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Coordination challenges in implementing the three lines of defense model

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(hereinafter referred to as "German Institute for Internal Auditing (DIIR)") The three lines of defense model (TLoD) aims to provide a simple and effective way to improve coordination and enhance communications on risk management and control by clarifying the essential roles and duties of different governance functions. Without effective coordination of these governance functions, work can be duplicated or key risks may be missed or misjudged. To address these challenges, professional standards recommend that the chief audit executive (CAE) coordinates activities with other internal and external governance stakeholders (assurance providers). We consider survey responses from 415 CAEs from Austria, Germany, and Switzerland to analyze determinants that help to implement the TLoD without any challenges and to explore the extent of (coordination) challenges between the internal audit function and the respective governance stakeholders. Our results show a great variance in the extent of coordination challenges dependent on different determinants and the respective governance stakeholder.

KEYWORDS

Chief Audit Executive, Combined Assurance, Governance Framework, Internal Auditing Function, Internal Auditor, Three Lines of Defense Model

1 | INTRODUCTION

This study analyses determinants and challenges between different governance stakeholders in implementing the three lines of defense model (TLoD), considering survey responses from chief audit executives (CAEs) from Austria, Germany, and Switzerland. The TLoD has been cited extensively as an effective model to use for risk management (e.g., Decaux & Sarens, 2015; EY, 2013; IFAC/IIA, 2018; IIA, 2013; KPMG, 2012; PWC, 2017). It has been accepted as a best practice for listed companies and as a required organizational model by banking regulators and the Basel Committee on Banking Supervision in regulated financial institutions as a response to deficient risk management in the financial crisis (Arndorfer & Minto, 2015; Bantleon et al., 2017). According to the Institute of Internal Auditors (IIA) position paper (2013), the TLoD provides a simple and effective way to enhance communications on risk management and control by clarifying essential roles and duties. In particular, management control is the first line of defense in risk management, the various risk control and compliance oversight functions established by management are the second line of defense, and independent assurance provided by the

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The authors are members of the Scientific Committee of the German Institute for Internal Auditing (DIIR). This article is a joint project undertaken by the Committee. The Committee aims to expand knowledge and understanding of internal auditing by providing and facilitating relevant research. All members hold a position as Full Professor at a German or Austrian university. They teach and do research in the areas of internal and external audit, corporate governance, management and financial accounting, and company law.

internal audit function (IAF) is the third line of defense. For financial institutions, the Bank of International Settlement proposes the external auditor and the regulator as the fourth line of defense (Arndorfer & Minto, 2015). We interpret governing bodies and senior management as the primary governance stakeholders served by the "lines," and they are the parties best positioned to help ensure that the TLoD is reflected in the organization's risk management and control processes (IIA, 2013). From a theoretical point of view, the TLoD can be understood as an organizational framework that helps to reduce potential information asymmetries in the context of the principal-agent theory. Thus, the different lines of defense reduce the information asymmetries between the principals and agents throughout the different hierarchy levels and minimize the risks of discretionary decisions from the agents.

However, in clearly demanding a high level of independence for each line, there are obvious tradeoffs that might affect the effectiveness and efficiency of the whole risk management function. In particular, a lack of coordination might reduce the positive effect of the three distinct lines because tasks and resources of each line are not independent from those of the other lines. Coordination theory states that task-related and resource-related dependencies require management by coordination mechanisms (Crowston, 1997; Malone et al., 1999; Malone & Crowston, 1994). Empirical research shows that coordination mechanisms have a positive impact on performance that is mediated by relational coordination; this holds for structured and for unstructured coordination mechanisms, which can be explained by the fact that both types provide opportunities for interaction (Gittell, 2002).

In line with this reasoning, research suggests that the lack of coordination between the three lines might lead to inefficiencies such as assurance fatigue, assurance gaps, or inadequate reporting that negatively impact governance. For example, these inefficiencies hinder boards' exercise of their oversight role and endanger implementation efforts (Decaux & Sarens, 2015; IIA, 2013; KPMG, 2012; Roussy & Rodrigue, 2018; Sarens, Decaux, & Lenz, 2012). Research targeting the banking industry found that the three lines have had difficulties coordinating the required responsibilities without overlapping each other (Institute of International Finance, 2014; Luburić, 2017; Udding, 2016). The UK Parliamentary Commission on Banking Standards comments in its June 2013 report that the TLoD is a "theory (that) appears to have lent undeserved credibility to some chaotic systems. ... and indeed provided a wholly misplaced sense of security" (UK Parliament, 2013, p. 18). In the same vein, audit firms (EY, 2013; KPMG, 2012; PWC, 2017) confirm that firms suffer from a not wellcoordinated TLoD. Professional bodies recognize that the implementation of the TLoD might be deficient (IIA UK and Ireland, 2010; Institute of International Finance, 2014; Institute of Directors, 2016; IIA, 2018; IIA, 2019). In particular, in December 2018 the IIA launched a global review of the TLoD considering the need for "horizontal coordination" and communication in the approach of risk and opportunities (IIA, 2018). In October 2019 the IIA published a report about the public exposure findings, as further critiques of the recent TLoD are named: duplication of work, "unrealistic expectations of the second and third lines can give false comfort to the first line," description of internal audit "does not characterize its full potential for being a trusted advisor and contributing to the creation of value," and inappropriate naming of the model (Nicholson, 2019).

Professional standards recommend that the CAE coordinates activities with other internal and external governance stakeholders (assurance providers) (IPPF 2050; IIA, 2017). Already from 2012, various IIA Practice Guides and Standards address the need for coordination.¹ In the same vein, standard setters and research promote the concept of combined assurance to improve assurance provider coordination (Institute of Directors, 2009; IIA UK and Ireland, 2010; Decaux & Sarens, 2015; Institute of Directors, 2016). This is in line with the implication of coordination theory that overlapping tasks require coordination mechanisms to reach agreements that are acceptable to all involved parties (Crowston, 1997). Empirical research has shown that combined assurance has the potential to avoid duplication of work and gaps in risk coverage and to improve internal audit (Azzali & Mazza, 2018). However, still in 2019, the IIA TLoD Review reveals in the "Report on the Public Exposure Findings June-September 2019" (published October 2019) that one main area that requires improvement is "encouragement for communication, coordination, and collaboration across the lines to avoid silos" (Nicholson, 2019, p. 13). The report also shows an explicit agreement that an appropriate role for internal audit is "to play a lead role in facilitating coordination, integration and alignment across the lines" (Nicholson, 2019, p. 10).

Overall, standard setters and research have identified various challenges in implementing the TLoD that are documented previously. However, critique is biased on challenges and does not refer to successful implementation. Thus, it remains unclear under which circumstances the TLoD can be implemented effectively and efficiently. Research indicates that several determinants might influence TLoD implementation efforts, in particular, company characteristics (such as size/complexity, industry, e.g., Nuijten et al., 2015; Carcello et al., 2018; Zhou et al., 2019), IAF characteristics (such as the focus of IAF activities and IAF quality, e.g., Sarens & De Beelde, 2006; Eulerich et al., 2018; Eulerich et al., 2019) and the relation to its main stakeholders (e.g., management and supervisory board, e.g., Sarens & De Beelde, 2006; Eulerich et al., 2018; Eulerich et al., 2019). This helps us to differentiate between two groups of companies dealing with the TLoD: one group that faces no challenges in implementation versus the other group that does face challenges in implementation. Therefore, we formulate our first research question to identify circumstances under which the TLoD is implemented without facing challenges.

In a second step, we deepen our understanding of the nature of the challenges by differentiating which governance stakeholders are affected by incomplete implementation efforts. We still consider influencing determinants as identified in our first research question. Therefore, we formulate the second research question to analyze the relationship between the IAF and the respective governance stakeholder for each potential governance stakeholder when implementing the TLoD. This analysis is also in line with the view that IAF

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effectiveness is a matter of stakeholder perception (Roussy, Barbe, & Raimbault, 2020). The governance stakeholders under consideration are risk management, the compliance function, the C-Level management, the supervisory board, the regulator, and the external auditor. We therefore contribute to research by exploring the elements of the TLoD implementation black box.

For our sample, we surveyed 415 CAEs whose answers represent the third line of defense. This approach provides valuable insights into the overall implementation status of the TLoD and respective challenges because the third line monitors the effectiveness of the other lines of defense and is responsible for coordination tasks (IIA, 2017).

Our findings show that almost all sample companies have implemented the TLoD, whereby roughly the half do not report any potential challenges while implementing the TLoD. The latter companies are characterized inter alia by having a higher probability of being listed as well as having a good collaboration with the C-Level and supervisory board. Challenges in implementing the TLoD are more likely for companies in the finance sector. With regard to different governance stakeholders, we, for instance, find that the IAF of listed companies faces fewer coordination challenges with the board and external auditors. In the finance industry, coordination challenges between the IAF and the compliance function, the regulator, and the external auditor are more pronounced than in other industries. These heterogeneous results enable us to identify and describe coordination challenges under various conditions.

Our study contributes to literature in at least four ways. First, our empirical findings confirm that the TLoD is implemented in most of our sample companies. Second, we identify determinants that influence the implementation of the TLoD in a positive or negative way. Third, we generate additional insights whether specific factors determine challenges between the IAF and a governance function. Finally, our results allow the IIA and the national chapters to rethink the pros and cons of the model, especially in the current phase of discussing the update of the TLoD (IIA, 2020).

The remainder of the article is structured as follows. The next section presents related research and develops the research questions. The third section describes the sample and the methodology, while the fourth section provides the results, robustness checks, and their interpretation. Finally, the fifth section discusses the outcome and limitations of this study, providing avenues for future research.

2 | LITERATURE REVIEW AND RESEARCH QUESTIONS DEVELOPMENT

Research on the implementation of the TLoD and related challenges is rare. Analyzing the financial crisis, Chambers and Odar (2015, p. 49) conclude that the "three lines of defence approach has not been entirely effective and has given a false sense of assurance." In the same vein, the Common Body of Knowledge (CBOK) (IIA, 2015) database, that is, the world's largest ongoing study of the internal audit profession, finds evidence for imperfect implementation efforts. It should be noted that in Europe 12% of the respondents are not familiar with the TLoD, increasing to 20% globally (Huibers, 2015). Udding (2016) surveyed Dutch banks, concluding that the design of the TLoD is valid but various problems can be identified in the implementation and operation. He identified five inhibitors that undermine the successful implementation of the TLoD. These are ambiguous responsibilities, lack of first line accountability, lines operating in silos, lack of countervailing power, and a static model with a dynamic environment. Other studies concentrate on the risk function and single components, such as the risk culture (e.g., Braumann, 2018). Analyzing central banks, Luburić (2017) confirms that the TLoD primarily requires good communication between the lines. He argues for strengthening each line, which itself increases the number of connections and topics for communication. Therefore, vertical and horizontal coordination of all aspects of risk management is one of the key conditions for achieving a successful implementation and functioning of the TLoD. Davies and Zhivitskaya's (2018) analysis of the criticisms of the TLoD suggests that ever-increasing layers of oversight may endanger business efficiency and customer service. Moreover, the existence of three separate groups who are supposed to ensure proper conduct toward risks might have led to a false sense of security. They ask for a proper implementation strategy such as clarity about the borders between the three lines and a clear understanding of the relationship between the first and second lines.

In addition, audit firms confirm that firms suffer from a not wellcoordinated TLoD. This might lead to the following challenges (EY, 2013; KPMG, 2012; PWC, 2017): inconsistent and multiple reporting, gaps in risk coverage, siloed risk functions, business fatigue, confusion on the organization's risk profile, and layers of redundant controls. Professional bodies ask for coordination among various assurance providers but recognize that the implementation is rare because of various challenges (ECIIA, 2009; IIA UK and Ireland, 2010; Paterson, 2011; Institute of Directors, 2016). Additionally, the COSO Enterprise Risk Management–Integrated Framework also underlines the necessity to coordinate the "activities spanning risk, compliance, control, and even governance" to manage the cost of risk management (COSO, 2017).

The King III Report on Governance for South Africa 2009 (Institute of Directors, 2009; PWC, 2010) introduced the approach of combined assurance to improve coordination. The King IV Report on Governance for South Africa 2016 (Institute of Directors, 2016) confirmed the concept of combined assurance but admitted that the concept needed to evolve to become more useful and effective. In 2017, the basics concept was integrated into the International Professional Practice Framework (IPPF) by including Standard 2050 "Coordination and Reliance." However, there are currently barriers for the IAF to rely on others (lack of maturity by the first and second lines of defense, concerns about impairing the independence and objectivity of the IAF, lack of alignment in the definition of risk and risk management, lack of prescriptive guidance for evaluating the lines of defense) (Pett & Poritz, 2018). Decaux and Sarens (2015) show in a multiple case study that no organization seems to have attained a mature combined assurance implementation.

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Overall, standard setters and research have identified various challenges in implementing the TLoD that are documented previously and show the necessity of a coordinated approach. This is in line with predictions of coordination theory. In particular, a lack of coordination might reduce the positive effect of the three separate lines because tasks and resources of each line are not independent from those of the other lines. Therefore, task-related and resource-related dependencies require management by coordination mechanisms (Crowston, 1997; Malone et al., 1999; Malone & Crowston, 1994).

Still, it remains unclear under which circumstances the model can be implemented effectively and efficiently, and therefore without challenges. Research indicates that several determinants might influence implementation efforts taking effective coordination into account. These determinants can be differentiated into company characteristics (e.g., Carcello et al., 2018; Nuijten et al., 2015; Zhou et al., 2019), IAF characteristics, and relations to stakeholders (e.g., Eulerich et al., 2018; Eulerich et al., 2019; Sarens & De Beelde, 2006). We follow this line of research and cover all three categories-company characteristics, IAF characteristics, and relations to stakeholders-by including the following central determinants in our investigation: First, company characteristics such as the size and complexity of the organization influence the need for more monitoring. We therefore proxy these characteristics by full-time equivalent of IAF employees, listing status, and the organization belonging to the finance sector. Second, IAF characteristics are influencing factors from the supply side. In particular, the quality of the IAF proxied by the level of conformance to the International Professional Practice Framework, percentage of assurance activities as an indication of the focus of IAF's tasks, and, percentage of unplanned audits can be seen as determining factors to influence implementation challenges of the TLoD (Eulerich et al., 2018; Eulerich et al., 2019). Third, the intensity of use of the IAF's work by the supervisory board and by the management board respectively might influence the interaction between the IAF and other governance providers as proposed by Carcello et al. (2018) or Eulerich et al. (2018). Accordingly, we formulate a research question in order to identify and describe cases where the TLoD is implemented successfully. This helps us to differentiate between two groups of companies dealing with the TLoD: one group that faces no challenges in implementation versus the other group that faces challenges in implementation. Based on the discussion above, we formulate our first research question as follows:

RQ1: Which determinants lead to a TLoD implementation without challenges?

As a second step, we aim to analyze when the TLoD is implemented with coordination challenges between different governance stakeholders. We anchor on coordination theory that predicts for both task-related and resource-related dependencies that management need to establish effective coordination mechanisms (Crowston, 1997; Malone et al., 1999; Malone & Crowston, 1994). Empirical research confirms that coordination mechanisms have a positive impact on performance that is mediated by relational coordination. This holds for all types of interaction between lines and includes structured and unstructured coordination mechanisms (Gittell, 2002). One important feature is the enactment of coordination in enabling shared interpretations (Claggett & Karahanna, 2018). These forms of relational coordination could also be interpreted as a communication network that helps coordination in two ways: by informing each stage about earlier stages, and by creating common knowledge within each stage (Suk-Young Chwe, 2000).

Applying this idea to an internal control and risk management environment, research suggests that challenges are caused by various coordination deficiencies (e.g., Luburić, 2017; Udding, 2016). We aim to explore how these coordination challenges affect different governance stakeholders to understand potential tradeoffs between the independence of each line of defense and coordination efforts. We expect that specific determinants might drive the implementation effort of a company. For example, Sarens and De Beelde (2006) found that the IAF looks for senior management support in order to work effectively. Abbott et al. (2012) document the positive effect of coordination efforts between internal and external audit. Munro and Steward (2010) document that involvement in consulting of the IAF impacts reliance on work undertaken and the use of internal auditors as assistants for control evaluation by the external auditor. As professional standards recommend that the CAE coordinates activities with other internal and external governance stakeholders (assurance providers) (IPPF 2050, IIA, 2017), we formulate our second research question asking for challenges in implementing the TLoD between the IAF and the respective governance stakeholder controlling for various determinants:

RQ2: Which determinants lead to challenges between governance stakeholders and the IAF when implementing the TLoD?

This analysis helps us to shed light on the TLoD implementation black box. We split the second research question into six subquestions, analyzing in each subquestion the relation between IAF and the respective governance stakeholder, namely, risk management, the compliance function, the supervisory board, the C-Level, the regulator, and the external auditor. Thus, we run six different models to answer our second research question.

3 | DATA AND RESEARCH DESIGN

3.1 | Survey and sample

To answer our research questions, we use a proprietary sample of European CAEs. Together with the Austrian, German, and Swiss IIA,² we surveyed only CAEs as we assume CAEs to be knowledgeable about coordination and communication deficiencies between the different lines of defense, as well as between each line and the governing bodies and management because they are responsible for auditing the effectiveness of the other lines of defense (IIA, 2013). In addition, they regularly communicate with management and

governance bodies about risk management and internal control effectiveness (IIA Standard 2060: Reporting to Senior Management and the Board).

We invited the participants via email or postal letter to participate in an online survey, since this online solution offered easy access to the questionnaire. The survey was available for one month (January 2017). Overall, the national IIAs sent the survey invitation to 1,916 participants, all of which are CAEs, from different organizations. The 1,916 CAEs from the participant pool were identified based on the members and personal contacts of the national IIAs. Of those, 415 participants provided usable responses to the questions that are relevant for this study (response rate of 24.7%). The participants represent a broad variety of firm sizes and industry types. All data received was reviewed and cleaned to ensure responses were entered appropriately and interpreted correctly.

3.2 | Descriptive statistics and correlation matrix

Table 1 provides the descriptive statistics for our sample. Our sample consists of companies from different industries and with a different listing status. Roughly a third of the surveyed CAEs work for companies that are based in the finance industry (30.84%) and are therefore subject to increased supervision and stricter regulation. Less than half of our sample is made up of CAEs working for listed companies (40.24%). LN_IAFStaff is the natural logarithm of full-time equivalents; LN_IAFStaff averages 1.90. Most of the participants report that they work in conformance with the IPPF, with an average of 3.65. Looking at stakeholder relationships, with a mean of 4.08 on a 5-point Likert scale, Intensity_CLevel illustrates that on average the IAF's work is

TABLE 1 Summary statistics

used intensively by the company's management board. In comparison, regarding the relationship to the supervisory board, the average is only 1.90. The focus of the participating IAFs is especially on assurance, with 80.43%; 15.54% of their annual audits are unplanned.

45.3% of the CAEs report that there were no challenges implementing the TLoD. The main source of coordination challenges between governance stakeholders can be attributed to the second line. The CAEs report a stake of challenges of 15.18% with risk management and 14.94% with compliance. This is followed with great distance by challenges with the external auditor (7.95%). Challenges with the supervisory board seem to be a rare event (3.86%), whereas the C-Level (6.51%) and the regulator (6.02%) are in between.

Tables 2 and 3 present the cross-correlations. They show that there are no high levels of correlation between the independent variables of the model as all values are well below the threshold suggested by literature (Kennedy, 2008). Moreover, the variance inflation factor (VIF) is employed to check for collinearity between the explanatory variables. All variables have a VIF below the recommended maximum value of 5 (Rogerson, 2001). Thus, it is noted that the collinearity of variables does not seem to be an issue for this study.

Analyzing Table 4, we observe that 87.95% have implemented the TLoD in their organizations. Looking at potential company characteristics, we observe that 96.09% of the companies from the finance industry have implemented the TLoD. The TLoD is mandatory in the finance industry in most cases. This finding also covers the fact that the TLoD is an organizational model required by banking and insurance regulators and the Basel Committee on Banking Supervision. Looking at the listing status, we find a comparable situation with 95.21% of the listed companies that have implemented the TLoD.

Variable	Observations	М	SD	Min	Max
Dependent variables					
TLoDNoChallenges	415	.453012	.4983881	0	1
TLoDChallengeRiskManagement	415	.1518072	.359267	0	1
TLoDChallengeCompliance	415	.1493976	.3569102	0	1
TLoDChallengeC-Level	415	.0650602	.2469298	0	1
TLoDChallengeSupervisoryBoard	415	.0385542	.1927624	0	1
TLoDChallengeRegulator	415	.060241	.2382199	0	1
TLoDChallengeExternalAuditor	415	.0795181	.2708722	0	1
Independent variables					
LN_IAFStaff	395	1.895498	1.255768	0	7.20786
Listing	415	.4024096	.4909755	0	1
Finance	415	.3084337	.4624041	0	1
ConformanceIPPF	379	3.651715	1.541341	0	5
Intensity_SB	415	1.901205	1.531433	0	5
Intensity_CLevel	393	4.081425	.9386736	0	5
AssurancePct	392	80.43112	14.26585	10	100
PctUnplanned	372	15.54123	52.88918	1.666667	100

Note. Refer to the Appendix for variable definitions.

TABLE 2 Cross-correlation matrix TLoDNoChallenges

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TLoDNoChallenges (1)	1.0000								
LN_IAFStaff (2)	.1613	1.0000							
	.0013								
Listing (3)	.1910	.2760	1.0000						
	.0001	.0000							
Finance (4)	.0002	.1937	.1861	1.0000					
	.9975	.0001	.0001						
ConformanceIPPF (5)	.1329	.1992	.2335	.0914	1.0000				
	.0096	.0001	.0000	.0756					
Intensity_SB (6)	.2360	.2272	.1622	.2273	.1372	1.0000			
	.0000	.0000	.0009	.0000	.0075				
Intensity_CLevel (7)	.1944	.1088	.1203	.0058	.2222	.2796	1.0000		
	.0001	.0310	.0171	.9093	.0000	.0000			
AssurancePct (8)	.1399	.2682	.1324	.1833	.1917	.0281	0152	1.0000	
	.0055	.0000	.0087	.0003	.0002	.5786	.7647		
PctUnplanned (9)	0641	.0399	0328	.0127	1034	.0770	0288	.0503	1.0000
	.2175	.4423	.5277	.8073	.0508	.1383	.5800	.3335	

Note. Pearson correlation coefficient, p-value in italics. Refer to the Appendix for variable definitions.

Thus, companies from non-finance industries or companies that are not listed are less likely to implement the TLoD. Since the overall acceptance is on a high level, we analyze potential determinants that drive the implementation of the TLoD without any challenges.

3.3 | Model

We use two different empirical models to investigate our research questions 1 and 2. In order to explore the first research question, that is, "Which determinants lead to a TLoD implementation without challenges?" we apply a logistic regression model, since the dependent variable is a dummy variable. The equation reads as follows:

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 \begin{array}{l} TLoDNoChallenges = \beta_{1}LN\_IAFStaff + \beta_{2}Listing + \beta_{3}Finance + \beta_{4}ConformancelPPF \\ + \beta_{5}Intensity\_SB + \beta_{6}Intensity\_CLevel + \beta_{7}AssurancePct + \beta_{8}PctUnplanned + \epsilon \end{array}  \tag{1}
```

Variable definitions are described in the Appendix. Each variable is based on a specific question of the survey. The dependent variable of interest is TLoDNoChallenges, a binary variable coded 1 in the case where there are no challenges while implementing the TLoD; 0 otherwise. Furthermore, the model includes eight independent variables capturing factors that are likely to influence the implementation without challenges. Of these eight variables, the three variables LN_IAFStaff, Listing, and Finance account for company characteristics. The variable LN_IAFStaff represents the natural logarithm of the number of people employed in the IAF given as the full-time equivalent and including administrative workers as well as supervisors. This variable is operationalized following Carcello et al. (2018), who use the number of internal audit staff. The variable LN_IAFStaff thus acts as a proxy for investments in the IAF due to the larger (smaller) size of the company and the related increased (decreased) need for monitoring. Listing is a dummy variable with a value of 1 if the company is listed, as used by Arena and Azzone (2009). Finance is a dummy variable with the value of 1 if the company belongs to the finance industry (including banks, financial institutions, and insurance companies), used as an indicator variable similar to Abbott et al. (2012). We include ConformanceIPPF to measure whether the IAF follows the international professional practice framework and as a proxy for IAF quality. It is measured on a 5-point Likert scale from 1 "totally not in conformance with the IPPF" to 5 "full conformance with the IPPF." To examine the IAF's relationship with its main stakeholders (Chief Executive Level [C-Level] and Supervisory Board or Audit Committee [SB/AC]), the model includes the variables Intensity_SB and Intensity_CLevel. The intensity variables are measured on a 5-point Likert scale from very low to very high and measure the intensity with which the management board or the SB/AC use the IAF's work. This measurement can also be found in other studies (e.g., Carcello et al., 2018; Eulerich et al., 2018). Furthermore, we use the variables AssurancePct, measuring the percentage of audit-related tasks, and PctUnplanned, measuring the percentage of unplanned audits, as additional measures of the IAF characteristics and to understand the focus of IAF activities.

As a next step, we modify this approach and aim to analyze when the TLoD is implemented with coordination challenges between different governance stakeholders. Therefore, we replace our dependent variable with six different variables that capture different governance stakeholders as a potential source of implementation challenges. The following equation represents our approach to answer the second

		ige wirn uil	IIELEIIL SOVE	ernance stak	enolders									
	(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)	(6)	(10)	(11)	(12)	(13)	(14)
TLoDChallengeRiskManagement (1)	1.0000													
TLoDChallengeCompliance (2)	.3125 .0000	1.0000												
TLoDChallengeC-Level (3)	.1879	.1909	1.0000											
	.0001	.000												
TLoDChallengeSupervisoryBoard (4)	.1246	.1267	.2517	1.0000										
	.0111	.0098	0000.											
TLoDChallengeRegulator (5)	.0622	.0643	.2207	.1071	1.0000									
	.2059	.1908	0000.	.0291										
TLoDChallengeExternalAuditor (6)	.1487	.0267	0053	.0337	.2251	1.0000								
	.0024	.5871	.9141	.4940	0000.									
LN_IAFStaff (7)	0916	.0440	1313	0948	.0053	.0210	1.0000							
	.0689	.3829	0600.	.0597	.9167	.6775								
Finance (8)	.0083	.1446	0069	0253	.2695	.0544	.1937	1.0000						
	.8666	.0032	.8880	.6068	0000.	.2687	.0001							
Listing (9)	0322	.0558	.0027	0878	.0401	0959	.2760	.1861	1.0000					
	.5129	.2564	.9565	.0741	.4157	.0509	0000.	.0001						
ConformanceIPPF (10)	0668	.0815	0539	.0049	0645	1201	.1992	.0914	.2335	1.0000				
	.1947	.1131	.2955	.9246	.2100	.0193	.000	.0756	0000.					
Intensity_SB (11)	0166	0436	0596	0525	.0693	0160	.2272	.2273	.1622	.1372	1.0000			
	.7363	.3752	.2256	.2857	.1587	.7459	0000.	0000.	.000	.0075				
Intensity_CLevel (12)	0971	0599	1760	0316	1116	0165	.1088	.0058	.1203	.2222	.2796	1.0000		
	.0544	.2359	.0005	.5319	.0269	.7442	.0310	.9093	.0171	0000.	0000.			
AssurancePct (13)	0576	.0285	1397	1736	0248	0163	.2682	.1833	.1324	.1917	.0281	0152	1.0000	
	.2552	.5737	.0056	9000.	.6252	.7482	0000.	.0003	.0087	.0002	.5786	.7647		
PctUnplanned (14)	.1255	0224	0198	0093	.0011	0229	.0399	.0127	0328	1034	.0770	0288	.0503	1.0000
	.0155	.6669	.7038	.8575	.9826	.6591	.4423	.8073	.5277	.0508	.1383	.5800	.3335	
Vote. Pearson correlation coefficient, p-va	alue in italics.	Refer to the	e Appendix f	or variable d	lefinitions.									

	Non-finance	Finance	Total	Not Listed	Listed	Total
TLoD Not Implemented	15.68%	3.91%	12.05%	16.94%	4.79%	12.05%
TLoD Implemented	84.32%	96.09%	87.95%	83.06%	95.21%	87.95%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

TABLE 4 Company characteristics and TLoD implementation

research question, that is, "Which determinants lead to challenges between governance stakeholders and the IAF when implementing the TLoD?"

Dif_Gov_Stakeholders_i = $\beta_1 LN_IAFStaff + \beta_2 Listing + \beta_3 Finance$

 $+\beta_4$ ConformanceIPPF $+\beta_5$ Intensity_SB $+\beta_6$ Intensity_CLevel $+\beta_7$ AssurancePct

+ β_8 PctUnplanned + ε

(2)

We apply an empirical approach similar to Model 1 but change the dependent variables based on specific IAF stakeholders, namely, risk management, the compliance function, the supervisory board, the C-Level, the regulator, and the external auditor. Thus, we run six different models to answer our second research question. That said, in our Model 2 Different_Gov_Stakeholder has to be replaced with one of the six specific dependent variables that captures the corresponding stakeholder.

4 | EMPIRICAL RESULTS

4.1 | Regression results

Table 5 presents the results of the logistic regression Equation (1) that is used to investigate our first research question when the TLoD is implemented without any challenges. The overall model is significant (p-value < .001), with a pseudo R^2 of .0950. We include 356 observations in our model. We find that companies that have no challenges in implementing the TLoD are characterized by a high probability of being listed (.7291***), a relatively high usage intensity of audit reports by the supervisory board (.2206***) and the C-Level (.3337**), as well as a high percentage of assurance activities (.0166*). Interestingly, we find a negative significant effect for our industry dummy Finance (-.6066**), suggesting that companies in the finance industry are more likely to face challenges when implementing the TLoD than companies from other industries. The variables LN_IAFStaff, ConformanceIPPF, and PctUnplanned per year do not show any significant effects. The result related to the IAF size is remarkable, because this determinant does not drive successful TLoD implementation. If we assume that larger organizations are more complex, more resources seem to mitigate their impact on implementation challenges. Furthermore, results indicate that the percentage of unplanned audits does not have an influence on the TLoD implementation without challenges. Thus, the TLoD implementation seems not to be affected by the required flexibility of the IAF in the sense of unplanned audits or—in other words—TLoD seems not to reduce the flexibility and agility of the IAF.

In our second logistic regression Equation (2), we analyze the potential challenges between the IAF and different governance stake-holders. Table 6 presents our results for the specific logistic regressions between the IAF and different governance stakeholders, which addresses our second research question. Our model for coordination challenges between IAF and risk management only shows a significant negative effect on Intensity_CLevel (-.3290**). Thus, an IAF with a strong interaction with the C-Level is less likely to face coordination challenges between the IAF and the risk management function when implementing the TLoD. This conforms to the idea of the influence of the tone from the top to effective implementation efforts confirmed by literature (Hansen et al., 2009).

The second model applies to coordination challenges between the IAF and the compliance function as our dependent variable. We find a significant positive effect for the industry dummy Finance (.8813***), suggesting that companies from the finance industry are more likely to face challenges with the compliance function in the context of TLoD implementation. This conforms to banking and assurance regulation, where the compliance function understands its tasks broader and might include not only process-integrated controls but also independent assurance tasks. Moreover, the fourth line of defense model promoted by the Bank for International Settlement (Arndorfer & Minto, 2015) recommends that the compliance function directly reports to the supervisory function and the board. This might cause coordination challenges with the IAF. Companies in which the IAF has a high level of conformance with the IPPF are more likely to face coordination challenges between the IAF and the compliance function in the context of the TLoD (.2009*). If the supervisory board uses IAF reports more intensively, we observe a negative significant effect on challenges with the compliance function (-.2238**). Put differently, IAFs with a higher level of cooperation with the supervisory board are less likely to face problems with the implementation of the TLoD.

Our third model analyzes determinants of coordination challenges between the IAF and the C-Level. The only significant effect that can be observed is the intensity of using IAF reports by the C-Level itself (-.6582***). The result suggests that when the C-Level uses the IAF's reports more intensively it is less likely that challenges with the implementation of the TLoD will be faced. This confirms again the idea of the influence on the tone from the top to effective implementation efforts (Hansen et al., 2009). If top management promotes the TLoD, challenges in implementing the TLoD are less likely (Lenz et al., 2014).

TABLE 5 Logistic regression

\mathbf{v}_{-}	67

Dependent variable TLoD	NoChallenges						
	Coef.	SD	z	P>z	95% Cl		
LN_IAFStaff	.1083	.1013	1.0700	.2850	[0903; .3069]		
Listing	.7291***	.2460	2.9600	.0030	[.2470; 1.2113]		
Finance	6066**	.2679	-2.2600	.0240	[-1.1317;0815]		
ConformanceIPPF	.0378	.0794	.4800	.6340	[1179; .1935]		
Intensity_SB	.2206***	.0826	2.6700	.0080	[.0587; .3825]		
Intensity_CLevel	.3337**	.1409	2.3700	.0180	[.0576; .6098]		
AssurancePct	.0166*	.0088	1.8800	.0600	[0007; .0339]		
PctUnplanned	0097	.0092	-1.0600	.2880	[0277; .0082]		
Pseudo R ²				.0950			
Observations				356			
5a: Logistic Regression (Fi	nance Industry)						
-	Coef.	SD	z	P>z	95% CI		
LN_IAFStaff	0256	.1835	1400	.8890	[–.3852; .3339]		
Listing	.5019	.4264	1.1800	.2390	[3339; 1.3376]		
ConformanceIPPF	.0600	.1454	.4100	.6800	[–.2250; .3449]		
Intensity_SB	.2340	.1581	1.4800	.1390	[–.0758; .5437]		
Intensity_CLevel	.3550	.2780	1.2800	.2020	[1898; .8998]		
AssurancePct	0028	.0201	1400	.8910	[0422; .0367]		
PctUnplanned	0120	.0141	8500	.3970	[0340; .0157]		
Pseudo R ²				.0600			
Observations				112			
5b: Logistic Regression (Non-Finance Industry)							
	Coef.	SD	z	P>z	95% CI		
LN_IAFStaff	.1811	.1280	1.4100	.1570	[0699; .4320]		
Listing	.8268***	.3086	2.6800	.0070	[.2219; 1.4317]		
ConformanceIPPF	.0307	.0962	.3200	.7490	[1578; .2193]		
Intensity_SB	.2217**	.0981	2.2600	.0240	[.0294; .4139]		
Intensity_CLevel	.2964*	.1683	1.7600	.0780	[0334; .6262]		
AssurancePct	.0194*	.0101	1.9200	.0550	[0004; .0393]		
PctUnplanned	0096	.0126	7700	.4430	[0343; .0150]		
Pseudo R ²				.1192			
Observations				.244			

Note. Coefficient p-values are two-tailed and robust standard errors follow White (1980).

⁷⁷p<.01,

^{**}p<.05,

p<.1. Refer to the Appendix for variable definitions. The regression is a logit. CI = Confidence Interval.

Using the supervisory board as a second main stakeholder in our fourth model, we find a significant negative effect for the listing status (-1.3735*), suggesting that IAFs in listed companies are less likely to face coordination challenges between the IAF and the supervisory board. Furthermore, we find a significant negative effect when the IAF has a stronger assurance focus for its activities (-.0363**). Both results conform to the idea that the implementation of the 8th EU Directive has risen the awareness of the supervisory board and the audit committee to monitor the effectiveness of the internal control system for listed companies (Bantleon et al., 2011).

The fifth model focuses on the regulator as a stakeholder and analyzes determinants of challenges with the regulator. Especially in the finance industry, it is more likely to face challenges when implementing the TLoD between the IAF and the regulator (2.9815***). This can be expected as the financial industry faces a

	RiskManage	ment	Compliance		C-Level		SupervisoryB	oard	Regulato	F	ExternalAuditor	
	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
LN_IAFStaff	210179	.135	.021492	.865	331657	.165	214976	.428	200868	.412	.240949	.161
Listing	.037200	.908	.171274	.586	.293641	.563	-1.3735*	.089	.151557	.773	991475**	.042
Finance	.335342	.319	.88131***	.007	.240404	.672	.608970	.375	2.98152***	000	.85133*	.064
ConformanceIPPF	024994	.797	.20085*	.072	0619	.662	.170111	.361	184588	.218	25651**	.033
Intensity_SB	051785	.636	2238**	.043	.006662	.970	201750	.332	.140757	.464	173448	.243
Intensity_CLevel	329008**	.041	2536	.125	658206***	.004	176109	.541	558528*	.057	.062172	.785
AssurancePct	005249	.632	0082	.469	023931	.123	036265**	.036	033146*	.076	005706	.714
PctUnplanned	.006645	.326	00434	.698	009883	.583	.000295	.971	001553	.899	025248	.277
Pseudo R ²	.0445		.0508		.0952		.1003		.2133		.0747	
Observations	356		356		356		356		356		356	
6a: Logistic Regression for Fir	nance Industry											
	RiskManage	ment	Compliance	a	C-Level		SupervisoryB	oard	Regulato		ExternalAuditor	
	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
LN_IAFStaff	2880	.266	.2640	.185	-1.2725*	.094	6218	.403	3150	.279	.0727	.823
Listing	.3902	.48	0347	.943	2.5482*	.062	9609	.494	.2858	.631	-1.2607*	.097
ConformanceIPPF	.0935	.615	.1029	.537	3781	.213	.1803	.639	1177	.51	4012*	.059
Intensity_SB	.0278	.891	3576*	.052	.3094	.53	0183	.973	.0547	.806	.2232	.413
Intensity_CLevel	5147	.144	.0539	.86	-1.5429*	.065	-1.5449	.152	9791**	.013	9568*	.064
AssurancePct	0080	.742	0032	.89	.0117	.821	0802*	.082	0188	.465	0442	.191
PctUnplanned	.0036	.826	.0086	.586	.0132	.539	.0518**	.045	0023	.907	1041*	.093
Pseudo R ²	.0348		.0442		.2998		.2380		.0930		.2011	
Observations	112		112		112		112		112		112	
6b: Logistic Regression for No	on-Finance Indus	try										
	RiskManage	ment	Compliance	0	C-Level		SupervisoryB	oard	Regulator		ExtemalAuditor	
	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
LN_IAFStaff	2056	.250	1065	.542	1810	.511	0867	.809	.0319	.951	.2676	.263
Listing	1869	.659	.3635	.394	5148	.458	0000	omitted	3580	.782	-1.0642	.127
ConformanceIPPF	0811	.485	.30178*	.051	.0358	.833	.1598	.472	4992	.124	2439	.129
Intensity_SB	0898	.499	15855	.265	.0238	.908	2325	.36	.3800	.284	3355*	.083
Intensity_CLevel	2478	.184	39274*	.056	5988**	.019	0533	.872	.6673	.431	.3815	.219
AssurancePct	0022	.860	01006	.466	0221	.217	0243	.255	0678*	.063	.0013	.942
PctUnplanned	.0071	.418	01627	.426	1273*	.054	1785*	.073	0113	.719	0038	797.
Pseudo R ²	.0587		.0523		.1467		.1302		.2382		.0767	
Observations	244		244		244		160		244		244	
lato Coofficiant a valuas	elict-owt exc.	d and robuct ct	f arrors f		1000							

TABLE 6 Logistic Regression: Dependent variable Diff_Gov_Stakeholders

follow White (1980). Note. Coefficient p-values are two-tailed and robust standard errors romow vv "p<.01, "p<.05, "p<.05, "p<.1. Refer to the Appendix for variable definitions. The regression is a logit.

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stronger regulatory regime. However, those challenges are less likely step—to s when the IAF has a stronger focus on assurance activities (-.0331*) or further ar

when IAF reports are used more intensively by the C-Level (-.5585*). Finally, our sixth model considers coordination challenges between the IAF and the external auditor. Challenges between the IAF and the external auditor in the context of the TLoD implementation are more likely to occur in the finance industry (.8513*). Given the stronger regulatory regime for the finance industry, a higher need for coordination could be expected. We observe that listed companies are less likely to face challenges when implementing the TLoD with the auditor (-.9915**), suggesting that listed companies already fulfill certain characteristics, for example, due to transparency requirements. Finally, we document a significant negative effect for the conformance with the IPPF (-.2565**), which is consistent with the notion that for a higher quality IAF, captured by the conformance with the IPPF, challenges when implementing the TLoD with the auditor are less likely. This conforms with research documenting under which conditions external auditors rely on the internal auditor's work. For example, Munro and Steward (2010) found for the use of internal audit's work by external auditors that involvement in consulting impacts reliance on work undertaken and the use of internal auditors as assistants for control evaluation.

4.2 | Robustness checks

We have carried out additional analyses as robustness checks because the activities and focus of the IAF in the regulated finance industry sector compared to the less regulated non-finance sector are considerably different. Therefore, we analyze the extent to which the results of our overall models vary in separate subsamples. We divided our sample into a finance (n = 112) and a non-finance (n = 244) subsample and carried out the analyses described above again for the respective subsamples.

Tables 5a and 5b show the results of the additional analyses considering the existence of implementation challenges in general. The results of the subsample of non-finance companies remain qualitatively the same as for the entire sample. Thus, the listing status (.8268***), the intensity that IAF reports are used by the supervisory board (.2217**) and the C-Level (.2964*), as well as the percentage of assurance activities performed by the IAF (.0194*) significantly influence the implementation effort. More specifically, the subsample of non-finance companies that have no challenges in implementing the TLoD is characterized by a high probability of being listed, a relatively high usage intensity of audit reports by the supervisory board and the C-Level, as well as a high percentage of assurance activities. For the subsample of the finance industry, we do not find any significant effects. Therefore, our independent variables do not explain variance in the results. It seems that the influence of the specific industry regulation for banks, insurance companies, and other financial service companies for the implementation of the TLoD mitigates other influencing factors. This is remarkable because the finance sector reports challenges in implementing the TLoD. Therefore, the next

step—to shed light on the stakeholder relationship—should help us to further analyze these differences.

Tables 6a (finance industry) and 6b (non-finance industry) proceed analogously to the approach described above and analyze the potential challenges between different governance stakeholders. Comparing the regression results of the whole sample with the finance and the non-finance subsample, we find overall comparable results with some remarkable deviations. We do not find any significant effect concerning challenges with risk management. Challenges with the compliance function are less likely to occur for the finance subsample if the intensity that IAF reports are used by the supervisory board is high (-.3576*). Thus, IAFs with a higher level of cooperation with the supervisory board are less likely to face problems with the implementation of the TLoD with the compliance function. Interestingly, in terms of challenges with the compliance function for the variable Intensity_CLevel a significant negative effect can now be found for the non-finance subsample (-.3927*). The reported effect stemming from the conformance with IPPF standards only holds for the non-finance subsample (.3018*).

Challenges with the C-Level are weaker if the internal audit reports are intensively used by the C-Level (-1.5429* for the finance subsample and -.5988** for the non-finance sub-sample), conforming the idea of the tone from the top. If top management promotes the TLoD, challenges in implementing the TLoD are less likely. Additionally, for the finance industry, challenges regarding the C-Level are less likely to occur if the IAF is better staffed (-1.2725*). This effect could not be documented in our main analysis in Model 2. in which we did not observe any effect for IAF size with different governance stakeholders. However, for the subsample of the finance industry, we find that a larger IAF with more resources is less likely to face challenges when implementing the TLoD with the C-Level. Regarding the cooperation with the supervisory board, the positive effect of a higher percentage of assurance tasks can be confirmed for the finance subsample (-.0802*) but not for the non-finance subsample. Thus, for the finance subsample, a stronger focus on assurance tasks decreases the likelihood of challenges in implementing the TLoD with the supervisory board. This is consistent with the task of the supervisory board to monitor the effectiveness of internal controls (Bantleon et al., 2011).

Regarding challenges between the IAF and regulators, the results of the finance subsample confirm the negative effect of the intensity that IAF reports are used by the C-Level (-.9791**), whereas the nonfinance subsample shows significant negative results for the assurance activities (-.0678*). For the analysis of the relation with the external auditor, the significant negative effect of the listing status (-1.2607*) and the conformance with IPPF standards (-.4012*) can be confirmed for the finance subsample but not for the non-finance subsample. These results support that non-finance listed companies already fulfill certain characteristics, for example, due to transparency requirements, that decrease the likelihood of challenges in implementing the TLoD with the auditor. Furthermore, for non-finance companies with a higher quality, IAF challenges when implementing the TLoD with the auditor are less likely. Challenges with the external auditor in the ⁷⁰ ₩ILEY-

finance subsample are less likely to occur if the intensity of using internal reports by the C-Level is high (-.9568*).

Overall, this analysis helps us to understand which industry effect drives the main results. Therefore, challenges in implementing the TLoD between the IAF and different governance stakeholders can be different due to the diverse regulatory background and the respective governance structure.

5 | DISCUSSION AND CONCLUSION

Overall, the TLoD model is widely accepted as a framework to structure the position of the IAF and other governance stakeholders. Although the benefits of the TLoD seem to be obvious at first sight, anecdotal evidence from companies, audit firms, and professional bodies shows various challenges when implementing the model. In line with the implications of coordination theory (Crowston, 1997; Malone & Crowston, 1994), coordination and communication between the IAF and the other governance functions are one important challenge when implementing the TLoD. Recognizing these challenges, in December 2018 the IIA launched a global review of the TLoD. The review considers roles and responsibilities and the need for "horizontal coordination" and communication in the approach of risk and opportunities" (IIA, 2018). The updated position paper (IIA, 2019) emphasizes the need to update the model in order to overcome its shortcomings, for example, "it is not equipped to reflect the current realities of modern organizations" (IIA, 2019, p. 2). The proposal includes broadening the scope beyond value protection to embrace value creation, the need for close coordination among all contributors to avoid silos, and defining safeguards when enabling "blurring of the lines," for example, when internal audit responsibilities are extended beyond providing credible objective assurance. In July 2020 the IIA announced the update of the TLoD referred to as "Three Lines Model" (IIA, 2020; as a short description and an initial assessment Chambers, 2020 and Tysiac, 2020).

Thus, our study contributes to answering a main question in the TLoD discussion: when is the framework actually implemented without any challenges and which specific determinants lead to challenges between the different governance functions and stakeholders. Using data from a large by-invitation-only survey sent out to CAEs, our empirical models identify potential determinants of challenges during the TLoD implementation and factors leading to an implementation without these types of challenges. Our results show that the majority of our sample has implemented the TLoD (nearly 90%). Forty-five percent of our sample do not have any potential challenges while implementing the TLoD. This is a positive finding for both the profession as well as the IIA and other standard setters.

On the one hand, listed companies, companies where the IAF, the C-Level, and the supervisory board have a good relationship, and IAFs with a stronger focus on assurance activities tend to have no challenges in the implementation. The size of the IAF and the percentage of unplanned audits do not affect implementation challenges and stakeholder relations. On the other hand, companies in the finance sector often face challenges in the implementation compared to other industries. This is even more interesting, since the finance sector is often seen as an optimal environment for the implementation of strong IAFs. Because of the regulatory rules and guidelines, the IAF should always be the ultimate internal line of defense. Our results indicate that, although there might be a regulatory need to implement an IAF as the third line of defense, the participating CAEs see themselves in quite a complicated position compared to the nonfinance colleagues.

To generate more insights, we run additional logistic regression models, in which the challenges with the implementation of the TLoD are analyzed for different governance stakeholders. With those additional analyses, we are able to identify whether specific company or IAF characteristics determine challenges with stakeholders such as risk management, the compliance function, the C-Level management, the supervisory board, or the external auditor. In those additional models, we find heterogeneous results. If the company is listed there are fewer coordination issues with the board and external auditors. They seem to be more aware of the necessity of the implementation. Implementation issues for the finance industry are pronounced in relation to the compliance function, the regulator, and the external auditor, which all have a very defined governance role in those regulated industries. A higher conformance with the International Professional Practice Framework increases the challenges with the compliance function but decreases those with the external auditor. This finding conforms with some ideas on duplication of work and efficiency efforts in auditing (e.g., Abbott et al., 2012; Pizzini et al., 2015). The more assurancerelated tasks are performed, the less there are challenges with the supervisory board and the regulator. This finding shows the potential tradeoffs between assurance and consulting tasks for the IAF as documented by literature (e.g., Hoos et al., 2015; Munro & Steward, 2010). Coordination challenges might decrease, but resources are more dedicated to the effectiveness of internal controls compared to process efficiency considerations.

In sum, our study contributes to the literature in multiple ways. First, we empirically confirm that the TLoD is implemented in most of our sample companies. Furthermore, we identify determinants that influence the implementation of the TLoD in a positive or negative way. We also generate additional insights if specific factors determine problems (challenges) for the IAF with a specific governance function. Thus, our results help companies to identify whether a specific challenge is relevant for their IAFs or not and which specific determinant might be the most influential factor. Furthermore, our results allow the IIA or the national chapters to rethink the pros and cons of the model, especially in the current phase of discussing the update of the TLoD. For example, the results for finance companies suggest that a strict interpretation of the TLoD increases implementation challenges. Therefore, a more relaxed interpretation of the lines, as suggested by the new proposal, might address these challenges. From an academic perspective, we contribute to literature since our empirical results analyze the TLoD in more detail and provide additional insights, but also raise questions.

Thus, future research can analyze if our results are valid for other regulatory regimes and countries, since one limitation of our study is the focus on three German-speaking countries. Furthermore, the potential self-perception bias of the participating CAEs can be a potential limitation, although the survey methodology seems to be a valid approach to gather data and generate initial results for our research questions. Nevertheless, future studies can switch the perspective and analyze the potential challenges of a TLoD implementation through the lense of the potential stakeholders. Using participants from the IAF or, for example, the risk management function, an experimental approach is preferable to isolate the specific factors from a more behavioral perspective. A comparison over time with our results promises interesting insights as soon as enough experience with the revised version will have been gathered. Finally, the application of new technologies and the advent of new, agile organizational approaches, that, for example, reduce silo thinking, could have consequences for the challenges associated with the implementation of the TLoD. Altogether, our study provides multiple relevant results for the practical and the academic discussion about the advantages and disadvantages of the TLoD and opens multiple avenues for future research.

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ENDNOTES

- ¹ IIA Practice Guides: Coordinating Risk Management and Assurance, March 2012; Internal Audit and the Second Line of Defense, January 2016; Coordination and Reliance: Developing an Assurance Map, February 2018. IPPF Standard 2050: Coordination and Reliance, 2017.
- ² The survey is used by the national IIAs for benchmarking purposes and to identify important trends in the profession. The questionnaire is revised on a three-year basis to include current trends and modify questions. It includes overall more than 80 questions from different areas of internal auditing (e.g., structure, reporting, quality management). Together with the national IIAs, an extensive pretest of the instrument was conducted with nine CAEs from different organizations. Using feedback from these CAEs as well as from the national IIAs, the questions were aligned with the research topic of this study.

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APPENDIX

Variable Definitions

Variables from the survey	Description	Question
Dependent variables		
TLoDNoChallenges	Dummy variable with the value "1" if there is no challenge and the value "0" if there is a challenge	Are there any challenges in the implementation of the TLoD? Answer: "No"
Diff_Gov_Stakeholders	Dummy variable with the value "0" if there is no challenge and the value "1" if there is a challenge with the specific Assurance Provider (Risk Management; Compliance; C-Level; Supervisory Board; Regulator; External Auditor)	Are there any challenges in the implementation of the TLoD? Answer: "Yes, with"
Independent variables		
IAF characteristics		
ConformanceIPPF	Scales from 1 to 5 where 1 if very low conformance and 5 if conformance is very high	How is your conformance with the International Professional Practice Framework?
AssurancePct	Percent of assurance activities (engagements) from 0 to 100%	What is the percentage of assurance-related tasks?
PctUnplanned	Percent of unplanned audits (engagements) from 0 to 100%	What is the percentage of unplanned audits?
Stakeholders relationships		
Intensity_SB	Scales from 1 to 5 where 1 if low use and 5 if intense use	In your opinion, how intensively are the results of the IAF's work used from 1 to 5 by the supervisory board?
Intensity_CLevel	Scales from 1 to 5 where 1 if low use and 5 if intense use	In your opinion, how intensively are the results of the IAF's work used from 1 to 5 by the management board?
Company characteristics		
LN_IAFStaff	Natural logarithm of total full-time equivalent (FTE) of IAF employees	What is the total number (FTE) of IAF employees?
Listing	1 for "Listed" and 0 for "Not listed"	What is the company's listing status?
Finance	1 for "Credit and financial institutions including Banks," "Insurance companies," "Pension and social institutions" and 0 for "Nonfinancial Industry"	Which industry does the company belong to?