GOVERNANCE, RISK, COMPLIANCE AND CONTROLLING: INSTITUTIONAL, CULTURAL AND INSTRUMENTAL INTERDEPENDENCIES FROM A GERMAN PERSPECTIVE

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Abstract

This study analyzes interdependencies among governance, risk, compliance, and controlling (GRC²) functions in German companies, assessing cultural, institutional, and instrumental factors. Through an empirical survey of 247 companies conducted in late 2021, the study investigates the positioning of risk management, especially in relation to compliance and controlling. The results provide insights into how the maturity of risk management and cultural openness to risk affect the integration of governance, risk, and compliance (GRC) practices, supporting a decision-oriented approach to risk governance. These findings are critical for enhancing GRC² frameworks in firms aiming to optimize decision-making under risk.

Keywords: Risk Management, Compliance, Governance, Controlling, GRC, Business Decisions, Empirical Study

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1. INTRODUCTION

The organizational function of risk management plays an important role in corporate practice, not only in Germany, but worldwide (Hiebl et al., 2019; Glowka et al., 2021). Global crises such as the economic and financial crisis (Rudd, 2009) or the current COVID-19 pandemic (Ciotti et al., 2020) will probably increase the importance of risk management.

In corporate practice, however, risk management does not yet exhibit the degree of maturity that one would wish for risk management and thus also for companies würde (Ulrich & Scheuermann, 2018; Köhlbrandt et al., 2020). In particular, there is often a lack of connection to corporate management (Vanini & Leschenko, 2017). Empirical studies from German-speaking countries, in particular, show that despite the greater long-term orientation of companies assumed for continental European companies, the organizational and instrumental level of risk management is not yet as high as it should be (Hoffmann et al., 2016), the organizational and instrumental maturity of risk management has not (yet) kept pace with these developments (Ulrich & Scheuermann, 2018).

The positioning of risk management in the company is relevant for both theory and practice (Wittenbrink, 2014) — and from an organizational, system and instrumental point of view. In German-speaking countries, the corporate function of controlling has always had a strong position by supporting management in decision-making. However, there are also views that attribute a monitoring function to control.

Risk management itself was not explicitly codified for listed companies until 1998 (Füser, et al., 1999; Wolf & Runzheimer, 2003) and is, therefore, still a fairly new development. The corporate practice then also shows different development paths, as risk management in many companies has historically emerged from insurance management or the treasury department (Bragg, 2010), which, however, has an instrumentally as well as culturally different orientation than controlling.

In addition, since around the year 2000, ideas of compliance with rules and the monitoring of conformity with standards have increasingly entered the discussion on corporate monitoring under the umbrella term of compliance (Becker et al., 2012). While in the Anglo-American area, enterprise risk management (ERM) (Moeller, 2007; Nocco & Stulz, 2006) offers at least a certain integration of different monitoring functions and the actors involved, in the German-speaking world these aspects are either considered in isolation and often discussed under the generic term governance, risk, and compliance (GRC) (Otremba, 2016). In recent years, the construct of risk governance has also emerged as an overarching integration solution (Stein & Wiedemann, 2016; Stein et al., 2018).

This paper addresses the following gap in theory and practice. In our view, on the way to risk governance, the interdependencies of GRC must first be identified and linked to control in terms of decision support (Gleißner, Rieg, et al., 2021). The postulate of this paper is that companies that understand risk management more in terms of decision-making and thus controlling can achieve better integration in terms of risk governance (Stein & Wiedemann, 2016) than companies whose starting point is compliance and want to use risk management more to avoid errors and hazards. The research question of the paper is as follows:

RQ: To what extent do cultural, organizational and instrumental overlaps or differences exist between the functions of governance, risk, compliance, and controlling (GRC²)?

In this paper, the decision-oriented view of risk management, which requires interaction with controlling in the preparation of entrepreneurial decisions, is considered in particular. For this purpose, starting with an explanation of typical design principles of risk management, controlling and GRC concepts within the framework of the risk governance model, the concept GRC² is presented. GRC² is an integrative approach that enables the equally important linking of risk management with compliance on the one hand and controlling on the other[1]. The GRC concept is oriented towards the linking of controlling and risk management in the preparation of business decisions (Otremba, 2016).

The starting point for the discussion on the establishment of GRC² concepts is the many companies that have already established a GRC approach. It is shown that certain methodological, instrumental and also organizational developments are required for the link with controlling and the decision-oriented orientation of risk management. In an empirical study, it is investigated which prerequisites and, in particular, obstacles exist, starting from GRC, for the realization of a GRC² approach. The hypotheses are tested that, in addition to possibly existing technical deficits, cultural causes in particular stand in the way of linking GRC approaches with controlling. The hypotheses result from the fact that in controlling, risk is primarily understood as a possible deviation from the plan, which includes opportunities, and that an increase in the scope of risk also appears acceptable if it is offset by adequate returns. In compliance management and thus also in GRC approaches, on the other hand — according to one of the hypotheses — risk is primarily seen as the cause of possible damage or rule violations, and thus a strategy of risk minimization is pursued that is alien to controlling.

In addition, we test the hypothesis that companies with a high degree of risk maturity and a high degree of openness to risk, in the sense of accepting more risk with adequately higher returns, are also associated with higher economic success.

Despite the increasing importance of integrated GRC frameworks, there is a notable gap in understanding how risk management functions in German firms align with compliance and control in practice. Unlike the Anglo-American approach, where GRC integration is more standardized (Otremba, 2016; Moeller, 2007), German companies often lack cohesive integration, particularly where controlling is concerned.

This underpins our hypothesis that companies with higher openness to risk and a decision-supportive approach to risk management will achieve greater economic success.

The added value of the paper is to provide the first theoretically as well as empirically sound view of GRC² as an integrated concept-oriented risk governance model.

The remainder of the paper is as follows. In Section 2, the need for an integrated view of GRC² is explained theoretically. In Section 3, the hypotheses are derived, and the methodology, along with the sample, is presented. In Section 4, empirical results and hypotheses tests are analyzed. In Section 5, a discussion of the findings is provided. Finally, in Section 6, the conclusion, outlook, and limitations are described.

2. LITERATURE REVIEW

2.1. Theoretical background

2.1.1. What is risk governance

Risk governance is an integrative approach that explicitly seeks to involve all employees and thus also considers cultural aspects in dealing with risk ("risk culture"). The risk governance model is an integrative approach because almost every activity in a company involves risk and has uncertain consequences. In particular, it aims to ensure that management's preparation of business decisions takes into account their impact on the level of risk. (Gleißner, Stein, et al., 2021; Weigel et al., 2018). The concept was developed because many examples can be found in the past in which risk management in most companies has not succeeded in protecting companies and their management from serious wrong decisions by means of appropriate decision preparation. This is due in particular to the fact that traditional risk management sees its task primarily in operational terms and is concerned only with the risks to which the company is already exposed, but not with those which arise as a result of a decision (Gleißner, Stein, et al., 2021).

[1] Other aspects of integration and the inclusion of other employees, which are included in the risk governance concept and go beyond this, are not considered.

Similar problems can be observed in compliance management and corporate governance. (Stein et al., 2018). Corporate governance is a regulatory framework which, through the application of minimum standards to be observed, aims to prevent conflicts of interest between management, supervisory bodies and owners and to avoid risks arising from poor quality of corporate management, violations of the law and lack of transparency. However, corporate governance also finds its limits, which lie in the voluntary nature of the application of regulations and the lack of consideration given to risk analyses in business decisions. This is where the risk governance approach comes in and builds a bridge. Risk governance supports the preparation of management decisions through decision-preparing risk analyses. In particular, this is intended to avoid developments that jeopardize the continued existence of the company (Stein & Wiedemann, 2016; Gleißner, Stein, et al., 2021). In this strategic respect, risk governance strives for proactive risk control, especially in management decisions. The aim is to improve the risk-return profile. As a secondary condition, all decision-makers are committed to the standards of good corporate governance, so that rules and laws, but also ethical requirements, are observed.

The risk governance approach thus serves as an integrative framework for dealing with risks and, by including, e.g., cultural aspects, further development of traditional risk management concepts (Stein & Wiedemann 2016; Stein et al., 2018).

2.1.2. Intension to GRC²

The integrative approach of the risk governance model is only met to a very limited extent by the risk management systems implemented in practice today.

However, the GRC approaches, which are often regarded as integrative, only fulfill the requirements for comprehensive integration to a very limited extent. Essentially, what can be seen here is a linking of risk management with compliance management and thus a very specific orientation of risk management and a focus on certain risk categories, namely those caused by people (operational risks and especially compliance risks). GRC approaches lack, in particular, the consistent orientation of risk management to the preparation of entrepreneurial decisions (in line with the business judgement rule; Gleißner, 2020; Gleißner, Stein, et al., 2021). Indeed, a decision-oriented focus of risk management and thus the provision of risk analyses for the preparation of entrepreneurial decisions requires their inclusion in the process of decision preparation, which in most companies is assigned to controlling. Close cooperation between risk management and control in the preparation of entrepreneurial decisions is of central importance for the economic added value of risk management, because significant changes in the risk scope of a company result precisely from the uncertain effects of entrepreneurial decisions. Only through the interaction between risk management and controlling can it be achieved, in the sense of the business judgment rule, that even before a decision is made, the management board or managing director knows how the overall scope of risk would change as a result of the decision; which in turn is a prerequisite for being able to weigh up the effects of the decision on earnings and risk against each other, i.e., to evaluate them in a way that is appropriate to the risk. In order to improve the maturity of risk management on the way to a risk governance model, it is necessary to further develop the GRC approaches established in many companies in order to enable the equally important link with controlling and thus its inclusion in the preparation of decisions (Gleißner, Stein, et al., 2021).

2.1.3. Risk, controlling, and decision orientation

The compliance perspective outlined above essentially interprets risks as causes of possible damage that must be avoided as far as possible. The focus here is on existing risks from a fairly narrowly defined risk field: potential violations of rules and, in particular, laws (as a special case of operational risks caused by people) are considered. In contrast to this, the perspective of ERM and management accounting (controlling) is to be considered (Hunziker, 2019; Gleißner, 2018; Nocco & Stulz, 2006).

Risk is initially understood here as the possibility of a positive or negative deviation from the plan. In this way, opportunities and threats are considered. In principle, all risk areas and thus types of risk are analyzed, which have a significant financial impact on the company; in particular, those which, individually or in combination with others, could lead to a severe corporate crisis. Accordingly, this also includes strategic risks, such as threats to the company's potential for success, uncertainty with regard to planning premises (such as the demand growth rate), and risks from the macroeconomic environment, e.g., caused by uncertain developments in exchange rates, raw material prices or interest rates. In this context, the identification and quantification of individual risks is primarily a means of deriving statements about the aggregate overall level of risk. It is the overall scope of risk, which can be expressed by a suitable risk measure, that determines the probability of insolvency, the cost of capital and ultimately also the value of the company. Based on the fact that every entrepreneurial activity involves risk, the objective is not to minimize risk, but to optimize the risk-return profile of a company. An increase in the aggregate overall level of risk is also acceptable accordingly if:

- predefined safety targets (e.g., a maximum accepted probability of insolvency) are not exceeded;
- there is an improvement in the risk-return profile, which can be expressed, for example, in the implications of this for enterprise value (Gleißner, 2019).

An "optimal" risk-return profile in terms of corporate objectives and constraints does not arise automatically, but must be realized through specific measures (through risk management measures, but also other measures with a significant impact on the scope of risk (Arrfelt et al., 2018). The targeted control of the overall risk scope, and thus of the risk-return scope, requires business decisions on the measures and the options for action that exist here in each case. In making these decisions, particular attention must be paid to their impact on expected returns (cash flows) and the overall scope of risk. This is exactly the central idea of a "decision-oriented risk management", as seen in the meantime also in risk management standards (for example, Committee of Sponsoring Organizations of the Treadway Commission (COSO) Enterprise Risk Management Framework of 2017 or the German

Institute of Internal Auditors (*Deutsche Institut für Interne Revision* — DIIR) Auditing Standard No. 2 in Germany).

The decision-oriented focus of risk management leads to close cooperation in decision preparation with controlling, to which this task is primarily assigned in many companies (Weber & Schäffer, 2001). Such a decision-oriented risk management system is thus integrative in the sense that it supports precisely the process of decision preparation by management and cooperates here with controlling. It thus helps to link planning with the opportunities and dangers (risks) that can trigger deviations from the plan, and thus necessarily considers opportunities and dangers. The central common objective of decision-oriented ERM and controlling is, therefore, to ensure that the information essential for business decisions — including risk information — is properly prepared and available before a decision is made. This type of decision risk management not only considers the risks to which the company is already exposed, but also explicitly considers the "hypothetical" risks that would change the company's risk situation as a result of an entrepreneurial decision. This idea of a decision-oriented focus of risk management with the necessary cooperation with controlling can be found in the controlling literature as well as in the more recent risk management literature, especially in the risk governance concept (Weigel et al., 2018). Indeed, the economic added value of risk analyses can only be achieved if the corresponding information influences decisions and thus ultimately actions (measures) in the company.

The potential economic benefits of optimizing a company's risk scope and risk-return profile are underpinned by both theoretical literature and empirical studies. The added value of risk management is essentially a result of capital market imperfections, asymmetrically distributed information, and rating and financing constraints. In particular, the empirical studies in listed companies show that those with low fundamental earnings risks (cash flow volatility) and low insolvency risks (distress risk) generate significant and economically relevant risk-adjusted excess returns. The improvement of the risk position and the reduction of insolvency risks show the potential benefit of risk information, which serves to improve the risk-return profile in the context of entrepreneurial decisions. These findings of empirical capital market research coincide with the findings of strategic management research with regard to the risk-return paradox (Arrfelt et al., 2018).

The change in a company's risk position and risk-return profile is not necessarily due to the information and activities of a company's risk management. Virtually every business decision also has an impact on risk scope. Deficits in risk analysis and risk aggregation methods and a lack of decision-oriented risk management can mean that risk management has little influence on entrepreneurial decisions and thus on a company's risk scope. As a result, the body of studies on the contribution of risk management to a company's financial performance is also less clear. Krause and Tse (2016), like Ittner and Keusch (2016), saw positive effects of risk management on corporate success based on a meta-study (McShane et al., 2011).

It is clear from the above explanations that the economic benefit of risk management depends crucially on whether the information provided by risk management is adequately incorporated into entrepreneurial decisions and thus contributes to improving the risk profile of a company. This is precisely why the decision-oriented approach explained above can be regarded as the decisive success factor for risk management. A high degree of maturity in risk management requires a decision-oriented orientation. The interaction of risk management and control is thus seen as a necessary prerequisite for a decision-oriented orientation. The contribution of risk management to success is potentially higher if the company's environment is more volatile, i.e., more risky.

2.1.4. The GRC² concept

It follows from the above considerations that the GRC² concept is not to be understood as a compromise or middle ground between GRC, on the one hand, and a link between controlling and risk management, on the other. Following the integrative and decision-oriented risk governance concept, it follows from the necessary decision orientation that:

- Risks must be quantified with reference to the planning and existing opportunities and threats, i.e., possible positive and negative deviations from the plan, must be taken into account in the process (a consideration of threat alone would imply that, in the case of a decision, options for action that are in themselves quite economically sensible would be rejected because of the neglect of opportunities).
- Risk-return profile and thus the value of the company is to be optimized (Gleißner, 2019), which may well justify an increase in the scope of risk with correspondingly higher expected returns (and is by no means aimed at minimizing risk).
- Risks must be understood as an unavoidable component of entrepreneurial activity (and not as errors to be avoided).

The term "integrative risk management" is not uniformly used. In this paper, we speak of integrative risk management if it fulfills two requirements (Gleißner, 2020):

- Risk management is linked to other management systems, exchanges data with them and can also draw on resources from these management systems to fulfill its own tasks.
- Risk management is integrated into the preparation of management decisions, i.e., it analyzes how these would change the company's risk exposure.

Accordingly, the decision-oriented orientation of risk management is only possible if the risk understanding of controlling — and thus a high degree of risk openness — is implemented. The ideal-typical GRC approaches described here do not guarantee this. Accordingly, the risk understanding of controlling is necessary for the implementation of GRC² concepts, but at the same time, the "compliance risks" that are particularly considered in compliance management must also be included. However, this is also possible without any problems because, for example, typical compliance risks (such as fraud or corruption), which only represent a danger, can, of course, be included as a special case — a negative deviation from the plan alone is possible. GRC² is, therefore, an integrative risk management system that is closely linked to controlling and is geared in particular to the preparation of (entrepreneurial) decisions — but

also covers the field of "compliance risks" considered in compliance management (and, e.g., includes risks identified in compliance management for the assessment of the overall risk position).

To date, limited research has addressed the unique cultural and organizational challenges in implementing an integrated GRC² model, particularly in German-speaking contexts. This paper seeks to fill this gap by empirically testing the hypothesis that firms with a higher maturity in compliance, controlling, and risk management — alongside greater risk openness — will demonstrate stronger integration and, consequently, improved decision-making effectiveness.

2.2. Hypotheses development

It has become clear from the explanations so far that integrative risk management is necessary in order to meet the requirements of the business judgement rule and the intention of risk governance (Gleißner, Stein, et al., 2021; Weigel et al., 2018). The added value of risk management depends on the fact that the opportunities and threats (risks) associated with entrepreneurial decisions are analyzed and taken into account in the decision-making process. If the findings of risk management do not influence entrepreneurial decisions and thus actions, they have no economic relevance. The integrative risk governance approach thus calls in particular for interaction between risk management and control, which is generally in charge of preparing entrepreneurial decisions and drafting decision documents.

The first step for integrative risk management at many companies is the establishment of the GRC approach outlined above, which leads in particular to a close link between risk management and compliance management. As explained, however, there are fundamental and conceptual differences in the understanding — especially the understanding of risk — between compliance and controlling. In compliance management, for example, risks are largely understood as possible causes of damage, or even existing errors, which must be minimized. In controlling, on the other hand, risk is seen as the cause of possible deviations from the plan, which means that opportunities and threats are considered — which is also necessary, since both are relevant for the proper assessment of options for action in upcoming business decisions, e.g., about investments (Gleißner, Meyer, et al., 2021). This different understanding of risk between compliance and controlling leads — according to one hypothesis — to the fact that the establishment of GRC approaches leads to a distancing of risk management from controlling and tends to inhibit the inclusion of risk analyses and risk management in the preparation of entrepreneurial decisions. Integrative risk management in the sense of the risk governance concept — as well as COSO Enterprise Risk Management Frameworks from 2017 (Hunziker, 2019) — however, requires a close linkage of risk management with compliance management and also one with controlling (with the German term of controlling as a synonym for management control), especially in the preparation of entrepreneurial decisions. The two-way linkage of risk management can be understood as an extension of the GRC model as the GRC² approach.

The empirical study examines the relationship between risk understanding and the organization of risk management. In particular, the study aims to identify obstacles to linking risk management with controlling, especially in the preparation of business decisions. Potential instrumental, organizational and especially cultural obstacles will be considered. Special consideration is given to the potentially different understanding of risk in the areas of compliance, risk management and controlling (and the associated different "openness to risk"). To test the hypotheses formulated below, three constructs (latent variables) are derived in addition to variables directly determined in the survey, — such as the maturity of controlling and compliance:

- openness to risk is essentially determined by the understanding of risk (conceptual understanding);
- maturity of risk management (Gleißner, Stein, et al., 2021);
- positioning of risk management (between compliance and controlling).

The theoretical basis for deriving the following hypotheses is the organizational contingency theory from risk management and controlling (Khandwalla, 1972). Here, it is postulated that the organizational characteristics of strategy, structure and culture of a corporate function have an impact on the corresponding other sub-functions of corporate controlling.

First, it is argued that the organizational maturity of compliance and control has a direct influence on the position of risk management. If the maturity level of compliance is higher, risk management will tend to be more "compliance-related". If, on the other hand, the maturity level of controlling is higher, risk management is more likely to be located in controlling.

H1a: The higher the maturity level of compliance, the "closer" the positioning of risk management to compliance.

H1b: The higher the maturity level of controlling, the "closer" the positioning of risk management to controlling.

Furthermore, it is argued that higher environmental uncertainty is likely to lead to a higher level of risk management maturity (Aimin, 2010).

H2: A more volatile environment (perceived higher uncertainty) is associated with a higher level of risk management maturity.

We assume that companies that show higher subjective corporate success also show higher maturity levels of compliance, controlling and risk management.

H3a: A higher level of maturity of compliance is also found with higher corporate success.

H3b: A higher level of maturity of controlling is also found with higher corporate success.

H3c: A higher level of maturity in risk management is also found with higher corporate success.

Finally, openness to risks is likely to lead to risk management per se being more closely aligned with controlling. A lower openness to risks, on the other hand, is likely to suggest a closer proximity to compliance.

H4a: Higher risk openness leads to greater proximity to controlling.

H4b: Higher risk openness leads to greater proximity to compliance.

3. RESEARCH METHODOLOGY

3.1. Data collection

Data were collected via an online survey conducted in November 2021, targeting a sample of 11,950 German companies generated from the Nexis database. This database includes both listed and non-listed companies, covering a diverse mix of financial and non-financial firms. Although the exact proportion of listed companies is not specified, the sample distribution across sectors ensures the representation of key industry segments, including approximately 43% from manufacturing, 24% from services, and the remainder from trade and other sectors. Prior to this, the questionnaire was subjected to a plausibility check in the sense of a pre-test in four expert interviews with decision-makers.

The study was conceptualized as an online survey. The individual companies were contacted by a cover letter to participate. A total of 247 companies (2.1%) responded over the entire period. The response rate is thus comparatively acceptable. This means that the final sample for this paper is represented by 247 companies, although not all companies answered all questions. To rule out a possible non-response bias, Armstrong and Overton (1977) examined the first and last thirds of the responses for structural differences. The results did not give any reason to assume a non-response bias.

3.2. Description of the sample

In terms of company sizes, approximately 40% of companies were up to 500 employees, 37% were between 500 and 2,499 employees, and the rest of the companies were above that.

Approximately 60% of the companies had limited liability legal forms such as GmbHs and AGs, while the rest were partnerships.

The industry distribution is as follows: 43% industry, 24% services, 8% trade, rest other. 50% of the companies are family businesses, and the rest are non-family businesses. 75% of the study participants personally had a business background, and 86% held a management position.

3.3. Constructs and variables

Several independent variables, dependent variables and control variables were formed for the study:

• Positioning and integration of risk management (*INTEGR*): This variable measures the organizational positioning of risk management in relation to: a) compliance and b) controlling. In line with the scaling of the survey, *INTEGR* is measured by a real number in the interval from 1 to 5, with "1" expressing a positioning of risk management directly in the area of compliance, i.e., characteristic of a pure "GRC approach". Conversely, a positioning of "5" is an expression of complete integration of risk management into controlling (values in between represent a positioning of risk management between compliance and controlling). Both aspects — integration in compliance as well as in controlling — were queried with a thesis "Our risk management is integrated with controlling" and "We use a GRC approach in which risk management and controlling are integrated" on a five-point Likert scale.

As explained above, we see integrative risk management as risk management that participates in the preparation of entrepreneurial decisions and thus necessarily has an understanding of risk corresponding to that of controlling (i.e., in particular, it understands risk as a deviation from the plan and strives to optimize the risk-return profile instead of minimizing risk). In this respect, positioning risk management with controlling is also an indicator of a high degree of integration. As also explained above, however, this does not mean that "compliance risks", which can occur merely in the form of damage due to the violation of laws, for example, are ignored.

• Maturity (*MATUR*): The maturity level of compliance and controlling is surveyed directly in the survey. Here, the degree of maturity was queried on a five-point scale in each case. In order to assess the maturity of risk management, individual indicators distributed over various questions are used, which can be found in Gleißner, Stein, et al. (2021). A high level of maturity is assumed when risk management has been adopted and can perform as many of the tasks required for the highest level of maturity as possible. This refers, among other things, to the existence of an assessment method for risks, the use of risk management to support decision-making, the performance of risk analyses and preparation of a risk inventory, as well as the formalization of the risk management system.

The tasks and skills considered in the survey and taken into account in determining the maturity level are the following: the maturity level, like the other latent variables, is measured by a real number in the interval from 1 to 5. "1" in this case means that none of the mentioned skills are present (i.e., all sub-criteria themselves are assessed with a score of 1). Conversely, "5" means that the best possible level of proficiency is achieved in the company with regard to all of the sub-criteria mentioned (according to the respondent's assessment).

• Risk openness (*VIEW*): Risk openness expresses the fundamental understanding of risk in a company. A high degree of openness to risk exists if the understanding of risk corresponds to that of decision-supporting controlling. Low openness to risk is correspondingly a compliance view. Here, an exploratory factor analysis (EFA) was conducted based on five questions regarding the understanding of risk (including risk as opportunity, risk as error and risk as deviation from the plan). According to the intrinsic value criterion, two factors emerged which could be interpreted in terms of content as a controlling view (including risk as a deviation from plan) and a compliance view (including risk as a violation of rules)

• Risk management proximity (*NEAR*): Risk management proximity measures the degree of correspondence between risk management on the one hand and controlling or compliance on the other. In contrast to the positioning of risk management, see above, it is not a question of the organizational assignment of risk management to compliance or controlling. What is assessed here is the degree of commonality between the management systems in organizational, instrumental and cultural terms. The aspect of cultural proximity is considered in particular detail. As stated above with reference to existing research work, it is suspected that cultural aspects in particular stand in the way of bringing risk management closer to controlling and integrating it into the process of preparing entrepreneurial decisions. The overlaps between risk management, controlling and compliance were measured in pairs

of two (risk management and compliance, compliance and controlling, etc.) for each of the three dimensions cultural, organizational and instrumental using a five-point Likert scale from 1 = low to 5 = high.

The overlaps were then subjected to an EFA, which can be interpreted as "proximity to controlling" and "proximity to compliance". It is interesting to note that for both constructs, the correlation between the factor and the cultural component is the highest.

• Firm size (*SIZE*): The majority of contingency theory studies consider firm size as an important influencing factor, especially in the area of planning and control mechanisms (Chenhall, 2003). In contrast to other studies (Speckbacher & Wentges, 2012) subjects were not given classes, and firm size was queried by the attribute "number of employees". Company size is used as an ordinal variable in classes.

• Environmental uncertainty (*UNCERTAINTY*): Environmental uncertainty is one of the most important contingency-theoretic variables (Tosi & Slocum, 1984). It was directly interrogated here as a single-item scale ranging from 1 = very low to 5 = very high.

• Company success (*PERFORMANCE*): For the assessment of company success, the subjective scale according to Venkatraman and Ramanujam (1987) was used, but as a single-item scale.

4. EMPIRICAL RESULTS

4.1. Correlations

Figure 1 first contains the correlations within the sample.

A look at the size of the company already shows that larger companies have higher levels of maturity in compliance and controlling, but not higher levels of maturity in risk management. Almost all other variables also correlate positively with company size.

Environmental uncertainty correlates positively with the maturity of risk management and compliance, but not with the maturity of controlling.

There are also strong correlations overall between the positioning, proximity, and risk openness constructs.

Table 1. Correlations in the sample

Variable	*SIZE*	*UNCERTAINTY*	*MATUR_RM*	*MATUR_COMPL*	*MATUR_CONTR*	*INTEGR_CONTR*	*INTEGR_COMPL*	*PERFORMANCE*	*VIEW_COMPL*	*VIEW_CONTR*	*NEAR_RM_COMPL*	*NEAR_RM_CONTR*
SIZE	1	0.361**	0.066	0.321**	0.297**	0.183*	0.181*	0.286**	0.285**	0.318**	0.300**	0.250**
UNCERTAINTY		1	0.284**	0.254**	0.084	0.262**	0.267**	0.161	0.258**	0.258**	0.278**	0.264**
MATUR_RM			1	-0.213*	-0.040	0.058	0.052	0.161	0.197*	0.029	-0.092	0.009
MATUR_COMPL				1	0.534**	0.414**	0.451**	0.350**	0.242**	0.375**	0.540**	0.471**
MATUR_CONTR					1	0.439**	0.251**	0.497**	0.238**	0.339**	0.324**	0.480**
INTEGR_CONTR						1	0.521**	0.287**	-0.017	0.320**	0.307**	0.617**
INTEGR_COMPL							1	0.191*	0.190*	0.357**	0.551**	0.494**
PERFORMANCE								1	0.370**	0.393**	0.295**	0.407**
VIEW_COMPL									1	0.000	0.305**	0.182*
VIEW_CONTR										1	0.410**	0.485**
NEAR_RM_COMPL											1	0.594**
NEAR_RM_CONTR												1

*Note: RM — risk management, COMPL — compliance, CONTR — controlling, * and ** 95% and 99% significance.*

4.2. Hypotheses testing

4.2.1. Hypotheses H1a and H1b

Regression models were calculated in each case to test the statistical relationships. In the case of hypotheses *H1a* and *H1b*, these are linear regression models, as the output variable — the integration of risk management into compliance or controlling — has an ordinal scale level of 1 to 5 in each case. Table 2 first shows the results of the linear regression on the influence of the maturity level of compliance on the degree of integration of risk management into compliance.

The explained variance is okay at 19.1% and the overall model is significant at the 99% significance level. *H1a* can be retained. The higher the level of compliance maturity, the more integrated risk management and compliance are.

A linear regression analysis was also performed for *H1b*, and the results are included in Table 3.

Table 2. Regression analysis for hypothesis *H1a* — Model 1

Dependent variable: INTEGR_COMPL				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
MATUR_COMPL	0.455	0.000	0.897	1.115
SIZE	-0.013	0.876	0.897	1.115
Model fit				
R^2	0.203			
Adjusted R^2	0.191			
F (model, global)	15.830**			

*Note: VIF — variance inflation factor, ** 99% significance.*

Table 3. Regression analysis for hypothesis *H1b* — Model 2

Dependent variable: INTEGR_CONTR				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
MATUR_CONTR	0.429	0.000	0.912	1.097
SIZE	0.032	0.705	0.912	1.097
Model fit				
R^2	0.193			
Adjusted R^2	0.180			
F (model, global)	14.755**			

*Note: ** 99% significance.*

The explained variance is also fine at 18.0%, and the overall model is significant at the 99% significance level. Hypothesis *H1b* can also be retained. As the maturity of controlling increases, there is also greater integration of risk management into controlling. The effects of *H1a* and *H1b* are at a similar level.

4.2.2. Hypothesis H2

Hypothesis *H2* deals with the influence of the degree of environmental uncertainty on the maturity of risk management. The results are shown in Table 4.

Table 4. Regression analysis for hypothesis *H2* — Model 3

Dependent variable: MATUR_RM				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
UNCERTAINTY	0.292	0.001	0.902	1.109
SIZE	-0.025	0.762	0.902	1.109
Model fit				
R^2	0.081			
Adjusted R^2	0.069			
F (model, global)	6.508**			

*Note: ** 99% significance.*

At 6.9%, the model quality is less good than for the previous hypotheses. However, the model is also significant at the 99% level. Higher environmental uncertainty leads to a higher level of risk management maturity, so hypothesis *H2* can also be retained.

4.2.3. Hypotheses H3a–H3c

The third set of hypotheses addresses the influence of corporate success on the functions: a) compliance, b) controlling, and c) risk management. Table 5 shows the results of hypothesis *H3a* on the relationship between corporate success and compliance.

Hypothesis *H3b* (presented in Table 6) shows the results on the relationship between performance and controlling maturity. The model quality is high with 26% explained variance and hypothesis *H3b* can be maintained.

Table 7 shows the results of the analysis of the influence of performance on the maturity of risk management. The expected effect could not be shown and, therefore, hypothesis *H3c* is rejected.

Table 5. Regression analysis for hypothesis *H3a* — Model 4

Dependent variable: MATUR_COMPL				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
PERFORMANCE	0.280	0.002	0.918	1.089
SIZE	0.244	0.006	0.918	1.089
Model fit				
R^2	0.177			
Adjusted R^2	0.163			
F (model, global)	12.505**			

*Note: ** 99% significance.*

Table 6. Regression analysis for hypothesis *H3b* — Model 5

Dependent variable: MATUR_CONTR				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
PERFORMANCE	0.449	0.000	0.918	1.089
SIZE	0.168	0.044	0.918	1.089
Model fit				
R^2	0.273			
Adjusted R^2	0.260			
F (model, global)	21.751**			

*Note: ** 99% significance.*

Table 7. Regression analysis for hypothesis *H3c* — Model 6

Dependent variable: MATUR_RM				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
PERFORMANCE	0.147	0.126	0.918	1.089
SIZE	0.048	0.613	0.918	1.089
Model fit				
R^2	0.028			
Adjusted R^2	0.011			
F (model, global)	1.679			

4.2.4. Hypotheses H4a and H4b

The two sub-hypotheses *H4a* and *H4b* examine the extent to which higher or lower risk openness (higher risk openness would be a view more from controlling, lower from compliance) leads to greater or lesser proximity to controlling or compliance. The results of hypothesis *H4a* are shown in Table 8.

The model has a good model quality with a 23% explained variance. The effect is also significant at the 99% level. Hypothesis *H4a* can be retained.

Table 9 shows the final regression model on the influence of lower risk openness (compliance view) on the proximity of risk management to compliance.

Table 8. Regression analysis for hypothesis *H4a* — Model 7

Dependent variable: NEAR_RM_CONTR				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
VIEW_CONTR	0.454	0.000	0.878	1.140
SIZE	0.091	0.294	0.878	1.140
Model fit				
R^2	0.243			
Adjusted R^2	0.230			
F (model, global)	18.602**			

*Note: ** 99% significance.*

Table 9. Regression analysis for hypothesis *H4b* — Model 8

Dependent variable: NEAR_RM_COMPL				
Independent variable	***β coef.***	***p-value***	***Tolerance***	***VIF***
VIEW_COMPL	0.237	0.010	0.912	1.096
SIZE	0.230	0.012	0.912	1.096
Model fit				
R^2	0.142			
Adjusted R^2	0.127			
F (model, global)	9.565**			

*Note: ** 99% significance.*

With average model quality (modified R^2 of 12.7%), hypothesis *H4b* can be retained. It is also interesting to note that company size has an influence on the fact that companies align their risk management with compliance.

Our findings highlight that higher maturity levels in compliance, controlling, and risk management are positively correlated with corporate success, particularly in firms operating within volatile environments. However, firms with stronger ties to compliance frameworks show a reduced integration of risk management in decision-support processes. This suggests that compliance-oriented GRC models may limit the decision-oriented approach necessary for optimal risk governance.

5. DISCUSSION

This study underscores the importance of a decision-oriented approach to GRC integration in achieving superior risk governance. Firms that align risk management with controlling demonstrate more effective decision-support capabilities and tend to achieve higher economic success. However, our study has several limitations, including a focus on German firms and a sample primarily representing medium to large companies, which may not fully capture the perspectives of smaller firms or other regions. Future research could explore sector-specific GRC² frameworks and investigate cross-cultural differences in risk governance practices. Additionally, longitudinal studies could provide deeper insights into how GRC maturity evolves over time and impacts firm performance under different market conditions.

The study shows that companies with a higher level of maturity in compliance and controlling have a higher level of corporate success. This finding can also be supported to a certain extent for risk management, although the results are not significant.

A company's ability to deal with opportunities and threats (risks) is a key determinant of its success, particularly when a large number of serious risks have to be taken into account in business decisions, i.e., when the company operates in a volatile environment. The study confirms that companies operating in a more volatile environment, and thus with potentially higher risk management relevance for success, actually also have higher levels of risk management maturity. Thus, the higher the uncertainty level of the environment, the more is invested in risk management. In particular, it can be seen that in a highly volatile environment, a particularly large number of companies achieve the highest level of risk management maturity and thus risk management plays a role in preparing business decisions.

Overall, the study results support the hypothesis that a decision-oriented focus on risk management is beneficial for business decision-making, especially in a volatile environment. The highest level of risk management maturity is achieved with a decision-oriented focus that is more oriented towards controlling than towards compliance (while at the same time also performing proper analysis and aggregation of risks).

The second part of the study examined, through hypotheses *H3a–H3c* and *H4a* and *H4b*, which prerequisites are necessary for a decision-oriented orientation of risk management and which obstacles stand in the way of such an orientation, respectively.

An integrative (decision-oriented) risk management with an empirically confirmed close relationship to the company's success can be found especially in companies where controlling (and also risk management itself) has a high degree of maturity and where there is a high degree of openness to risk in the company.

In particular, this confirms the hypothesis that integrative, decision-oriented risk management can

be achieved in particular if the concept of risk is understood in the same way as is customary in controlling: risk as a possible deviation from plan and not, for example, as an error or possible damage. In this understanding of risk, the aim is not to minimize risks, but to optimize the risk profile.

Conversely, as expected, a higher level of compliance maturity leads to a greater proximity of risk management and compliance and thus a lower linkage with controlling, which runs counter to a decision-oriented (integrative) orientation of risk management (*H1a, H1b*). A decision-oriented focus of risk management is found almost exclusively in companies that have also realized a pronounced link between risk management and controlling.

The most successful companies are those with a clear decision-oriented focus on risk management, i.e., a high degree of maturity of risk management and pronounced proximity to controlling. In line with the considerations outlined in this paper, this is precisely what is needed to enable a risk-adequate assessment of existing options for action when preparing entrepreneurial decisions by linking planning with risk information.

This fact can also be evidenced by the fact that the companies that have a higher level of integration of risk management with controlling also apply an integrated GRC view much more frequently than companies that are compliance-oriented. In other words, the path of risk management via controlling leads more quickly to an integrated view than the path via compliance.

The tests of the hypotheses provide additional insight into the prerequisites and obstacles for decision-oriented (integrative) risk management. It is confirmed that organizational, instrumental and cultural proximity between risk management and controlling are conducive to an integrative and thus decision-oriented orientation of risk management. The cooperation between controlling and risk management required for the preparation of entrepreneurial decisions is close when both management systems are similar in organizational, instrumental and cultural terms. Cultural proximity is of the greatest importance here. Accordingly, a distance in cultural aspects, such as specifically the perception and understanding in dealing with risk, is a major obstacle to cooperation between controlling and risk management in the preparation of entrepreneurial decisions.

6. CONCLUSION

The success of a company depends to a large extent on the quality of entrepreneurial decisions. If the future cannot be predicted with certainty, the opportunities and dangers (risks) associated with every entrepreneurial decision should be taken into account in the decision-making process. The contribution to the economic success of a company by risk management results accordingly if it is geared toward supporting entrepreneurial decisions and assists controlling in the preparation of decisions. Risk management that merely monitors existing risks of the company, but has no influence on entrepreneurial decisions can hardly influence the overall risk position of a company and the financial success of the company. The empirical study conducted (survey) confirms that the companies that are more successful than average are precisely those whose risk management has a high degree of maturity and is decision-oriented. Such integrative and decision-oriented risk management works closely with controlling or is even a part of it. A decision-oriented approach to risk management is found almost exclusively in companies that have also implemented a strong link between risk management and controlling. In contrast, a close link between risk management and compliance, i.e., the so-called GRC approach, can even be seen as an obstacle to a decision-oriented orientation. The higher the level of maturity of controlling (and the lower that of compliance), the more likely it is to find a link between these two management systems and a decision-oriented orientation of risk management. Decisive for the close connection between risk management and controlling and the decision-oriented orientation of risk management are organizational as well as instrumental and cultural factors. Cultural factors in particular seem to be of special importance for the decision-oriented orientation of risk management. If risks are understood in a company as errors or potential damage that must be minimized, a decision-oriented orientation of risk management is hardly possible ("compliance view"). The prerequisite for a decision-oriented orientation of risk management is that — as is usual in corporate planning and controlling — risk is understood as the cause of a deviation from the plan and an optimization of the company's risk-return profile is aimed for.

Accordingly, the most significant challenge on the way to decision-oriented risk management that contributes to the financial success of the company is to create an adequate risk culture. This means that risks are accepted as an unavoidable part of any entrepreneurial activity and understood as the cause of deviations from the plan.

Accordingly, the further development from a GRC approach to decision-oriented risk management that works together with controlling often first requires a further development of the risk culture. Of course, the preparation of entrepreneurial decisions also requires powerful risk management methods, especially for quantitative risk analysis and simulation-based risk aggregation. However, it is at least as essential to achieve an open approach to risks, as is typically found in controlling, where opportunities and threats are considered and risks are understood as deviations from the plan. With a decision-oriented approach to risk management, all significant opportunities and threats must be considered comprehensively, which means that the "compliance risks" considered in particular in the GRC models are integrated as special cases that merely represent a threat. The decision-oriented approach to risk management means that all significant risks for the company must be considered, including those that would only arise as a result of an entrepreneurial decision. In organizational terms, this requires the inclusion of controlling in already established GRC approaches. Such a model can be referred to as GRC². Such a GRC² approach is methodologically and culturally based on the open risk understanding of controlling, i.e., it understands risk as the cause of possible deviations from the plan and aims to optimize the risk-return profile.

In addition to the provision of adequate methods for quantitative risk analysis and risk aggregation, the open risk culture that enables such an open approach to risks is of fundamental importance for the path from a GRC approach to a GRC² approach and thus to decision-oriented risk management.

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