Testing the discriminatory power of factors of Internal Auditing Effectiveness: Sorting the wheat from the chaff

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Abstract

Purpose – This study clarifies the discriminatory power of factors suggested by practitioners and academic research that may indicate Internal Auditing (IA) effectiveness. Based on survey data from Heads of IA (CAEs), the study tests a set of indicators and questions that may help to differentiate the strong and effective from the weak and ineffective IA function (IAF).

Design/methodology/approach - Subsequent to extensive literature research on IA effectiveness a snapshot questionnaire was developed and tested based on the self-assessment of CAEs in private organizations headquartered in Germany. The group of cases clustered at the bottom end of the range is contrasted with the group of cases at the top end, and statistical significance for some indicators is validated.

Findings - IA effectiveness is a multi-faceted concept associated with organizational factors that have a bearing on the IA role and mandate, by IA resources (CAE and IA staff), by IA processes and by the pattern of relationships between the CAE and other key governance stakeholders. Questions are identified from components of the implied IA effectiveness model that have discriminatory power, including those related to the governance context, to the training and professional qualification of the IA staff, to the practice of IA technology and risk-based IA, to having appropriate access to the board/audit committee, to benefitting from their input to the IA plan, and to the CAE’s informal contact with senior management.

Practical implications – The combination of selected questions with discriminating power identifies IAFs who are expected to be more or less effective. That knowledge may help the quality assurance and improvement program, as well as policy makers who seek to increase the value of IA.

Originality/value - Maximum variation as a sampling technique is a promising research path that helps make visible the differences among IAFs. The study shows that the current body of knowledge about IA effectiveness can reveal different intensities of IA effectiveness at both ends of the range even when that knowledge is based solely on survey data. Further research on IA effectiveness is encouraged to challenge the findings and to look into suggested novel indicators that could not be statistically confirmed in this study.

Keywords - Internal auditing, effectiveness, self-assessment, discriminatory power

Paper type – Empirical survey
Introduction and research question

Internal Auditing (IA) effectiveness is, to large extent, still viewed as a “black box”, and the subject continues to be actively debated in practice (e.g., Deloitte 2010, Ernst & Young 2006 and 2008, KPMG 2009, PWC 2009 and 2010). However, in academic research, IA effectiveness remains largely unexplored (e.g., Anderson 2003, Arena and Azzone 2009, Cohen and Sayag 2010, Hermanson and Rittenberg 2003, Paape 2008, Prawitt 2003 and Sarens 2009). Despite the prominent positioning of IA effectiveness in the definition of IA (IIARF 2011a, 2) and the relevance of the subject in practice, further academic research on IA effectiveness may shed light on that “black box” and enrich the body of knowledge.

This paper discusses insights gained by means of questionnaire data with the purpose of making visible the differences in IA effectiveness among Internal Audit Functions (IAFs). The stakeholder perspective is not included because of the study design, so meaningful differences are revealed exclusively by means of questions addressed to Heads of IA (CAEs) that are based on indicators largely suggested by the literature review, complemented by some novel hypotheses of the authors.

The central question concerns whether and to what extent the data exclusively generated by questionnaires and based on the self-assessment of CAEs have discriminatory power to distinguish the comparatively strong and effective IAF from the comparatively weak and ineffective cases. Therefore, the research question (RQ) addressed in this paper is:

**RQ:** To what extent does applying the set of indicators of IA effectiveness suggested by practitioners and academic research help differentiate the strong and effective IAF from the weak and ineffective IAF?

In order to address the RQ, questionnaires were sent in autumn 2010 to CAEs of organizations headquartered in Germany. Consequently, it is important to appreciate the specific German corporate governance context, which is characterized by a two-tier board structure with a management board and a separate supervisory board (German Corporate Governance Code 2010). The two boards are distinct, in terms of both membership and responsibilities. The management board is responsible for managing the company, while the supervisory board advises and supervises the management board’s activities, is responsible for appointing and removing members of the management board, and sets up an audit
committee to handle and oversee issues of accounting, risk management, and compliance. The German Corporate Governance Code (2010) and the German Accounting Law Modernization Act (BilMoG 2009) indicate that it is common practice in Germany for the CAE to report directly to the management board¹ (“Vorstand” or “Geschäftsführung” depending on the type of legal entity), while the CAE may or may not have direct access to the supervisory body (“Aufsichtsrat” or “Beirat”) or a sub-committee thereof, such as the audit committee (Günther and Gonschorek 2008, 139, Hölscher and Rosenthal 2011, 489, also Velte 2011, 575). Therefore, in Germany senior management (SM) is generally regarded as the chief stakeholder of IA, reducing the potential uncertainty and ambiguity of “serving two masters” (Anderson 2003, Beasley et al 2009, Chambers 2008, Deloitte 2010, Hermanson and Rittenberg 2003, IIARF 2003 and Lenz and Sarens 2011). As a result, the potential impact of any confusion caused by divergent interests and agendas of multiple stakeholders is not expected to be a concern or limitation of this study.

With the purpose of the snapshot questionnaire and the specifics of the German governance context in mind, the paper is structured as follows. Section 1 presents the IA effectiveness model that is applied when selecting and clustering the set of questions into categories (core dimensions/building blocks). Section 2 describes the process of data generation. Section 3 presents the statistical analyses and outcome, and discusses the results. Section 4 acknowledges limitations of this research. Section 5 summarizes and concludes, and describes avenues for further research.

¹ According to a survey by the German Institute of Internal Auditors (Eulerich 2011, 22), 82 percent of CAEs in Germany report solid line to the CEO, to a member of the SM team, or to the entire SM team.
1. IA effectiveness model and questionnaire

Figure 1 shows the core categories (building blocks) of IA effectiveness that were derived from a literature review.

[Insert figure 1]

The model has four building blocks on which IA effectiveness depends: organization (questions regarding the IA role and mandate), IA resources (people), IA processes and pattern of relationship (with key governance stakeholders).

The building blocks are expected to be related and to be intertwined, as suggested by dotted lines. For example, a competent and professional CAE may be more likely to establish sound IA processes and to build beneficial relationships with other governance actors, namely SM and the board/audit committee. However, as their relationships are not the focus of this paper, the questions are clustered into four building blocks and tested individually.

The first three questions in the questionnaire (Appendix A, English translation of the original German version of the questionnaire) capture the industry sector, the number of employees, and net revenue. The next five questions address the IA role and mandate (Q4 to Q8) and are followed by ten questions about IA resources (Q9 to Q18), fourteen questions on IA processes (Q19 to Q32), and nine questions on IA relationships (Q33 to Q41).

1.1 IA effectiveness model: organization

Organizational characteristics, such as firm size, the overall governance context, and whether the organization has a legal requirement to establish an IAF, are expected to affect IA effectiveness (Carcello et al. 2005, Goodwin-Stewart and Kent 2006, Sarens et al. 2010, Sarens and Abdolmohammadi 2011). This category acknowledges that IA is a service to the business (Chambers 1992), so organizational factors are assumed to affect the IAF and its effectiveness. Questions concerning the IA role and mandate are part of this building block.

It is hypothesized that IAF is more effective

- if the overall Corporate Governance context is strong or very strong (Q4),
- if having an IAF is a legal requirement (Q5),
- if the IAF budget in the past two years has been unchanged or increased\(^2\) (Q6),
- if the IAF budget for the coming two years will be unchanged or increased (Q7), and
- if there is an IA charter that is agreed upon by the board/audit committee (Q8).

When self-assessing the overall corporate governance context (Q4) in their respective organizations, the respondents were prompted to consider dimensions like ethical values, risk and control awareness, risk management and internal control, and the tone at the top.

The IAFs that do not have a written IA charter (Q8) get an unsatisfactory rating in quality assessment, as a written charter is regarded as a minimum requirement (DIIR 2007).

1.2 IA effectiveness model: IA resources (people)

The characteristics of the IAF as a whole and the characteristics of the individual auditor are components that affect IA effectiveness (Sarens 2009). Van Peursem (2005) views communication skills and personal authority as indicators of successful internal auditors who define their role by adapting and tailoring it to circumstances. Rittenberg and Anderson (2006) present the ideal profile of a skilled and qualified CAE referencing, for example, stature and presence, strategic audit focus, the ability to exercise sound judgment, and the capacity to communicate clearly on audit issues.

Some of the questions grouped in this block are self-explanatory and standard, like questions on training and professional IA qualifications, and some are developed as hypotheses to be assessed and tested.

It is hypothesized that IAF are more effective

- if the average tenure of IA staff in the IAF ranges from three to seven years (Q9),
- if the next career move of IA staff is usually a lateral move or a promotion (Q10),
- if the combined share of co-sourcing and outsourcing of IA services ranges from 1 percent to 40 percent (Q11),
- if IA staff has forty hours or more of training per year\(^3\) (Q12),

\(^2\) A flat or increased budget (Q6 and Q7) is viewed as an indicator of IA effectiveness, because the availability of funds signals SM’s and the organization’s appreciation of IA and because such funds offer the opportunity to hire and keep qualified staff, and they complement the IA work as needed (provided the money is spent wisely).
If IA staff is trained on at least two of the dimensions of governance, fraud and ethical audits\(^4\) (Q13), if the tenure of the CAE in its current role ranges from three to seven years (Q14), if the CAE has worked in senior positions outside IA (Q15), if the CAE has a professional IA qualification\(^5\) (Q16), if IA staff are required to have a professional IA qualification (Q17) and if the CAE participates at least in two networking activities with IA peers\(^6\) (Q18).

This block contains hypotheses that have not – yet been- supported by academic research. For example Q9\(^7\) refers to the hypothesis that freshly appointed IAF staff must first get to know the organization before being fully operational and reaching at some point the peak performance level from which effective IA services are rendered. It is also hypothesized that, beyond a certain point, such as a certain tenure as internal auditor in an organization, threats to objectivity like self-review, social pressure, economic interest, personal relationship, and familiarity (Mutchler 2003, 251) may present a heightened risk that gradually becomes less well mitigated. Thus, internal auditors (including the CAE) who continue in a position in the same organization for too long may be at risk of losing value and their cutting-edge abilities. The optimal span of time in the job is hypothesized in the snapshot questionnaire to range from three to seven years. The same logic applies for CAEs and is tested by Q14.

Q10\(^8\) presents another novel hypothesis, which postulates that career prospects affect career choices when IA staff leave the IAF but continue to work for the same organization. If the

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\(^4\) IIARF (2010a, 11): “The IIA requires practicing CIAs (Certified Internal Auditors) to have on average 40 hours per year of continuing professional education (CPE).”

\(^5\) The internal audit activity does not contribute to governance to the same extent as it does to controls (IIARF 2011b, 5). These audit subjects are viewed as particularly demanding, so adequate training may increase the chance that internal auditors do and deliver more.

\(^6\) Networking activity is viewed as an indicator of IA effectiveness because discussing own’s practices and challenges with peers and learning from their perspective are regarded as ways to improve. Being appreciative of the plurality in practice may be a good guide for continuously improving the IA activity.

\(^7\) According to a survey by the German Institute of Internal Auditors (Eulerich 2011, 56) about 57 percent of companies participating plan for a long tenure in IA, that is, exceeding seven years, 32 percent consider a medium tenure of three to seven years, and 11 percent wish internal auditors to work less than three years in IA.

\(^8\) According to a survey by the German Institute of Internal Auditors (Eulerich 2011, 57) in the majority of cases internal auditors do not take on a management position in the same organization after their tenure in IA. That is reported to happen generally only in about 10 percent of cases, and occasionally in about 15 percent of cases. Taking on another role that is not a managerial role is the most frequent reason provided when leaving the IAF, closely followed by retiring, both apply in about 40 percent of cases (occasionally).
next career move in the same organization is typically a demotion, it is unlikely that the IAF in the organization attracts the best individuals.

The majority of IAFs may not be using any co-sourcing or outsourcing (IIARF 2010a, 29). Q11 presents a hypothesis that builds on Rittenberg and Covaleski (1997) and suggests that neither zero co-sourcing nor full outsourcing is an optimal solution in the long run to exploit the potential power of IA. IA’s knowing its own limitations is regarded as positive, so some kind of balanced approach is regarded as favorable, such as using co-sourcing (cost) effectively where there is, for example, a lack of expertise and competency or a major transformational project that requires special attention. The mark of 40 percent co-sourcing or outsourcing is chosen somewhat arbitrarily, but it is deliberately set below 50 percent, as the lion’s share of the IA work (according to that hypothesis) should be provided by in-house capacity that has learned to navigate in the political context of the organization and that has an appreciation of its culture. This hypothesis acknowledges Sawyer (1995), who contends that the best set of qualities of an internal auditor may be of no avail if the auditor does not understand the organization’s politics and culture.

Q15 presents another hypothesis. That internal auditors have senior level experience in areas outside IA is regarded an advantage since they have experience with the roles and responsibilities of those they are supposed to review and audit. This view supported, by Brodie (2010, 26), among others, who reports, “one of the greatest assets that any internal auditor can have is the ability to step into clients’ shoes and see things from their perspective”. Thus, it is reasonable to assume that such experience will be helpful in developing an appreciation of the subject matter, and may help in gaining acceptance from the auditee.

**1.3 IA effectiveness model: IA processes**

The top five tools used in practice (IIARF 2009, 12) when self-monitoring IA performance are compliance with the audit plan (i.e., the number of audits planned versus the number executed); compliance with a budget; a satisfaction survey from auditees; audit time management (planning, field work, closing); and reporting time management (i.e., planned versus actual reporting time).
This list of tools largely corresponds with the measure of success referenced by Pforsich et al (2006, 29) when establishing an effective IAF. In addition, the 2010 study of the Common Body of Knowledge (CBOK) ranks the percentage of the audit plan completed on the “pole position” (IIARF 2011b, 40). The criteria that are used in practice are not further critiqued in this paper, as the practical relevance and usefulness assumed by practitioners are viewed as justification for inclusion in the questionnaire.

The IIA International Professional Practices Framework (IIARF 2011a) provides mandatory guidance to internal auditors that describe the role model for the IAF to follow and how an IAF should work. The definition of IA (IIARF 2011a, 2) represents the mission statement, the declared purpose of IA. There are known gaps in practice, such as compliance with the Attribute Standard 1300 (Quality Assessment and Improvement Program) as only about a third of CAEs claim full compliance (IIARF 2010a, 31). The 2007 guideline for conducting a quality assessment (DIIR 2007) consists of eighty-one questions clustered into eleven observation areas, summarized under three headers: the so-called “basics” of IA (organization, position within the company and responsibilities, and budget and planning), the audit process (preparation, execution, reporting, post audit work and follow-up) and staff (selection, development/training, and management of the IAF). Five minimum standards are highlighted (DIIR 2007, 6): having a charter, independence, risk-oriented planning process, documenting results and implementation of a follow-up process. As adherence to these minimum standards is considered essential, non-adherence to any one of these five criteria would result in an unsatisfactory rating. Consequently, those minimum criteria are included in the IA effectiveness model.

It is hypothesized that IAF are more effective

- if the IAF is using Computer Assisted Auditing Techniques (CAAT) (Q19),
- if an external quality assessment was performed in the past five years\(^9\) (Q20),
- if risk-based IA is applied to determine the priorities of the IA activity\(^10\) (Q21),
- if assurance mapping is used to identify assurance providers for key risks (Q22),
- if an assessment of the reliability is performed of the assurance provided by others (Q23),

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\(^9\) Attribute Standard 1312 (External Assessments) requires a qualified, independent review from outside the organization to be conducted at least once every five years (IIARF 2011a, 23).

\(^10\) Performance Standard (PS) 2010 (Planning) requires the CAE to establish risk-based plans to determine the priorities of the IA activity, consistent with the organization’s goals (IIARF 2011a, 26)
- if SM provides input to the IA plan\textsuperscript{11} (Q24),
- if the board/audit committee provides input to the IA plan (Q25),
- if the IA makes recommendations for improving the governance process\textsuperscript{12} (Q26),
- if IA evaluates the effectiveness of risk management (Q27),
- if final IA reports are published within two weeks after completion of the audit (Q28),
- if IA rates individual findings and grades the overall IA reports\textsuperscript{13} (Q29),
- if IA follows-up on the status of issues a minimum of three times per year\textsuperscript{14} (Q30),
- if 90-100 percent of IA findings are implemented in a timely manner (Q31) and
- if the IAF uses a minimum of three measures of IA effectiveness not including “reliance by external audit” (Q32).

Question 19 acknowledges that exploiting technology may be instrumental in improving IA effectiveness.

As expected by practice advisory 2050-3 (IIARF 2011a, 119-122), shortcomings in practice are suspected when IA relies on the work of other assurance providers. This hypothesis is tested by Q22 and Q23.

The speed of reporting is associated with quality, so IA reports that are issued soon after the fieldwork has been completed are viewed as a positive sign (Q28).

Ultimately, IA performs through others, as issues in IA reports must be remedied by the process owners and responsible staff. Regular follow-up is viewed as crucial (Q30), so the success rate of timely and effective remediation of issues is tested by Q31. The authors are aware of the limitation that the outcome of this question may be partly a consequence of other processes.

\textsuperscript{11} According to PS 2010 (Planning), the CAE is requested to consult with SM and the board when developing a risk-based plan (IIARF 2011, 26-27). This footnote is also relevant to Q25.

\textsuperscript{12} This question is expected to have high discriminatory power, as there are relatively fewer IAFs that adequately evaluate and improve the effectiveness of risk management and governance processes (as demanded by the IA mission) compared with the IA contribution to controls (IIARF 2011b, 5). This footnote is also relevant to Q27.

\textsuperscript{13} When communicating results of the IA work, IA reports that rate the individual findings (i.e., high or medium) and grade the overall report (i.e., satisfactory, marginally deficient or deficient) are indicators of IA effectiveness. This recommendation is in line with PS 2410 (Criteria for Communicating), which generally suggests that internal auditors’ opinions and/or conclusions should be expressed (IIARF 2011, 37).

\textsuperscript{14} PS 2500 (Monitoring Progress) requires the CAE to establish a follow-up process to monitor and ensure timely remediation of issues (or that SM has accepted the risk of not taking action.)
Q32 refers to an element that contains a novel hypothesis. Some view IA as subordinate to external audit – that is, that logic IA acts as an assistant to the professional service provided by external audit. That discussion is typically subsumed into the “reliance question” (Cohen et al. 2007, Desai and Desai 2010, Felix et al. 2001 and 2005, Gramling et al. 2004, and Krishnammooorthy 2002). External audit’s perspective is challenged, and an “anti-reliance hypothesis” is developed in the next section (Q41).

1.4 IA effectiveness model: pattern of relationships
The effectiveness of other governance actors (SM, the supervisory board and the audit committee) is also expected to affect IA effectiveness because the IAF is not an island. The 2010 practice guide on measuring IA effectiveness and efficiency (IIA 2010) moves “meeting stakeholders’ needs” to center stage: sample measures of effectiveness, which are itemized in the appendix, include client satisfaction ratings, percent of recommendations implemented, and number of unsatisfactory internal audit opinions. The number of management requests is regarded as a criterion to measure service to stakeholders. All of these criteria (with the exception of the number of unsatisfactory internal audit opinions) are also included in the IA effectiveness model reviewed here.

It is hypothesized that IAF is arguably more effective

- if the CAE has a functional reporting line to the board or audit committee15 (Q33),
- if the CAE has an administrative reporting line to either the CEO, the deputy CEO, the CFO or the company secretary16 (Q34),
- if the CAE has appropriate access to the board/audit committee (Q35),
- if the CAE meets formally with the board/audit committee monthly or quarterly (Q36),
- if the CAE is contacted informally by the audit committee a minimum of three times per year (Q37),
- if the CAE has appropriate access to SM (Q38),
- if the CAE reports formally to SM quarterly (at a minimum) (Q39),
- if the CAE is contacted informally by SM minimum three to four times per year (Q40), and
- if external auditors do not rely on the work performed by the IAF (Q41).

15 The IIARF (2011a, 17) recommends that the CAE report functionally to the board in order to achieve organizational independence.
16 The IIARF (2011a, 16) suggests a dual-reporting relationship.
Q33 - 40 focus on the importance of the CAE’s interactions with the board/audit committee and SM. Such relationships, when they are characterized by regular interactions and an open dialogue, aid the IAF’s pursuit of effectiveness. Thus, IA effectiveness is expected to be influenced by its interactions with SM (Van Gansbergh 2005, Mihret and Yismaw 2007, Halimah et al. 2009, Cohen and Sayag 2010), and with the supervisory board and the audit committee (Rezaee and Lander 1993, Anderson 2009 and Barma 2009). In Germany, SM is generally regarded as the “boss” - the “chief stakeholder” of IA, which reduces any uncertainty and ambiguity when IA “serves two masters” (Anderson 2003, Beasley et al. 2009, Chambers 2008, Deloitte 2010, Hermanson and Rittenberg 2003, IIARF 2003, and Lenz and Sarens 2011). Consequently, SM’s appreciation of IA is an important enabling factor, as Geis (2010) determines in a study of the potential benefits of IA in the German context.

Q41 postulates the hypothesis that the more the work of IA is related to the topics of external audit, the more appreciative external auditors may become; however, as the external audit is financially oriented, its focus can be far removed from the areas in which IA can make a difference for the organization. That view is supported by Arena and Jeppesen (2009), who conclude, “IA will need to demonstrate that it is different from external auditing” and that “the new focus of IA on risk management may legitimate the work of IA before public opinion.” This view builds on Spira and Page (2003), who suggests that risk management should become the central theme in the conceptual world and practical work of IA. Thus, reliance on external auditor as an indicator of IA effectiveness can be dangerously misleading. This hypothesis is in conflict with the majority of existing empirical literature on IA effectiveness in terms of whether IA contributes to the financial statement audit (Cohen et al. 2007, Desai and Desai 2010, Felix et al. 2001 and 2005, Gramling et al. 2004, and Krishnammoorthy 2002). CBOK 2006 shows that about 35 percent of IAFs that perform any formal assessment of value added used reliance on IA by external audit as a criterion (IIARF 2007, 198).

After presenting the rationale for the components and questions about the IA effectiveness model, we next present the applied methodology for generating and analyzing the data, describe the outcome, and discuss what the data tell us.
2. Data generation

As this study is designed to work solely with questionnaire data based on the self-assessment of CAE, we do not consider other stakeholders’ view. There can be a disconnect between the “supply-side perspective”, which is based on the self-assessments of CAEs, and the “demand-side perspective”, which contains the stakeholder’s expectations and perceptions (IIARF 2011c). Self-perception and external perception may differ greatly (Ernst & Young 2006, 29).

When developing the questionnaire, we wanted to define a set of questions that have discriminating power to obtain a spectrum of results, rather than having all responses narrowly clustered. The questionnaire benefitted from consultation with academics and from suggestions from coordinators of two working groups of German internal auditors: the German IIA working groups “Rhine-Main area” and “Mittelstand” (German mid-sized companies).

The questionnaire was first tested by the two coordinators of these German IIA working groups, and in autumn 2010 it was made accessible through “Vovici EFM Continuum software.” The questionnaire was sent to CAEs in Germany (Appendix A, English version of the questionnaire), that is, to heads of IA in Germany that were members of the German IIA working groups “Rhine-Main area” and “Mittelstand”. The two groups combined had a total of 134 members at the time of the review. The questionnaire was open for replies for two weeks, and forty-six valid responses were received for a response rate of 34 percent. This response rate is comparable to other survey-based studies in the IA literature. Carcello et al. (2005, 76) yield a usable response rate of approximately 25 percent, and Sarens’ and Abdolmohammadi’s (2011, 13) sample base represents 28 percent of that study’s target population.

Non-response bias was tested using the Kruskal-Wallis test\(^\text{17}\) to compare the responses of early and late respondents. By comparing the responses from questionnaires that were returned within the first week with those that were received in the second week, we were able to confirm the null-hypothesis and that the two cohorts did not differ significantly. Thus, non-response bias is not regarded as a problem in this study.

\(^{17}\) Brosius (2011, pp. 859, 880-881)
No case from the banking sector is considered, nor are any financial service organizations, as it is typically assumed that the IAF is more mature in the financial industry (although recent corporate failures in the banking sector may challenge that assumption). That choice was motivated by the desire to avoid potential bias in the sample base. By excluding IAFs from those sectors and heightening the representation from the targeted part of German IAFs, we expect the sample base to be more homogeneous than it would be otherwise.

Including cases from the “Mittelstand” in Germany is not expected to create any sort of bias, as the vast majority of companies in Germany, whether small, medium-sized or large, regard themselves as part of that group, as there is no generally accepted set of qualifying criteria. For example, Simon (2009, 15) analyzes a sub-group of the “Mittelstand” with revenue up to USD 4 billion.

The forty-six sample cases are considered a fair representation of German IAFs that are members of the DIIR. In the sample base, the industrial sector stands out as most frequent, with the major industries represented being manufacturing and engineering (28 percent) and health care, life science and pharmaceuticals (20 percent). About 60 percent of the sample firms have revenues below EUR 1.2 billion, and about 80 percent have staff that number fewer than 10,000.

That corresponds well with the 2011 survey (Eulerich 2011, 12 and 14) where 65 percent of the participating firms report revenues below EUR 1.0 billion and 90 percent have staff that number fewer than 10,000, and over 40 percent of samples are operating in the industrial sector when adjusted to ensure even comparison (Eulerich 2011, 11). That value is confirmed by the CBOK 2010 study.

In addition, we consulted the German Institute of Internal Auditors (DIIR) when testing the representativeness of the sample base. According to the DIIR annual report 2010, there

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18 In the sample, 7 percent have revenues exceeding EUR 6 billion and only 9 percent have staff that number more than 25,000. In the 2011 survey (Eulerich 2011, 12 and 14) 8.5 percent have revenues exceeding EUR 5 billion and 3 percent have staff that number more than 50,000.
19 According to the CBOK 2010 study, 37 percent of participants (92 out of 250) work in the industrial sector after we exclude banks, insurance companies, external audit firms, and the public sector, and cases with missing sector information (data was provided by Professor Marc Eulerich, University Duisburg-Essen, 12 March 2012).
20 Günther Meggeneder (Chairman of the Board of the IIA from June 2010 to July 2011, currently leader of the DIIR working group “Mittelstand”), Volker Hampel (Managing Director of DIIR), and Professor Marc Eulerich (University Duisburg-Essen).
21 Annual report DIIR (2010, p. 86)
were 1,728 individual members and 633 sponsoring member firms in Germany as of 1 January 2011. It is assumed that all sponsoring member firms represent one IAF. After we exclude banks, insurance companies, external audit firms, and the public sector, 310 sponsoring member firms remain. In that adjusted base, about half of firms operate in the industrial sector, about a third are service firms, and the remainder are in energy and trade. There is no more detailed data available from the DIIR regarding the industry sector, revenues, or number of staff of the sponsoring member firms.

The questions are scored by applying a dummy variable with a binary rating (1/0). The binary approach was chosen, as the study seeks to identify indicators that differentiate the comparatively strong and effective from the comparatively weak and ineffective IAF, solely based on survey data from CAEs. Thus, only the extreme cases at the top and lower end of the range are distinguished. In building on an extensive literature review and testing some novel hypotheses, we did not intend to identify cases that neighbor the median but, rather to be “roughly right (and not exactly wrong)”. A binary approach appears to be well suited for that purpose. In addition, any finer methodology would require identifying questions with high discriminatory power to determine the meaning of any more subtle difference that may be observed. At the time this study was designed, we did not believe that a more refined measurement scale would reveal differences that we can measure and interpret reliably and that would make much difference in our findings.

Based on a diligent literature research, and complemented by our own considerations, we hypothesized indicators of IA effectiveness. Subject to the answer to each question, one or zero points were scored, and the overall effectiveness score was then summed up. The questions were not weighted in any manner. This evaluation scheme was defined prior to receiving the completed questionnaires. Thus, with thirty-eight qualifying questions captured in the scoring model (Q4 to Q41), the maximum points that could be achieved was 38. The snapshot questionnaire created the spread of scores shown in figure 2.

[Insert figure 2]

The highest IA effectiveness score of all forty-six responses was 32, and the lowest score was 12. Both scores appeared once. The median score of all 46 cases was 21. The first quartile (QU1) includes scores up to 18, and the fourth quartile (QU4) has a minimum score of 26.
Thirteen cases are grouped in QU1, representing the bottom end of the range, and seven cases are clustered in QU4, representing the top end of the range. As the study intends to look into extreme cases, only the cases that are grouped into QU1 or QU4 are studied further.

After presenting the data generation process that provides the source data as the basis for what comes next, we statistically analyze the data and test the significance of findings in preparation for discussing the results.

3. Statistical analyses and discussion of results
A three-step process is applied to test the statistical significance of the dummy variables (1/0) (Brosius 2011, Janssen and Laatz 2010): First, a cluster analysis is performed to test the suggested split of cases into quartiles, thereby identifying which cases fit statistically well together based on their effectiveness scores. Second, a Bonferroni test is carried out to test and verify that the answers in the four clusters differ significantly. Third, an analysis of variances (ANOVA) is performed question-by-question to test and validate which questions provide answers that are significantly different from cluster to cluster, such that they have statistically validated discriminatory power.

3.1 Statistical analyses, step 1: Cluster analysis
The cluster analysis (Brosius 2011, 711, and Janssen and Laatz 2010, 483) is based on an algorithm minimizes distances within clusters while optimizing the distances between clusters. The squared Euclidian distance (Brosius 2011, 738) is used in performing the cluster analysis of dummy variables. Table 1 shows, the combination of b and c is counted in comparing the IA effectiveness score case-by-case and question-by-question (i.e., case 1 in the sample scores 0 and case 2 scores 1 in a particular question, and vice versa) and displayed in a matrix.

[Insert table 1]

22 The cluster analysis shows which cases fit well together based on their effectiveness scores.
23 This is a type of multiple comparison test used in statistical analysis to determine which of the four clusters have answers that are significantly different from those of other clusters.
24 The ANOVA significance test shows which answers are significantly from cluster to cluster.
The total number of disparate pairs of variates is then calculated, comparing all 46 cases with one another, to serve as a similarity measure. The lower the score, the more the respective cases resemble each other; the higher the score, the more they differ.

The cluster analysis shows that QU1 and QU4 are distinct as figure 3 shows.

[Insert figure 3]

All 46 cases are assessed and sorted into clusters. For example, QU4 starts with case number 46 and goes down to case number 38, with all seven cases grouped into QU4 clustered narrowly together. Only cases 22 and 29 do not belong in QU4. The cluster analysis serves as a positive first indication that QU1 and QU4 are statistically different.

3.2 Statistical analyses, step 2: Bonferroni test
The Bonferroni algorithm (Brosius 2011, 510, and Janssen and Laatz 2010, 358) tests the mean difference between groups of data, that is, the four quartiles in this study. Table 2 shows that all four clusters (QU1 to QU4) are significantly different.

[Insert table 2]

The significant differences among the four clusters is confirmed, with the mean difference between QU1 and QU4 the largest (-12.58/12.58).

3.3 Statistical analyses, step 3: Analysis of variances (p-value and Cramers V)
This analysis shows that the answers to some questions are significantly different between the clusters. The confidence level is set at a high level of 99.5 percent to focus the analysis on those indicators that make the greatest difference. If the p-value is less than 0.005 (p < 0.005) the null-hypothesis is rejected, and there is a statistically founded connection between the question and the clustering of the case. The magnitude of Cramers V then demonstrates the strength of the connection. Cramers V ranges from 0 to 1 (Brosius 2011, 433, and Janssen and Laatz 2010, 278). Cramers V greater than 0.2 are generally viewed as acceptable, and Cramers V of around 0.5 (what we see here) are generally regarded as comparatively strong.
The allocation of QU1 is statistically significantly distinct from other units in several dimensions. The p-value of less than 0.005 is confirmed for seven questions for QU1 with Cramers V ranging from 0.420 to 0.617\textsuperscript{25}.

[Insert table 3]

Statistically validated findings

The seven questions identified in Table 3 have statistically validated discriminatory power and point to cases typically clustered at the lower end of the range. These differentiating questions concern the governance context (GOV), training of IA staff in general (TRA_IA) and training in governance, fraud and ethics in particular (TRA_GFE), professional qualification of IA staff (Q_IA), the practice of IA technology (CAAT) and risk-based IA (RBIA), and the CAE’s informal contacts with SM (IA-SM_3).

The crosstabs in table 4 summarize the score per quartile and questions that are significantly different predictor variables for QU1 cases.

[Insert table 4]

The allocation of QU1 is statistically significantly distinct from other units in several dimensions:

Sixty-nine percent of cases clustered in QU1 view the corporate governance context as predominantly very weak, weak or neutral (at best) (GOV, Q4). Seventy-one percent of the cases in QU4 view their governance contexts as strong or very strong.

Eighty-five percent of IA staff in cases clustered in QU1 receive fewer than 40 hours of training per year (TRA_IA, Q12), while 71 percent of cases in QU4 have at least 40 hours of training per year.

\textsuperscript{25} The table lists the number of the question in the questionnaire, and the code references the abbreviation used in the SPSS statistical software package (Brosius 2011).
In 69 percent of cases in QU1, IA staff is not adequately trained to perform governance, fraud and ethical audits (TRA_GFE, Q13). Such training is provided to 71 percent of cases clustered in QU4.

In only 15 percent of cases in QU1, IA staff is required to have a professional IA qualification (Q_IA, Q17), while all internal auditors in cases clustered in QU4 are expected to be professionally qualified.

In only 15 percent of cases in QU1 are Computer Assisted Auditing Techniques (CAAT, Q19) applied, while all cases in QU4 leverage technology.

The only six cases in the entire sample base in which risk-based IA (RBIA, Q21) is not applied are all in QU1. Forty-six percent of cases do not operate based on a risk assessment, while all other cases do.

In 85 percent of cases in QU1, SM rarely contacts the CAE informally (IA-SM_3, Q40) and rarely (maximum twice per year) or never requests ad hoc missions to be carried. That contrasts with 71 percent of cases in QU4, where the interaction between the CAE and SM is more frequent and more intense.

As table 5 shows, if the confidence level were lowered to 95 percent, that is, if the p-value is less than 0.05 (p < 0.05), additional connections between Q10, Q16, Q24, Q25 and Q39 and the clustering of the case into QU1 would have statistical foundation.

[Insert table 5]

Q10, NEXT (p = 0.016, Cramers V = 0.357)
After the tenure in IA, the next move in the same organization is generally a demotion for IA staff clustered into QU1.

Q16 Q_CAE (p = 0.025, Cramers V = 0.331)
CAEs grouped into QU1 typically have no professional IA qualification.

Q24 SM_INPUT (p = 0.007, Cramers V = 0.397)
When IAFs are in QU1, SM typically provides no input to IA planning by suggesting audit subjects and ad hoc projects.

Q25 AC_INPUT \( (p = 0.036, \text{Cramers } V = 0.310) \)
When IAFs are in QU1, the board/audit committee typically provides no input to IA planning by suggesting audit subjects and ad hoc projects.

Q39 IA-SM_2 \( (p = 0.017, \text{Cramers } V = 0.353) \)
The CAE of IAFs clustered into QU1 typically report formally to SM fewer than four times per year.

We now turn to QU4.

The allocation of QU4 is statistically significantly distinct from other quartiles in several dimensions. The p-value of less than 0.005 is confirmed for three questions for QU4 with Cramers V ranging from 0.424 to 0.554.

[Insert table 6]

Three questions have statistically validated discriminatory power that point to the cases in QU4, that is, those clustered at the top end of the range. These differentiating questions concern the training of IA staff in general (TRA_IA), the CAE’s having appropriate access to the board/audit committee (IA-AC_1), and the CAE’s benefitting from the board/audit committee’s input to the IA plan by suggesting audit subjects and ad hoc projects (AC_INPUT).

The crosstabs in table 7 summarize the score per quartile and questions that are significantly different predictor variables for the cases in QU4.

[Insert table 7]

In all cases clustered in QU4, IA staff members are expected to be qualified internal auditors (Q_IA, Q17). The score of 100 percent in QU4 contrasts with only 15 percent in QU1.
In 71 percent of the cases in QU4, the board/audit committee provides input to the IA plan by suggesting audit subjects and ad hoc projects (AC_Input, Q25), which contrasts fundamentally with IAFs clustered in QU1, where there is not even one such case.

All cases in QU4 believe they have appropriate access to the board/audit committee (IA-AC_1, Q35), while only 38 percent of cases in QU1 believe that. This finding is particularly remarkable, as the CAE in German organizations typically reports into SM.

As table 8 shows, if the confidence level were lowered and set at 95 percent, that is, if the p-value were less than 0.05 (p < 0.05), Q5, Q8, Q15, Q19, Q29, Q33, Q36 and Q37 would also have statistically founded connections with the clustering of the case into QU4.

[Insert table 8]

Q5, LEGAL (p = 0.040, Cramers V = 0.303)
That IAF exists because it is a legal requirement would then become statistically valid for cases clustered into QU4.

Q8, IA_C (p = 0.046, Cramers V = 0.295)
Having an IA charter that has been agreed upon by the board/audit committee would become statistically valid for cases grouped into QU4.

Q15, SEN (p = 0.046, Cramers V = 0.295)
A CAE who has worked in a senior position outside of IA would be a statistically validated indicator for cases grouped into QU4.

Q19, CAAT (p = 0.006, Cramers V = 0.406)
Exploiting Computer Assisted Auditing Techniques (CAAT) would be a statistically valid indicator for comparatively strong and effective IAF.

Q29, GRADE (p = 0.021, Cramers V = 0.340)
Grading individual findings and rating the overall IA report would be indicative of an IAF grouped into QU4.
Q33, REP_F (p = 0.027, Cramers V = 0.326)
A functional reporting line to the board or audit committee would signal an IAF clustered into QU4.

Q36, IA-AC_2 (p = 0.014, Cramers V = 0.364)
Regular (at least quarterly) formal meetings with the board/audit committee would be another statistically validated indicator of an IAF clustered into QU4.

Q37, IA-AC_3 (p = 0.027, Cramers V = 0.326)
That the CAE is contacted by the board/audit committee minimum of three times per year would then represent another statistically validated indicator of an IAF grouped into QU4.

After this descriptive summary of the process and outcome of the statistical analyses the results are discussed next.

3.4 Discussion of results
This study shows that the current body of knowledge about IA effectiveness may reveal levels of IA effectiveness at both ends of the range, even when the levels are based solely on survey data.

Prima facie, the survey results may be particularly applicable for corporate governance contexts that are characterized by a two-tier board structure, such as is the case in Germany, where SM is generally regarded as the chief stakeholder of IA. Such two-tier organizations with a supervisory board overseeing the actions of the board of management, can also be found in Austria and in a number of Eastern European countries, whereas one-tier organizations with one central board of directors is typical for the Anglo-Saxon and American set-up and is also common in Northern Europe (ECHIA 2007, 2).

SM is regarded as the chief stakeholder of IA, which reduces the uncertainty and ambiguity that can result when IA aims at “serving two masters” (Anderson 2003, Beasley et al. 2009, Chambers 2008, Deloitte 2010, Hermanson and Rittenberg 2003, IIARF 2003, Lenz and Sarens 2011). Different results may be found if the survey is fielded in different corporate governance contexts, and these differences may be the topic of future study.
However, the relevance of the survey results is not limited to corporate governance regimes that have two-tier board structures. First because analyses typically take place within whatever corporate governance context there may be. In addition, and perhaps more importantly, regardless of whether there is a one- or two-tier board structure, the audit committee, as a sub-committee of the supervisory board, (when there is one) is an important direct or indirect stakeholder/addressee of IA services, as such services are demanded by prominent regulatory requirements and governance codes like the New York Stock Exchange listed company manuals section (NYSE 2010, 303A.07), the UK Corporate Governance Code (FRC 2010), and the 8th Directive of the European Union (EU 2006, Directive 2006/43/EC, Article 41).

This last directive is especially important to acknowledge, as it requests that each public-interest entity in the EU have an audit committee tasked to monitor the effectiveness of the company’s internal control, IA (where applicable), and risk management systems. As of September 2010, all EU member states had confirmed the full transposition of the directive26. In Germany, an accounting law modernization act (BilMoG 2009) passed the parliament in May 2009 that converted the 8th EU directive (EU 2006) into national law and requested publicly traded companies describe the key characteristics of their internal controls and risk management system and publish and explain any deviations from the German Corporate Governance Code (2010). The law redefines the main emphasis of audit committee work as prescribed in the German Stock Cooperation Act (Aktiengesetz – AktG, Article 107, paragraph 3, sentence 2), which clarifies the role of the supervisory board’s audit and compliance committee. That law, which is directly applicable to publicly traded companies, is expected to have a signaling impact on non-listed firms as well, as orientation toward best practices may be a consideration for them.

Next, we present the results. As table 9 shows, nine questions from all components of the implied IA effectiveness model are confirmed as having discriminatory power at a statistically validated confidence level of 99.5 percent.

[Insert table 9]

A comparison of the population of cases grouped into QU1 with those in QU4 shows that the companies in QU4 typically have more employees and are larger in terms of revenue (figures 4 and 5).

[Insert figure 4]

[Insert figure 5]

There is some zone of overlap as both QU1 and QU4 contain cases that have between 1,001 and 25,000 employees and revenue between EUR 601 million and EUR 6 billion. Still, the organizations that are clustered in QU4 are generally more sizable, as they have more employees and generate relatively higher revenue.

The organizations in both quartiles operate in similar industries of health care, life science, pharmaceuticals, manufacturing and engineering, and other businesses. In addition, QU1 includes one case from the food and beverages sector, and QU4 includes cases from the telecommunications business.

One question signals statistically valid discriminatory power in the first building block of the IA role and mandate: the overall Corporate Governance context.

**3.4.1 Corporate Governance context (GOV, Q4)**

Corporate governance has taken on new importance since the failure of big, prominent corporations with the current economic crisis. As the twenty-first century has seen large corporate bankruptcies, there is rising interest in the matter in both theory and practice (Clarke 2007, 20). However, there is no universally accepted definition of what good corporate governance looks like (Cohen et al. 2010, 757). The UK Corporate Governance Code (FRC 2010, 1) defines the purpose of corporate governance as that of “[facilitating] effective, entrepreneurial and prudent management that can deliver the long-term success of the company.” The IAF is typically viewed as just one stakeholder in the overarching corporate governance framework, but it may be or become an important pillar thereof.
Having a comparatively weak corporate governance context is an important limitation for the IAF’s ability to be fully effective, as it presents a kind of “glass ceiling” that caps the impact IA can have since “it is difficult for internal auditing to be better than the existing corporate governance structure” (Rittenberg and Covaleski 2003, 128).

Spira and Page (2003, 640) point to the possible “metamorphosis of frog into prince”, that is potentially enhancing the value rendered by IA when conceptualizing IA and suggesting that it be risk-based. Sarens et al. (2011) show that an active role of the IAF in corporate governance is significantly and positively associated with the use of a risk-based audit plan, the existence of a quality assurance and improvement program, and input by the audit committee to the audit plan. Two of these factors emerge as significant in this study as well: the risk-based audit plan (RBIA, Q21) and audit committee input (AC_INPUT, Q25). While both aspects of corporate governance are discussed separately here, it is worth noting that the condition of the corporate governance context, whether weak or rather strong, is to a large degree a consequence of other factors that are partly in and partly beyond the control of the CAE. However, even when operating in a comparatively weak corporate governance context, the CAE may have some room to maneuver in driving improvements by operating IA in a risk-based manner, aiming to improve, and communicating with other key governance stakeholders. Those activities are promising avenues worth considering and strengthening when the CAE aspires to strengthen the role and contribution of IA.

Three questions in the questionnaire signal statistically valid discriminatory power in the second building block of IA resources: Q12, Q13 and Q17.

3.4.2 Training of IA staff (TRA_IA, Q12)

The differences between QU1 and QU4 in the dimension of training and continuous learning have statistically valid discriminatory power, which confirms Ridley’s (2008, 246) leading paradigm that “the aim [of success] should be to improve.” Barma (2006, 30), among others, concurs with this view and concludes “the best internal audit functions I have worked with are continuously looking to be innovative and improve the way they work.”

Investing or not investing in training of IA staff distinguishes the strong and effective from the weak and ineffective IAFs. Learning and remaining humble, that is, an IAF that knows its own limitations are viewed a positive light. The “know it all” attitude of those who lack such
perspective is likely to backfire in practice. This study confirms that there is value in investing in training for IA staff since the return is likely to be that internal auditors are more effective than they would be without adequate training. Meaningful training modules can be manifold, depending on the individuals and the scope of assignments. Generally, the basic and fundamental requirements are put in place in practice such that IA carries out a risk-oriented planning process, documents results, and establishes a sound follow-up process (DIIR 2007). Ultimately, the IIA definition postulated by the international professional practices framework should be delivered on (IIARF 2011a, 2).

3.4.3 Training of IA staff regarding governance, fraud and ethics (TRA_GFE, Q13)

Only about half of the IAF represented in the two recent CBOK studies play an important role in governance (IIARF 2007, 55). Similarly, CBOK 2010 reports that 55 percent of IAFs do not perform corporate governance reviews, and 68 percent perform no ethics audits (IIARF 2010a, 25). Therefore, there is a distinct discrepancy between what the IA definition claims IAF should do and what is done in practice.

It would be too speculative to suggest that shortcomings in IA practice in terms of corporate governance reviews are attributable to a lack of IA training in governance-, fraud- and ethics-related subjects. Although the fact that IA does not play a sufficiently active role in corporate governance is also due to many other factors, more IA training in governance, fraud and ethics is being provided by leading IAFs (QU4), which acknowledge the complexity of the subject matters, while IAFs at the bottom end of the range (QU1) do not. This gap between QU1 and QU4 cases represents a statistically confirmed differentiator of the strong and effective from the weak and ineffective IAFs.

3.4.4 IA staff and professional IA qualification (Q_IA, Q17)

All CAE in QU4 state that internal auditors are required to have a professional IA qualification, but only 15 percent of those in QU1 state the same. The CAEs in QU4 appreciate the value of IA qualifications for their staff, so they stress them. Some CAEs in QU1 who do not demand continuous learning and progression may fear that internal auditors that pursue training and get qualified will challenge their own roles and status. Without more data on such differences, however, such considerations remain speculative. However, the divergent emphasis on professional certification for IA staff serves as another statistically
valid indicator of IA effectiveness that helps to sort the wheat from the chaff in terms of indicators of strong, effective IA.

The IA qualification of IA staff *per se* may not be the prevailing driver so much as the endurance that is evidenced by successfully sitting the exams despite other commitments, the continued interest in the subject matter, and requirements by the Institute of Internal Auditors (IIA) and its German affiliate, the DIIR, to keep knowledge current. Notably, the IA qualification of CAE has no statistically significant discriminatory power.

Three questions signal statistically valid discriminatory power in the third building block of IA processes: Q19, Q21, and Q25.

### 3.4.5 IA and Computer-Assisted Audit Techniques (CAAT, Q19)

Only 15 percent of cases in QU1 leverage technology, but all IAFs in QU4 apply Computer Assisted Auditing Techniques (CAAT). Thus, exploiting technology is another statistically validated indicator of the effective IAF.

Technology *per se* is no substitute for sound professional judgment, but leveraging technology may facilitate effective IA. Continuous risk and control assurance requires automated testing and continuous monitoring in order to comfort stakeholders that the significant risks are managed and that related controls are operating effectively (Marks 2009). The practice of CAAT represents another statistically valid indicator that differentiates the strong and effective from the weak and ineffective IAF.

### 3.4.6 Risk-based IA (RBIA, Q21)

Resources are scarce and time is easily wasted if IA looks at the wrong matters, so a risk-based IA generally helps the CAE and IA staff to focus on what matters most. The importance of risk-based IA is supported by the literature (e.g., Allegrini and D’Onza, 2003, Burnaby and Hass 2009, Spira and Page 2003, and PwC 2009). The concept of risk-based IA has been the subject of position papers (IIA 2009, IIA UK and Ireland 2005a), complemented by professional guidance when implementing (IIA UK and Ireland, 2005b). Neither of these may be fully appreciated by CAE in Germany since only 54 percent of IAF in Germany in QU1 claim to be using a risk-based approach to determine the priorities of the IA activity, while all
of the IAF in QU4 claim to do so. This observation suggests that the IAF at the bottom end of the range should get the basics in place, which includes risk based IA (DIIR 2007, 6).

3.4.7 Board/audit committee and input to the IA plan (AC_INPUT, Q25)
The board/audit committee provides no input to IA planning in the IAFs in QU1, whilst 71 percent of those in QU4 report that they provide such input. Given the specifics of the German Corporate Governance Code (2010) and context and that SM is generally regarded as the chief stakeholder of IA, a relatively low score here should not be a complete surprise. Thus, it is striking that, despite the specifics of the German context, the large majority of IAFs grouped at the top end of IA effectiveness benefit from the board’s/audit committee’s input to IA planning by suggesting audit subjects and ad hoc projects.

This observation and the distinct spread between QU1 and QU4 support Chambers’ (2008) suggestion that the board is the ultimate customer of IA, along with the acknowledgement that other governance stakeholders are important because of the risk that IA reports to the board may be filtered in such a way that only what is palatable to management is communicated.

Finally, two questions signal statistically valid discriminatory power in the final building block of IA relationships: Q35 and Q40.

3.4.8 CAE and appropriate access to the board/audit committee (IA-AC_1, Q35)
In Germany, the CAE usually reports to a member of the SM team or is responsible to the entire SM team (Günther and Gonschorrek 2008, 139; Hölscher and Rosenthal 2011, 489; Velte 2011, 575). Direct reporting lines of CAEs to the supervisory board (“Aufsichtsrat”) are not yet common in the two-tier board system in Germany, so it is remarkable that all cases in QU4 claim to have appropriate access to the board/audit committee, a feature that applies to only 38 percent of the cases in QU1.

The statistical significance of the board’s/audit committee’s input to the IA plan and the CAE’s appropriate access to that oversight body may also be important for the DIIR who seek to enhance the weight of IA in Germany.

3.4.9 CAE is contacted informally by SM (IA-SM_3, Q40)
Seventy-one percent of CAE in QU4 are contacted *informally* at least three times per year by SMs who are requesting ad hoc missions while only 15 percent of CAEs in QU1 report the same.

The rapport between the CAE and SM has statistically valid discriminatory power, which confirms the many academic studies that support the critical impact that management support has on IA effectiveness referencing. Mihret and Yismaw (2007), Halimah et al. (2009) and Cohen and Sayag (2010), for example, view the demand-driven organizational/managerial characteristics as the most important factor. In a study of determinants of IA effectiveness in Israeli organizations, Cohen and Sayag (2010, 304) see this relationship as more important than the qualifications and work setting of the IA staff because SM makes important decisions that affect IA, including hiring proficient IA staff, developing career channels for IA staff, and providing organizational independence for IA work.

Here the discussion of statistically valid findings with a confidence level of 99.5 percent ends. Further data of the study is highlighted in terms of the testing of novel hypotheses.

### 3.4.10 Novel hypotheses

Table 10 summarizes the eight questions in which all cases in QU4 scored alike:

[Insert table 10]

All hypotheses with unanimous scores by cases in QU4 are directionally supported by the data, but not to a statistically valid degree, when the confidence level is set at 99.5 percent. The novel hypotheses about career prospects (Q10), the share of co-sourcing (Q11), the benefit of senior level experience outside IA (Q15) and the “anti-reliance hypothesis” (Q41) tested in this paper could not be statistically validated at that level.

However, at the lowered confidence level of 95 percent the novel hypotheses Q8, Q10, Q15, and Q24 qualify as statistically validated indicators.

While all IAF in QU4 claim to have an IA charter (Q8) in place that has been agreed to by the board or the audit committee, only 54 percent of cases in QU1 have established an IA charter that clearly scopes the role and mandate of IA in their organization. IAFs that do not have an
IA charter would get an unsatisfactory rating in a quality assessment on this basis alone, as having a charter is regarded a minimum requirement (DIIR 2007). Further study of why some IAFs do not have such an IA charter would be useful, especially as all respondents are members of the DIIR. Such study may benefit the profession and its representation in Germany, and especially its membership of CAE, by clearly emphasizing the “basics” and ensuring that “the five minimum standards” (DIIR 2007, 6) are in place so the foundation according to the normative model represented by the international professional practice framework of the IIA (IIARF 2011a) is right. More IAFs may have charter than are shown here, but the challenge remains to get IA charters agreed to by the boards or audit committees or understand the reasons why not.

The confirmation of hypotheses Q10 arguably the assumed vicious circle that only the IAF that signal the possibility of promising career paths after some tenure in IA have heightened chances to attract top performers who have alternative career options from which to choose. Those IAFs in which typically a demotion follows may attract internal auditors who have limited or no alternative career options instead and who may, in some cases, view that role as last stop before retirement. Further research is encouraged.

Hypotheses Q15 is statistically validated (at $p < 0.05$), so prior experience of the CAE in SM roles outside IA can be regarded as a differentiating factor, which poses questions about the effectiveness of career auditors who have worked only in IA. Further research is encouraged.

While all CAE in QU4 benefit from input and suggestions for audit subjects and ad hoc projects from SM to IA planning (Q24), only 46 percent of CAE in QU1 report the same. This result confirms the many academic studies that find that management support has a critical impact on IA effectiveness (e.g., Mihret and Yismaw 2007, Halimah et al. 2009; Cohen and Sayag 2010).

Table 11 summarizes the remaining eleven questions and displays the differences between QU1 and QU4.

[Insert table 11]
These hypotheses are also directionally supported by the data but are not statistically validated at the 99.5 percent confidence level. However, at the lowered confidence level of 95 percent, the hypotheses in Q5, Q16, Q36, Q37 and Q39 would be confirmed.

Q5 points to the relevance of legislative pressures, such as those through government regulations. No CAE in QU1 is qualified as an internal auditor, and only 43 percent of the CAE in QU4 have an IA designation (Q16). This observation poses directional questions about the value of the educational content and perceived value and benefit of such IA qualifications and designations for the most senior audience in the IA profession, that is, the CAE. The statistical significance of Q36, Q37, and Q39 at the lower confidence level ($p < 0.05$) highlights the particular importance of IA relationships, which warrants further (also more qualitative type of) study.

The hypothesis about the tenure of IA staff (Q9) was not statistically confirmed in this survey, but further research may be considered in order to more fully understand the career patterns of internal auditors.

Finally, an external assessment (Q20) as stipulated by the professional standards of the IIA (IIARF 2011a), Attribute Standard 1300 (quality assurance and improvement program), is performed by a mere 8 percent of IAF in QU1 and 43 percent of cases in QU4. These low scores may be no surprise if the recent CBOK study (IIARF 2010b, 33) is taken into consideration. Compliance with this professional standard continues to lag behind the other standards (as in the prior study of 2006), as, according to their self-assessment, only about a third of IAF fully comply. With particular focus on more specific questions that would produce more specific information, the quality assurance and improvement programs may be strengthened. This study makes suggestions for consideration.

Summing up, the questionnaire has significant discriminating power in distinguishing the top and bottom end of the range and differentiating the comparatively effective from the comparatively ineffective IAFs. All building blocks of the implied IA effectiveness model point out statistically valid indicators and differences between IAFs clustered at both ends of

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27 It may also be worth investigating to what degree the IIA standards (IIARF 2011a) are unanimously accepted by internal auditors; or whether compliance with International Standards of Auditing (ISA) represents an alternative that is applied in some cases because many internal auditors are accountants. The CBOK 2010 study (IIARF 2010a, 9) shows that public and chartered accounting certificates are held by about 20 percent of internal auditors. Further study is encouraged.
the continuum. Thus, the RQ is favorably answered: the set of indicators of IA effectiveness suggested by practitioners and academic research provide valuable pointers that help to sort the wheat from the chaff by differentiating the comparatively strong and effective IAFs from the comparatively weak and ineffective IAFs.

Further studies are suggested to validate the findings of this research. If verification of these findings is warranted, more qualitative research is needed also.

Before summarizing and concluding and suggesting areas for future research, limitations of this study are presented.

4. Limitations
The questionnaire and this study have several limitations that should be kept in mind when interpreting the results:

A) The study is *prima facie* limited to the German context, which is characterized by a two-tier board structure. As any corporate governance context may be viewed as special for one reason or another, a similar limitation would exist of this empirical survey had been performed in any other setting. Consequently, generalization is possible but may be impacted by German specifics, such as, that CAEs in German organizations generally report to SM. The direct and frequent access of the CAE to the supervisory board and audit committee remains a relatively uncommon practice in Germany.

B) All survey participants were members of the DIIR in Germany and members of its working groups in Germany, which may distort the data. The sample base may have over-sampled relatively strong cases of IAFs, as CAEs who believe they are managing a relatively effective IAF may have been more inclined to participate in the questionnaire than those that believe they are managing a relatively ineffective IAF.

C) The replies are based on self-assessment by the CAE, so the data is impacted and may be skewed by the potential self-bias that self-assessment may entail. In addition, the questionnaire as designed does not include the “demand side perspective”, so it is missing an important dimension for measuring IA effectiveness.
5. Summary and conclusion, and avenues for further research

Subsequent to extensive literature research on IA effectiveness a snapshot questionnaire was developed and tested based on the self-assessment of forty-six CAE in private organizations headquartered in Germany. IA effectiveness is viewed as a multi-faceted concept related to organizational factors (including the IA role and mandate), IA resources, IA processes and the pattern of relationships between the CAE and other key governance stakeholders. The study tests and discusses the set of indicators and questions that may help to sort the wheat from the chaff, that is, to provide ways to differentiate the comparatively strong and effective IAFs from the comparatively weak and ineffective IAFs from the rather weak and ineffective IAF based solely on survey data.

The key findings and conclusions are summarized as follows.

THE CURRENT BODY OF KNOWLEDGE HAS DISCRIMINATORY POWER.

The study demonstrates that the current body of knowledge about IA effectiveness is capable of revealing different levels of IA effectiveness at both ends of the range even when it is based solely on survey data. When QU1 samples are contrasted with QU4 samples, statistically valid discriminatory factors that are revealed at a high confidence level of 99.5 percent include the governance context, training and professional qualification of IA staff, the practice of IA technology and risk-based IA, the CAE’s having appropriate access to the board/audit committee, and IAF’s benefiting from the board/audit committees’ input to the IA plan, and the CAE’s informal contact with SM.

Differences between QU1 and QU4 in the dimension of training and continued learning are strong and statistically validated indicators of IA effectiveness. While the IA staffs of IAFs in QU4 is invariably required to have an IA designation or to pursue such studies, only a fraction of the IAFs in QU1 demand that their staffs have a professional IA qualification. In fact, no CAE in QU1 held a professional IA qualification, and only 43 percent of CAEs in QU4 are qualified internal auditors. This finding poses questions about the value of the educational content in the IA qualification process and the perceived value and benefit of IA qualifications for the most senior audience in the IA profession, the CAE.
THE VALUE OF QUALITY ASSURANCE AND IMPROVEMENT PROGRAMS SHOULD BE ENHANCED.
The study is practically relevant for CAEs and other professionals who are engaged in quality assurance and improvement programs. With particular focus on more pointed questions, such review programs may be strengthened whether they are performed internally or externally. With an improved value proposition, acceptance by internal auditors themselves may also increase and compliance with the professional Attribute Standard 1300 (quality assurance and improvement program) may be heightened in a way that will improve the overall quality of IA service rendered.

THE IIA AND DIIR MAY CONSIDER STRENGTHENING THE LINK BETWEEN THE CAE AND THE OVERSIGHT BODY.
The study is practically relevant for the policy makers, the IIA and DIIR, as it may provide evidence for strengthening the link between the CAE and the oversight body, the board/audit committee.

NOVEL HYPOTHESES OFFER ADDITIONAL DISCRIMINATORY POWER
At a confidence level of 95 percent, two of five newly tested hypotheses offer additional discriminatory power. If the next career move in the same organization is typically a promotion (or lateral move), it is more likely that the IAF in those organizations can attract the smartest and best individuals. In addition, it is regarded an advantage if internal auditors have senior-level experience outside IA, as such experience offers insights and the ability to appreciate the subject matter fully, and it may help in gaining acceptance from the auditee. The three novel hypotheses that were not statistically validated – those, regarding the tenure of internal auditors (Q9), and the share of co-sourcing and outsourcing (Q11), and the “anti-reliance” hypothesis (Q41) - may be the subject of further research.

The results of the study suggest several avenues for further research.

STRENGTHEN THE DISCRIMINATORY POWER OF INDICATORS
Future research should expand the zone of meaningfulness beyond QU1 and QU4 through more questions with heightened discriminatory power. Similar surveys may be performed in Germany and elsewhere that challenge and/or verify the findings of the present study, and making new discoveries.
EXPLORE THE ORGANIZATIONAL IMPACT ON IA EFFECTIVENESS
Future research should seek to clarify the role of organizational factors in promoting IA effectiveness, especially as the political and cultural impact is underexplored.

STUDY THE IMPACT OF THE INDIVIDUAL INTERNAL AUDITOR
Future research should seek to clarify the career pattern of internal auditors and on what basis career choices are made to move into the IA profession - and out again. In that context, further research on the hypothesis that there is an optimum life cycle for performing IA most effectively should be explored. In addition, further study on the share of co-sourcing and outsourcing, and what that may tell about IA effectiveness is called for.

EXAMINE THE RELATIONAL DIMENSION OF IA
Future research should examine the relational dimension of IA effectiveness and the CAEs’ interactions with other governance stakeholders. In addition, the data presented indicate that IA effectiveness may be inversely related to reliance on IA by external audit: in none of the IAFs in QU4 do the external auditors rely on work that is performed by IA while that is the case in 23 percent of the in QU1. While statistical significance was not reached in this survey, researching on the reliance question (or, rather, the “anti-reliance hypothesis” as postulated in this paper) of external audit on the work performed by IA could provide more definitive evidence of its being an indicator of IA effectiveness.

EXPLORE RELATIONSHIPS BETWEEN THE BUILDING BLOCKS
In addition to deepening understanding of the building blocks per se, further study of the space in-between, the relationships between the building blocks, could answer questions not addressed in this study. There is much yet to be discovered.
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Appendices

Figure 1
The building blocks of IA effectiveness used to develop the snapshot questionnaire designed to research IA effectiveness from survey data.
Figure 2
Frequency of IA effectiveness score
Figure 3
Step 1: Cluster analysis

QU1 / 1

QU1 / 2

QU4
Figure 4
Organizational factors (size 1): Number of employees

Figure 5
Organizational factors (size 2): Revenue (EUR million, billion)
Table 1
Squared Euclidean distance = b+c

<table>
<thead>
<tr>
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<th></th>
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<tbody>
<tr>
<td>0</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>1</td>
<td>c</td>
<td>d</td>
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<table>
<thead>
<tr>
<th>Case 2</th>
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Table 2
Bonferroni test

<table>
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<th>(I) Quartile</th>
<th>(J) Quartile</th>
<th>Mean difference</th>
<th>Standard error</th>
<th>Sig.</th>
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<td>QU3</td>
<td>QU1</td>
<td>-7,97</td>
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<tr>
<td>QU4</td>
<td>QU1</td>
<td>-12,58</td>
<td>0,726</td>
<td>0,000</td>
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<tr>
<td>QU2</td>
<td>QU1</td>
<td>4,29</td>
<td>0,587</td>
<td>0,000</td>
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<tr>
<td>QU3</td>
<td>QU1</td>
<td>-3,68</td>
<td>0,615</td>
<td>0,000</td>
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<tr>
<td>QU4</td>
<td>QU1</td>
<td>-8,30</td>
<td>0,709</td>
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<td>QU1</td>
<td>7,97</td>
<td>0,635</td>
<td>0,000</td>
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<td>QU1</td>
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<td>0,615</td>
<td>0,000</td>
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<td>0,726</td>
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<td>QU1</td>
<td>8,30</td>
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<td>QU1</td>
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<td>0,749</td>
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Table 3
ANOVA QU1 with p-value < 0.005

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<th>Cramers V</th>
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<td>#13 TRA_GFE</td>
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<td></td>
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### Table 4
**Crosstabs QU1**

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<td>23</td>
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<td>QU1</td>
</tr>
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<td>QU1</td>
<td>9</td>
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<td>5</td>
</tr>
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<td>4</td>
</tr>
<tr>
<td>QU4</td>
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<td>QU1 11</td>
<td>QU1</td>
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<td>QU1</td>
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### Table 5
**ANOVA QU1 with p-value > 0.005 and < 0.05**

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<td>Q16</td>
<td>Q_CAE</td>
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<td>SM_INPUT</td>
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<td>AC_INPUT</td>
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<td>Q39</td>
<td>IA-SM_2</td>
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Table 6
ANOVA QU4 with p-value < 0.005

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<td>0.424</td>
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<td>#25</td>
<td>AC_Input</td>
<td>0.000</td>
<td>0.554</td>
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<td>#35</td>
<td>IA-AC_1</td>
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<td>0.424</td>
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Table 7
Crosstabs QU4

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<td></td>
<td></td>
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<td>85%</td>
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<td>15%</td>
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<tr>
<td>QU2</td>
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<td>QU3</td>
<td>4</td>
<td>36%</td>
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<td></td>
<td></td>
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<td>QU1</td>
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<td>62%</td>
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<td>38%</td>
</tr>
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<td>QU2</td>
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<td>60%</td>
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<td>40%</td>
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<td>45%</td>
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<td>100%</td>
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<tr>
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Table 8
ANOVA QU4 with p-value > 0.005 and < 0.05

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<td>IA_C</td>
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<td>0.295</td>
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<td>Q15</td>
<td>SEN</td>
<td>0.046</td>
<td>0.295</td>
</tr>
<tr>
<td>Q19</td>
<td>CAAT</td>
<td>0.006</td>
<td>0.406</td>
</tr>
<tr>
<td>Q29</td>
<td>GRADE</td>
<td>0.021</td>
<td>0.340</td>
</tr>
<tr>
<td>Q33</td>
<td>REP_F</td>
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<td>0.326</td>
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<td>Q36</td>
<td>IA-AC_2</td>
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<td>0.364</td>
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<td>Q37</td>
<td>IA-AC_3</td>
<td>0.027</td>
<td>0.326</td>
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</table>
Table 9
Nine questions are statistically significant with high discriminatory power when comparing Quartile 1 (QU1) with Quartile 4 (QU4) data

<table>
<thead>
<tr>
<th>Nine questions that are significant with p &lt; 0.005</th>
<th>QU1</th>
<th>QU4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 #4 IA role and mandate</td>
<td>GOV</td>
<td>Overall Corporate Governance context, very strong or strong, yes = 1</td>
</tr>
<tr>
<td>2 #12 IA resources</td>
<td>TRA_IA</td>
<td>Training of IA staff is 40 hours per year or more, yes = 1</td>
</tr>
<tr>
<td>3 #13 TRA_GFE Training of IA staff provided for governance, fraud and ethical audits: min 2/3, yes = 1</td>
<td>31%</td>
<td>71%</td>
</tr>
<tr>
<td>4 #17 Q_IA IA staff are required to have a professional IA qualification, yes = 1</td>
<td>15%</td>
<td>100%</td>
</tr>
<tr>
<td>5 #19 IA processes</td>
<td>CAAT</td>
<td>IAF uses CAAT (Computer Assisted Auditing Techniques), yes = 1</td>
</tr>
<tr>
<td>6 #21 RBIA Risk-based IA is applied to determine priorities of the IA activity, yes = 1</td>
<td>54%</td>
<td>100%</td>
</tr>
<tr>
<td>7 #25 AC_INPUT Board / Audit committee provides input to the IA plan, yes = 1</td>
<td>0%</td>
<td>71%</td>
</tr>
<tr>
<td>8 #35 IA relationships</td>
<td>IA_AC_1</td>
<td>Appropriate access to board/audit committee = 1</td>
</tr>
<tr>
<td>9 #40 IA-SM_3 CAE is contacted informally by Senior management, min. 3-4 times p.a., yes = 1</td>
<td>15%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Table 10
Eight further questions statistically where all cases clustered in QU4 score alike. Further research is suggested.

<table>
<thead>
<tr>
<th>Eight further questions were all cases in QU4 replied alike. Q8, Q15, Q24, Q29 are significant with p &lt; 0.05</th>
<th>QU1</th>
<th>QU4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 #8 IA role and mandate</td>
<td>IA_C</td>
<td>IA charter exists and is agreed by the board/AC, yes = 1</td>
</tr>
<tr>
<td>2 #10 IA resources</td>
<td>NEXT</td>
<td>Next move of IA staff it is generally a lateral move or a promotion, yes = 1</td>
</tr>
<tr>
<td>3 #11 CO_S Combined share of co-sourcing and outsourcing of IA services is 1-40%, yes = 1</td>
<td>54%</td>
<td>100%</td>
</tr>
<tr>
<td>4 #15 SEN CAE has worked in Senior position outside IA, yes = 1</td>
<td>69%</td>
<td>100%</td>
</tr>
<tr>
<td>5 #24 IA processes</td>
<td>SM_INPUT</td>
<td>Senior management provides input to the IA plan, yes = 1</td>
</tr>
<tr>
<td>6 #26 IA_GOV IAF makes recommendations for improving the governance process, yes = 1</td>
<td>54%</td>
<td>100%</td>
</tr>
<tr>
<td>7 #29 GRADE IAF rates individual findings and grades the overall report, yes = 1</td>
<td>54%</td>
<td>100%</td>
</tr>
<tr>
<td>8 #41 IA relationships</td>
<td>EA_IA</td>
<td>External auditors rely on the work performed by IAF, yes = 0 and no = 1</td>
</tr>
</tbody>
</table>

Table 11
11 further questions. Further research is suggested.

<table>
<thead>
<tr>
<th>11 further questions. Q5, Q16, Q36, Q37 and Q39 are significant with p &lt; 0.05</th>
<th>QU1</th>
<th>QU4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 #5 IA role and mandate</td>
<td>LEGAL</td>
<td>Having an IAF is a legal requirement, yes = 1</td>
</tr>
<tr>
<td>2 #9 IA resources</td>
<td>TEN_IA</td>
<td>Tenure of IA staff on average in IAF, 3-4 yrs or 5-7 years, yes = 1</td>
</tr>
<tr>
<td>3 #16 Q_CAES CAE has a professional IA qualification, yes = 1</td>
<td>0%</td>
<td>43%</td>
</tr>
<tr>
<td>4 #20 IA processes</td>
<td>EA-5</td>
<td>External quality assessment was performed in the past five years, yes = 1</td>
</tr>
<tr>
<td>5 #22 AMAP_1 Assurance mapping is used to identify assurance providers for key risks, yes = 1</td>
<td>38%</td>
<td>86%</td>
</tr>
<tr>
<td>6 #28 TIME Final IA reports are published max. 2 weeks after completion of the audit, yes = 1</td>
<td>23%</td>
<td>57%</td>
</tr>
<tr>
<td>7 #30 FOLLOW IA follows-up on status of issues min. three times per year, yes = 1</td>
<td>38%</td>
<td>86%</td>
</tr>
<tr>
<td>8 #31 DONE 90-100% of IA findings are implemented timely, yes = 1</td>
<td>0%</td>
<td>29%</td>
</tr>
<tr>
<td>9 #36 IA relationships</td>
<td>IA-AC_2</td>
<td>CAE meets formally with the board (audit committee) monthly or quarterly, yes = 1</td>
</tr>
<tr>
<td>10 #37 IA-AC_3 CAE is contacted informally by audit committee min. 3-4 times per year, yes = 1</td>
<td>15%</td>
<td>43%</td>
</tr>
<tr>
<td>11 #39 IA-SM_2 CAE reports formally to Senior management weekly, monthly or quarterly, yes = 1</td>
<td>38%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Appendix A
The questionnaire: English version

48
Internal audit effectiveness

A member of the Heads of Internal Audit Service (HIAS) is looking to obtain a snapshot of current internal audit practice as part of an academic project into internal audit effectiveness.

The questions are largely based on literature research performed to date on the subject matter and are quite short. This survey will not take longer than 10-15 minutes. Two academic papers are currently under review, and may be shared with all participants of this survey when published.

1) What is your industry sector (choose one from this list):
- Banks and building societies
- Insurance
- Other financial services
- Food and drink
- Manufacturing and engineering
- Media and leisure
- Retail
- Telecommunications
- Utilities
- High technology
- Health care, life science, pharmaceuticals
- Other private sector
- Voluntary/charity
- Education
- Central government
- Local government
- Health
- Other public sector
- Other (please specify)

If you selected other, please specify

2) What is the total number of employees in your organisation? (If your organisation is international or has multiple divisions, your answer should cover only that part of the organisation which your internal audit services cover)
- less than 100
- 101 to 500
- 501 to 1,000
- 1,001 to 5,000
- 5,001 to 10,000
- 10,001 to 25,000
- 25,001 to 50,000
- over 50,000

3) What is the turnover or net revenue spend of your organisation? (Provide the worldwide total for multi-national organisations)
- Up to £10 million or or €12 million
- £11m - 25m or €13m - 30m
- £26m - 50m or €31m - 60m
- £51m - 200m or €61m - 240m
- £201m - 500m or €241m - 600m
INTERNAL AUDIT ROLE and MANDATE

4) How do you rate Corporate Governance in your organisation (think of ethical values, risk and control awareness, respect to risk management and internal control, tone from the top etc).

- very strong
- strong
- neutral
- weak
- very weak
- Other (please specify)

If you selected other, please specify ____________________________________________

5) The organisation has an internal audit function because it is a legal requirement.

- yes
- no
- don’t know

6) How has the internal audit budget changed in the past 2 years?

- lower funding
- no change
- higher funding

7) How is the internal audit budget expected to change in the next two years?

- lower funding
- no change
- higher funding

8) Does your internal audit activity have an Internal Audit Charter that has been agreed by the board (audit committee)?

- yes
- no
- don’t know
- Other (please specify)

If you selected other, please specify ____________________________________________

INTERNAL AUDIT RESOURCES

9) How long do internal audit staff stay on average in the function?
10) When internal audit staff leave the internal audit function but continue to work for the organisation what is generally the next step?

- demotion
- lateral move
- promotion
- Other (please specify)

If you selected other, please specify
______________________________________________________________________

11) What is the combined percentage of co-sourced and outsourced internal audit activity?

- none
- 1 - 10%
- 11 - 20%
- 21 - 30%
- 31 - 40%
- 41 - 50%
- more than 50%

12) On average, how many hours training does each internal auditor receive during the year?

- less than 40 hours per year
- 40 hours per year or more

13) Have internal auditors been given adequate professional training to perform governance, fraud and ethical audits?

<table>
<thead>
<tr>
<th></th>
<th>yes</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td>governance audits</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>fraud audits</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>ethical audits</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

14) How long have you been in your current role?

- less than one year
- less than two years
- less than three years
- less than four years
- less than five years
- less than six years
- less than seven years
● more than seven years

15) Have you worked in a senior position outside of internal audit?
   ● yes
   ● no

16) Do you have a professional internal auditing qualification, for example PIIA, MIIA, QiCa, CIA?
   ● Yes
   ● No

17) Are internal audit staff required to have a professional internal auditing qualification, for example PIIA, MIIA, QiCa, CIA?
   ● yes
   ● no

18) Do you regularly participate in networking and social events with internal auditing peers from other organisations?

<table>
<thead>
<tr>
<th>Event</th>
<th>yes</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td>internal auditing seminars and conferences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>round table discussions about internal auditing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>internal auditing workshops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIA working groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIA regional groups</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INTERNAL AUDIT PROCESS

19) Does the internal audit function use Computer Assisted Auditing Techniques (CAATT)?
   ● yes
   ● no

20) Has the internal audit function been subject to an external quality assessment in the past five years?
   ● yes
   ● no
   ● Other (please specify)

If you selected other, please specify

____________________________________________________________________

21) Are you using a risk-based approach to determine the priorities of the internal audit activity?
   ● yes
   ● no
   ● Other (please specify)
If you selected other, please specify
______________________________________________________________________

22) Does your organisation use assurance mapping to identify who provides assurance for key risks?

☐ yes
☐ no
☐ Other (please specify)

If you selected other, please specify
______________________________________________________________________

23) Do you assess the reliability of assurance services form other parts of the organisation?

☐ yes
☐ no
☐ Other (please specify)

If you selected other, please specify
______________________________________________________________________

24) Do senior management provide input to internal audit planning by suggesting audit subjects and ad hoc projects?

☐ yes
☐ no
☐ Other (please specify)

If you selected other, please specify
______________________________________________________________________

25) Do the board/audit committee provide input to internal audit planning by suggesting audit subjects and ad hoc projects?

☐ yes
☐ no
☐ Other (please specify)

If you selected other, please specify
______________________________________________________________________

26) Does the internal audit activity assess and make recommendations for improving the governance process?

☐ yes
☐ no
☐ Other (please specify)

If you selected other, please specify
______________________________________________________________________
27) Does the internal audit activity evaluate the effectiveness of risk management processes?

- yes
- no
- Other (please specify)

If you selected other, please specify _____________________________________________________

28) When, on average, are final internal audit reports issued after completion of the audit?

- within one week of completion
- within two weeks of completion
- within three weeks of completion
- after three weeks of completion

29) Do you rate or grade the findings in your audit reports and/or give an overall rating to your reports?

<table>
<thead>
<tr>
<th></th>
<th>yes</th>
<th>no</th>
<th>don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>individual findings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>overall report</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

30) How often do you follow-up progress of your recommendations?

- annually
- twice a year
- three times a year
- four times a year
- more than four times a year
- Other (please specify)

If you selected other, please specify _____________________________________________________

31) On the whole what percentage of recommendations of an internal audit are implemented timely and effectively?

- less than 50%
- less than 60%
- less than 70%
- less than 80%
- less than 90%
- 90 - 100%

32) What measures of effectiveness to do you use (choose all that apply)?

- number of recommendations accepted
- number of recommendations implemented
- improvements and cost savings from recommendations
- customer surveys from auditees
number of management requests for ad-hoc audits and projects
reliance by external audit on internal audit
no formal measurement
Other (please specify)

If you selected other, please specify

INTERNAL AUDIT RELATIONSHIPS

33)  To whom does internal audit report to functionally?

☐ board (Chairman or member)
☐ audit committee (Chairman or member)
☐ executive Management (either CEO, Deputy CEO or CFO or so)
☐ Other (please specify)

If you selected other, please specify

34)  To whom does internal audit report to administratively?

☐ Chief executive or Deputy CEO
☐ Chief financial officer
☐ company secretary
☐ chief risk officer
☐ chief compliance officer
☐ Other (please specify)

If you selected other, please specify

35)  Do you believe that you have appropriate access to the board / audit committee?

☐ yes
☐ no
☐ Other (please specify)
36) How often do you meet **formally** with the board (audit committee)?

- monthly
- quarterly
- annually
- never
- Other (please specify)

37) How often are you contacted **informally** (outside formal audit committee meetings) by the head of the audit committee or other audit committee members?

- never
- 1-2 times per year
- 3-4 times per year
- more than 4 times per year
- Other (please specify)

38) Do you believe that you have appropriate access to senior management?

- yes
- no
- Other (please specify)

39) How often do you report **formally** to senior management?

- weekly
- monthly
- quarterly
- bi-annually
- annually
- never
- Other (please specify)

40) How often is senior management contacting you **informally**, and requesting ad hoc missions to be carried out?
 never
 1-2 times per year
 3-4 times per year
 more than 4 times per year
 Other (please specify)

If you selected other, please specify

______________________________________________________

41) **Do external auditors rely on the work performed by the internal audit function?**

 yes, in full
 yes, partly
 no
 don’t know
 Other (please specify)

If you selected other, please specify

______________________________________________________

42) **If you would like to receive the academic papers and take further part in this research project please leave your email address below:**

______________________________________________________

______________________________________________________

**Data Protection Notice**

Thank you for completing the survey, your views and opinions are very important.

**Your response will be treated in total confidence.**

Completed questionnaires will be processed only by the Institute of Internal Auditors - UK and Ireland (IIA) using Vovici EFM Continuum software and will not be disclosed to any other third parties. By submitting this questionnaire you consent to our processing of your sensitive personal data for these purposes.
## Appendix B

### Snapshot questionnaire (self-assessment) - scoring model and result:

**Quartile 1 (QU1) versus Quartile 4 (QU4)**

<table>
<thead>
<tr>
<th>Scoring model</th>
<th>German sample of IAF, with n = 46</th>
<th>Quartile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question No.</td>
<td>SPSS code</td>
<td>Score, &quot;Yes = 1&quot; unless specified differently</td>
</tr>
<tr>
<td>1</td>
<td>nil, industry sector</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>nil, employees</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>nil, net revenue</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>GOV</td>
<td>Overall Corporate Governance context, very strong or strong, yes = 1</td>
</tr>
<tr>
<td>5</td>
<td>LEGAL</td>
<td>Having an IAF is a legal requirement, yes = 1</td>
</tr>
<tr>
<td>6</td>
<td>B-2</td>
<td>IAF budget in the past two years: no change or higher, yes = 1</td>
</tr>
<tr>
<td>7</td>
<td>B+2</td>
<td>IAF budget expected in the two coming years: no change or higher, yes = 1</td>
</tr>
<tr>
<td>8</td>
<td>IA_C</td>
<td>IA charter exists and is agreed by the board/AC, yes = 1</td>
</tr>
<tr>
<td>9</td>
<td>TEN_IA</td>
<td>Tenure of IA staff on average in IAF, 3-4 yrs or 5-7 years, yes = 1</td>
</tr>
<tr>
<td>10</td>
<td>NEXT</td>
<td>Next move of IA staff it is generally a lateral move or a promotion, yes = 1</td>
</tr>
<tr>
<td>11</td>
<td>CO_S</td>
<td>Combined share of co-sourcing and outsourcing of IA services is 1-40%, yes = 1</td>
</tr>
<tr>
<td>12</td>
<td>TRA_JA</td>
<td>Training of IA staff is 40 hours per year or more, yes = 1</td>
</tr>
<tr>
<td>13</td>
<td>TRA_GFE</td>
<td>Training of IA staff provided for governance, fraud and ethical audits: min 2/3, yes = 1</td>
</tr>
<tr>
<td>14</td>
<td>TEN_CAE</td>
<td>Tenure of CAE in current role ranges from 3 to 7 years, yes = 1</td>
</tr>
<tr>
<td>15</td>
<td>SEN</td>
<td>CAE has worked in Senior position outside IA, yes = 1</td>
</tr>
<tr>
<td>16</td>
<td>Q_CAE</td>
<td>CAE has a professional IA qualification, yes = 1</td>
</tr>
<tr>
<td>17</td>
<td>Q_IA</td>
<td>IA staff are required to have a professional IA qualification, yes = 1</td>
</tr>
<tr>
<td>18</td>
<td>NET</td>
<td>CAE participates in networking activities with IA peers: 2 or more actives, yes = 1</td>
</tr>
<tr>
<td>19</td>
<td>CAAT</td>
<td>IAF uses CAAT (Computer Assisted Auditing Techniques), yes = 1</td>
</tr>
<tr>
<td>20</td>
<td>EA-5</td>
<td>External quality assessment was performed in the past five years, yes = 1</td>
</tr>
<tr>
<td>21</td>
<td>RBIA</td>
<td>Risk-based IA is applied to determine priorities of the IA activity, yes = 1</td>
</tr>
<tr>
<td>22</td>
<td>AMAP_1</td>
<td>Assurance mapping is used to identify assurance providers for key risks, yes = 1</td>
</tr>
<tr>
<td>23</td>
<td>AMAP_2</td>
<td>Assessment of the reliability of assurance provided by others, yes = 1</td>
</tr>
<tr>
<td>24</td>
<td>SM_INPUT</td>
<td>Senior management provides input to the IA plan, yes = 1</td>
</tr>
<tr>
<td>25</td>
<td>AC_INPUT</td>
<td>Board / Audit committee provides input to the IA plan, yes = 1</td>
</tr>
<tr>
<td>26</td>
<td>IA_GOV</td>
<td>IA makes recommendations for improving the governance process, yes = 1</td>
</tr>
<tr>
<td>27</td>
<td>IA_RM</td>
<td>IA evaluates the effectiveness of risk management processes, yes = 1</td>
</tr>
<tr>
<td>28</td>
<td>TIME</td>
<td>Final IA reports are published max. 2 weeks after completion of the audit, yes = 1</td>
</tr>
<tr>
<td>29</td>
<td>GRADE</td>
<td>IA rates individual findings and grades the overall report, yes = 1</td>
</tr>
<tr>
<td>30</td>
<td>FOLLOW</td>
<td>IA follows-up on status of issues min. three times per year, yes = 1</td>
</tr>
<tr>
<td>31</td>
<td>DONE</td>
<td>90-100% of IA findings are implemented timely, yes = 1</td>
</tr>
<tr>
<td>32</td>
<td>MEASURE</td>
<td>Min. 3 measures of effectiveness, and &quot;reliance by external audit&quot; not part thereof = 1</td>
</tr>
<tr>
<td>33</td>
<td>REP_F</td>
<td>Functional reporting line to board or audit committee, yes = 1</td>
</tr>
<tr>
<td>34</td>
<td>REP_A</td>
<td>Administrative reporting line to either CEO/Deputy/CFO/Company secretary, yes = 1</td>
</tr>
<tr>
<td>35</td>
<td>IA-AC_1</td>
<td>Appropriate access to board/audit committee = 1</td>
</tr>
<tr>
<td>36</td>
<td>IA-AC_2</td>
<td>CAE meets formally with the board (audit committee) monthly or quarterly, yes = 1</td>
</tr>
<tr>
<td>37</td>
<td>IA-AC_3</td>
<td>CAE is contacted informally by audit committee min. 3-4 times per year, yes = 1</td>
</tr>
<tr>
<td>38</td>
<td>IA-SM_1</td>
<td>CAE has appropriate access to Senior management, yes = 1</td>
</tr>
<tr>
<td>39</td>
<td>IA-SM_2</td>
<td>CAE reports formally to Senior management weekly, monthly or quarterly, yes = 1</td>
</tr>
<tr>
<td>40</td>
<td>IA-SM_3</td>
<td>CAE is contacted informally by Senior management, min. 3-4 times p.a., yes = 1</td>
</tr>
<tr>
<td>41</td>
<td>EA_I</td>
<td>External auditors rely on the work performed by IAF, yes = 0 and no = 1</td>
</tr>
<tr>
<td>42</td>
<td>Interested in participating in field study</td>
<td></td>
</tr>
</tbody>
</table>