distinction should be drawn regarding measurement, respectively.

Measurements based on the COSO ERM-framework is a more useful approach to rate ERM (despite of being subjective too) since it comprises many aspects, including a self-assessment / internal audit (for medium-sized and listed companies there is also the obligation of an external audit, esp. under the Sarbanes-Oxley Act).

The fact that there is a risk management officer, a risk management board, an audit committee or a big-four-auditor cannot be the only criteria to measure ERM inside a company. In order to find the influence of ERM on the performance of an organization it is necessary to clearly identify the use of ERM processes and their maturity within a company. A young company will have a completely different definition of performance and will most likely measure performance based on “market share” rather than “EBIT” (esp. due to start-up costs etc.). The respective company-specific ERM has to address those differences and a study of ERMs of different companies should take that into account as well. Quantitative and qualitative values including possible sustainability measurement methods are needed in order to assess ERM (see figure 3).

Other limitations

Most studies take only figures from one year instead of looking over a broader time span. ERM is not only complex but takes a while until it is implemented and fully used especially in big organizations.

Due to limitations of available data, many researchers use ERM ratings of Standard & Poor which covers insurers but no other industry.

V. A GENERIC FRAMEWORK

Based on the above mentioned research results and limitations the authors developed a generic framework for assessing ERM and measure the performance of it. It is based on existing methods and should help to identify approaches for assessing ERM in practice as well as research.

ERM approach

When an ERM is implemented, it is necessary to create a clear understanding of identifying and assessing risks as well as monitoring and measuring the process individually for each company. The COSO-framework offers one possible approach to operate an enterprise risk management system. A similar but generic approach is based on the ISO norm 31000. Both frameworks provide essential methodologies for ERM (see 2.3). Improving the risk management processes is an essential part of most frameworks. The monitoring and assessment of the risk management process itself can be based on standards as well. For instance the maturity level of the risk management process can be measured and improved by implementing standards such as RMIS (The Risk and Insurance Management Society). RIMS developed a methodology for measuring the maturity level of ERM and an assessment tool which can be used by companies. A often used source especially of the researches compared in this study is Standard& Poor’s Risk Management Quality Scale. It is another possible source of information about the quality of ERM but only available for companies within the insurance industry and therefore no reasonable method for a generic approach.

ERM analysis and performance

Seeing ERM as a collection of a very large amount of different risks of an organization (including risks in the context of sustainability) it seems logical to measure the outcome not only in financial figures but in other aspects as well. Therefore besides quantitative also, qualitative approaches are needed to understand the meaning of ERM for every company. Before risks can be measured the varieties of different risks have to be taken into account. Assessing Enterprise risk assessment therefore cannot be based purely on KPIs but must include other aspects such as a qualitative evaluation of recent incidents. Elkins (2006) suggested 4 different categories of risks (see figure 3). The illustration makes clear that risk management is a complex topic with many different sources of risks and many different measures to deal with. It is not appropriate to assume that ERM has either a positive or negative impact on financial figures and ignoring non-financial goals. ERM generally creates value by enabling the top management to measure and manage the risk-return tradeoff which is beneficial for companies which constantly need access to the capital markets and resources of other kinds to implement their strategies. Risk management is a strategic process and will therefore influence strategic decisions which influence the “output” of an organization.



Figure 2: The dimensions of ERM (source: own elaboration, based on Elkin 2006)

In this context this output based on strategic decision will affect the performance of a company. Without ERM other decisions would be made and certain risks would impact the output, changing the output and performance of a company.

Performance in the market is often translated as financial success of a company which might be one reason why the presented researches in this study (see previous chapter) mainly focus financial values. But performance is more than that. Performance first of all means success of the business model and the reaching of strategic goals. Success can be seen from a shareholder or a stakeholder perspective. If strategic goals are purely financial oriented then profit is an important performance indicator. But the performance of a social enterprise means something different (for instance an increased social value, reputation etc.) than for a manufacturing

company. Performance seen from an enterprise risk perspective can mean to effectively and efficiently reduce the likelihood or impact of identified and not identified risks. The right risk appetite has to be applied by strategic decisions within organizations in order to successful (The risk appetite is the amount and type of risk that is acceptable to be taken by an organizational entity over a defined time period, to achieve the objectives of that entity (COSO ERM)). This risk appetite therefore is strongly connected within the strategic process (Frigo, 2011). Since these risks have diverse sources (see figure 2), the performance (or the effect) of enterprise risk management should be measured based on indicators in those areas. Our research (see chapter 4) demonstrated that performance of ERP is an intensively discussed topic in scientific literature with a very financial driven focus. To measure risks in other areas as well, several approaches are discussed (see chapter 2.3). Each company has to define a risk taxonomy which must fit into the organizational environment and to the objectives in the risk identification process. The “performance” of ERM can be measured in the areas of financial risk management, hazard / environmental risk management, operational risk management, and strategic risk management into account. Each company has to develop its own method of assessing enterprise risks on the operational level (e.g. by using balanced scorecard etc.) and constantly measures it by using the individual measurement system. The operational measurements should then be aggregated into a strategic perspective based on clear KPIs which fit into the company-specific and probably non-financial objectives and which are individual to the strategic situation of the company.

On the basis of the finding of meta-analysis the authors suggest a generic model of assess ERM within enterprise (see figure 3). It can be used by scientists to further study the topic and find similarities and differences of ERM within various industries by analyzing the “status” of ERM implementation (e.g. by the maturity level) on the one hand and the outcome of it by using various multi-dimensional indicators on the other hand.

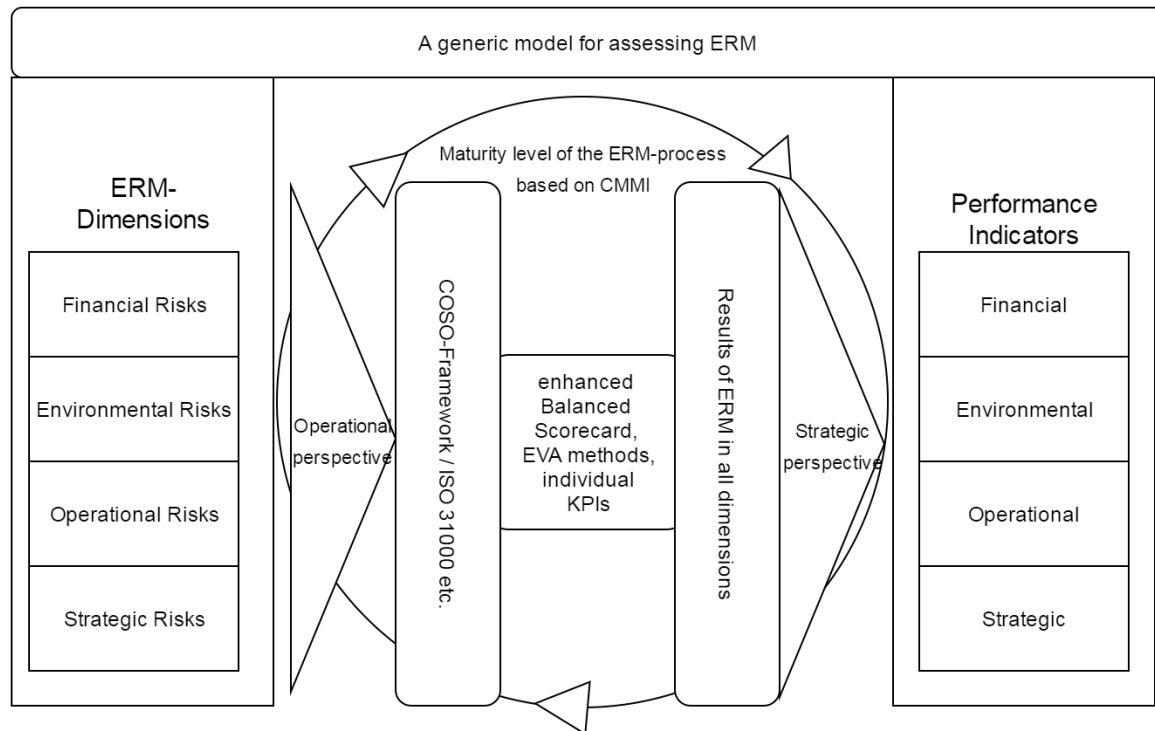


Figure 3: Generic model for measuring the status ERM within organizations (Source: own elaboration)

VI. CONCLUSION AND FUTURE WORK

The authors analyzed recent studies of ERM regarding their approach to measure the performance of companies using ERM. Many recent studies try to measure a direct impact of ERM by just using financial figures and considering only a short period of time. Just few studies use different approaches seeing ERM as the complex topic that it is. Measuring a result of complex issues is not an easy task. Organizations need to define their own specific assessment and measurement system to monitor and improve ERM. Scientists have to analyze the complexity of ERM using more than only financial values. Therefore the authors suggest a generic approach to assess ERM by the use of well-known frameworks and methodologies which is split into the phase of operating an ERM and measuring the output of an ERM. The first part is mainly driven by standardized methodologies and includes a maturity model to assess the maturity of the ERM implementation. It can help

scientists and practitioners to get a better understanding of the maturity level of the ERM. The second part demonstrates the importance of using multiple KPIs on the strategic level to identify the outcome of ERM.

Further research is necessary to test further elaborate the usefulness of this approach and to develop a deeper and more practical perspectives of it. The coherence of ERM and performance evaluation should be the objective of future research.

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