

Introduction

The effectiveness of Internal Audit (IA) takes a prominent place in the Institute of Internal Auditing's (IIA's) definition but it is also frequently debated and challenged in practice. Evaluating and improving the effectiveness of risk management, control, and governance processes is the key statement of IA (IIARF, 2015).

Many incidents related to large corporate bankruptcies in the beginning of this century, caused some tension between the value that IA believes to provide and the value perceived by its customers. While the IIA sees IA as a pillar of corporate governance, some of its key stakeholders nowadays doubt its effectiveness and hence its value for the organization. In practice there are many occasions when audit issues addressed by the internal auditor are not always accepted by management and even though audit issues are accepted by management and corrective actions have been agreed, management turns a deaf ear to the internal auditor's risk warning and is continuing the 'wrongdoing'. As an illustration, we often hear about organizations experiencing large projects that are not successful but not stopped by management despite the risk warnings reported by the internal auditor asking for change of course in the project direction.

In academic literature the reluctance to hear 'bad news' is a phenomenon that has been typified as a 'deaf effect' (Cuellar, 2009; Cuellar et al, 2006; Keil and Robey, 2001). The deaf effect could unfavourably influence the effectiveness of the internal auditor. In their recent studies Nuijten (2012) and Nuijten et al, (2016) suggested that deaf effect events on strategic topics such as continuation of a 'troubled' IT-project could be considered as a deficiency in the IA's effectiveness. While the question arises whether IA acts effectively in deaf effect situations, in circumstances of disastrous business failures, this could be followed by the inevitable question 'where was the auditor again?'. This could

further raise the question if the IA was effective in providing its services to management, which may further have unfavourable effects for the IA function within the organization as well as for the internal auditing as a profession in general. Therefore, internal auditors, as risk warnings messengers, need better ways of gaining the attention of message recipients to overcome the deaf effect and thus contribute to the effectiveness of the IA.

IA effectiveness definitions

One of the older and most used definitions of the effectiveness of the IA function is the definition of Dittenhofer (2001). In general, Dittenhofer (2001) relates the effectiveness of something with the achievement of a desired condition and points out that the internal auditing process is effective when it functions in such a way as to accomplish the task described by the internal auditing objective. In line with this definition, Mihret and Yismaw (2007) stated that internal audit is effective if it meets the intended outcome it is supposed to bring about. According to these definitions, effectiveness is synonymous with the achievement of goals.

In the literature there are other definitions of IA effectiveness that are related to acceptance of the internal auditors recommendations for improvement. For example, Sawyer (1995) stated that the auditor's job is not done until defects are corrected and remain corrected. Sawyer (1995) stated that management's commitment to use audit recommendations and its support in strengthening internal audit is vital to audit effectiveness (Sawyer, 1995). One decade later, the IIA (2015) defines the internal auditing as an independent activity that helps organizations to improve their operations (IIA, 2015). In this regard, the IA function can be considered effective when organizations follow their internal auditors' (independent) advice for improvement (Lenz, 2013). Furthermore, Lenz and Sarens (2012) consider that the IA report as an output cannot be effective per se, but all what matters is the intended change triggered by this output as well as the specific outcome of it and possibly lasting impact that achieves the wanted improvement.

In line with these definitions, in this thesis we look at the IA effectiveness from the perspective of deaf effect i.e. willingness of management to listen or not to listen to the internal auditor's risk warning messages.

Deaf effect and IA effectiveness

The reluctance to hear bad news is a phenomenon that has been labelled in the literature as a 'deaf effect'. In this thesis we use the deaf effect phenomenon (Cuellar, 2009; Cuellar et al, 2006) to define the effectiveness of IA. Based on the Whistle-Blowing Theory, Cuellar (2009) defined deaf effect as a phenomenon 'when a decision maker doesn't hear, ignores, overrules a report of bad news to continue a failing course of action'. Keil and Robey (2001) defined the 'deaf effect' as a reluctance of project management to hear bad

news (i.e. unwelcome but yet valuable messages) about their projects and confirmed that deaf effect does occur. Recently, Nuijten (2012) and Nuijten et al, (2016) investigated some of the causal factors that influence the deaf effect and suggested that deaf effect can be considered as a deficiency in the IA's effectiveness, which could even be followed later by the inevitable 'where was the auditor' question in disastrous business failures. In his study, Nuijten (2012) explained comprehensively the two different roles of internal auditors, how they are related to corporate governance and how they are reflected in the relationship with managers. In explaining this, reference is made to the formalized role of the internal auditor as part of organizations' corporate governance frameworks, related to providing risk information to decision makers when the organization takes risks that might no longer be justifiable and consistent with the organization's interests. This corporate governance framework could be dominated by principles and assumptions of the Agency Theory (incongruent goals and information asymmetry) or Stewardship Theory (congruent goals and information sharing). This determines whether the internal auditors - as exponent of this corporate governance framework - are supposed to a) monitor management risk-taking and expose management failures and decisions that are not consistent with organization' interests, or b) contribute to management performance by challenging and improving decision-making. In the first condition (based on Agency Theory principles) the internal auditor will act as an opponent to management. In the second condition (based on Stewardship Theory), the internal auditor will act as a collaborative partner to management. According to the Stewardship Theory, managers would appear to be more receptive to (even negative results from) objective assessments performed by the internal auditors when they consider them to be collaborative partners instead of opponents or 'policemen'.

Focussing on the relationship between the messenger and the recipient at an interpersonal level: with the internal auditor in the role of the provider of a risk warning and with the project owner's relationship with the messenger (as a collaborative partner or as an opponent), based on empirical research, Nuijten (2012) and later Nuijten et al, (2016) provided evidence that managers (project owners) are more likely to listen to the risk warnings from an internal auditor who is seen as a collaborative partner, regardless of the objectivity and credibility of the internal auditor to make true assertions on risks. The managers are less motivated intrinsically to listen to the risk warning, when the messenger is seen as an opponent – such an internal auditor is often labelled as a 'policeman'.

We base our studies on the principles of Agency Theory and Stewardship Theory and the relationships according to these theories.

Identified knowledge gap in prior academic research

Prior research on factors influencing IA effectiveness has tended to focus predominantly on factors such as the acceptance and implementation of the audit recommendations, the size of the audit department, compliance with the auditing standards, the positioning of the Internal Audit department in the organization and relation with the Audit Committee, and interaction with line managers (Arena and Azzone, 2009), top management support (Cohen and Sayag, 2010; Van Peurse, 2005; Mihret and Yismaw 2007), staff expertise, executing the audit plan, audit communication (Mihret and Yismaw, 2007), organizational support' (Sarens and De Beelde, 2006a; 2006b).

Based on a literature review, Lenz and Sarens (2012) and Lenz et al, (2014) derived four key dimensions or categorical building blocks of effectiveness of the IA function: organization, IA resources, IA processes and IA relationships (see Figure 1-1 below).

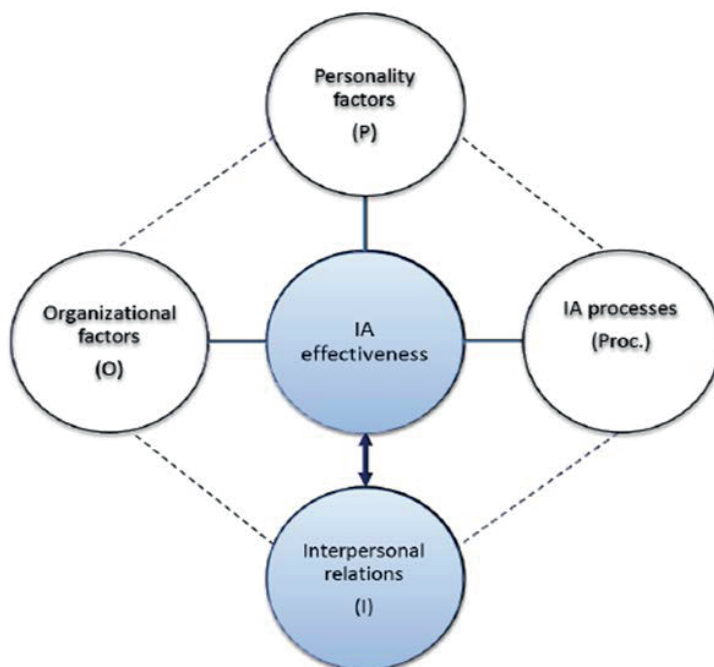


Figure 1-1. Building blocks of IAF characteristics according to Lenz and Sarens (2012), Lenz et al, (2014)

An overview of these dimensions (Lenz et al, 2014) follows below:

- Interpersonal relations: the IA relationships with other governance actors, namely senior management (SM) and the board/AC.
- Organizational factors: firm size, the overall governance context, and whether the organization has a legal requirement to establish an IA function, are considered as differentiators that can affect IA effectiveness, IA role and mandate.

- Personality factors: characteristics of the IA function as a whole and the characteristics of the individual auditor, communication skills and personal authority, stature and presence, strategic audit focus, the ability to exercise sound judgment, and the capacity to communicate clearly on audit issues.
- IA processes: compliance with the audit plan (i.e., the number of audits planned versus the number executed); compliance with a budget; degree of satisfaction with the IA as seen by auditees; audit time management (planning, fieldwork, closing); and reporting time management (i.e. planned versus actual reporting time).

From the above, we could establish that the IA effectiveness from the perspective of deaf effect i.e. willingness of management to listen or not to listen to the internal auditor risk warning messages is not addressed in one of these building blocks. We think this willingness of management to listen or not to listen to the internal auditor risk warning messages belongs to the interpersonal relationship block. This is one of the knowledge gaps we want to address with our thesis.

In the existing literature on IA effectiveness we identified some more knowledge gaps that we aim to fill in with our study. For this purpose we use the paper of Lenz and Hahn (2015) who performed a comprehensive review on the available literature on effectiveness of IA. By generally considering publications from 1999 onward, their paper provided a brief summary of what academic literature says about IA effectiveness. When providing a review of the existing empirical literature on IA effectiveness, Lenz and Hahn (2015) distinguished two different streams, the 'supply-side' perspective, i.e. empirical studies based on self-assessments of internal auditors, and the demand-side' perspective, i.e. empirical studies based on other stakeholders' perspectives. Stream 1 addresses the 'supply-side' perspective, empirical literature where internal auditors, mostly heads of IA (CAE), describe how they assess their effectiveness. The role of the CAE and the skills and competencies of internal auditors, organizational specifics, its politics and culture, support from senior management and the impact of the board, directly or through the audit committee (AC), are regarded as important factors (Lenz and Hahn, 2015). Stream 2 addresses the 'demand-side' perspective (i.e. meeting expectation of auditees) as it sheds light on empirical literature that discusses and analyses how clients, the customers and beneficiaries of the services rendered by the IA function perceive its value.

Lenz and Hahn (2015) consider IA effectiveness as a largely unaddressed area in academic research and based on their research suggested factors that influence IA effectiveness thereby focussing predominantly on the stakeholders ('demand-side') perspective. This gap in the literature was earlier reported by Soh and Martinov Benie (2011) who posited that in practice, the most commonly employed measures of IA effectiveness are still related to delivery of the annual IA plan and the acceptance and

adoption of audit recommendations, hence focussing on the 'supply-side' perspective of the IA effectiveness.

By investigating other factors that may influence the effectiveness of IA we address this knowledge gap in the literature, thereby focussing on the 'demand-side' perspective and its link with the 'supply-side' perspective.

Another knowledge gap in the area of IA effectiveness we aim to address in our study relates to the relevance of nudging and timing for the IA effectiveness. While we could find many studies in the behavioural literature that address nudging (refer to Chapter 3 of this thesis), to our knowledge nudging concepts are not yet applied in academic research of IA effectiveness. Similarly, the influence of timing in general is relatively little examined in the organizational literature but in the IA effectiveness literature not yet addressed (refer to Chapter 4 and 5 of this thesis).

One final remark we want to make here is about the knowledge gaps in the literature related to Stewardship Theory. Davis et al, (1997) recommended to researchers to further examine the stewardship mechanisms, their relative performance, their interactions with psychological conditions and the situational contingencies impacting them. Furthermore, Davis et al, (1997) advised researchers to investigate the choice between Agency and Stewardship relationships over time, including interaction effects between the relationship and other organizational or psychological factors. With our study we hope to address some of these recommendations and to further advance the understanding of the Stewardship Theory. Hernandez (2012; p. 173) noted "to date scholars of Stewardship Theory have focused on distinguishing it from Agency Theory rather than advancing an understanding of the stewardship construct".

To summarize, with this study thesis we aim to contribute to fill the abovementioned knowledge gaps in the existing academic literature about IA effectiveness. Additionally, with this study we also aim to contribute to the literature by further extending previous examination on the deaf effect in the field of escalating IS-projects. Finally, we aim to gather knowledge that will further advance the understanding of the Stewardship Theory.

Research objective and scope

The objective of this study is as follows:

1. Identifying and recommending additional approaches and factors from the 'demand-side' perspective of IA effectiveness for reducing deaf effect and hence improving IA effectiveness;

2. Examining the main causal effects of additional contingency factors such as organization power of the internal auditor operationalized in top management support and nudging concepts including descriptive social norms and their interaction effects from the collaborative partner vs opponent perspective. Additionally, we examined what constitutes the right 'timing' for communicating the risk warnings by the internal auditor as a new contingency factor for IA effectiveness;
3. Combining both the 'supply' and the 'demand' side perspective of the IA effectiveness for finding better ways for meeting customer expectations.

We include here the collaborative partner vs opponent relationship between the internal auditor (messenger of risk warnings (bad news)) and the auditee (management – decision makers). The meaning of the collaborative partner vs opponent construct will be further explained in Chapter 2 and Chapter 3 of this thesis based on the Stewardship Theory and Agency Theory. The top management support construct is explained in Chapter 2 of this thesis based on the Whistleblowing Theory and literature on IA effectiveness. The nudging construct is detailed in Chapter 3 of this thesis and is based on the Focus Theory of Normative Conduct and Nudging concepts. Exploring the timing factors on the basis of the so called 'supply vs demand' side of the IA effectiveness will be explained in Chapter 4 and 5 of this thesis.

The scope of this study included the IA function being our unit of analysis and the internal auditor being the unit of observation. For the purpose of our study we defined IA effectiveness as the extent to which the internal auditor's message recipients (auditees) are willing to listen or not to listen to the internal auditors' risk warning message (so called 'deaf effect').

Focussing on the deaf effect as an indicator for IA effectiveness, in our studies described in Chapter 2 and 3 we made the assumption that a manager acts in the role of project owner who is not willing to listen to the risk warning message that an Information System project should be redirected or discontinued. In Chapter 4 and 5 a manager acts in the role of an auditee (management) who is not willing to listen to the risk warning messages related to risks involved in management's decision making in the organization in general. The messenger providing the risk warnings in our study is the internal auditor who is a credible source that makes true assertions based on thorough investigation in conformity with the internal auditing standards and requirements (Nuijten et al, 2016).

As our main research objective is related to investigating several different factors influencing the deaf effect as an indicator of IA effectiveness, we position our study in the field of academic research of IA effectiveness as well as deaf effect.

Research questions

In table 1-1 we present the Research Questions that are based on our scope and assumptions and that will form the starting point for the research design of our studies elaborated in Chapter 2 - 5 of this thesis.

Table 1-1. Research Questions

	Research Question	Type of Question	Chapter
1	Could the organization power of the internal auditor (through high or low top management support) be of influence on the deaf effect?	Why	2
1.1	Could the messenger-recipient relationship (MRR) be of influence on the deaf effect?	Why	2
1.2	Is the influence of MRR on the deaf effect moderated by the organization power of the internal auditor through top management support?	How	2
2	Are recipients less likely to exhibit the deaf effect when they are nudged by the messenger (i.e., internal auditor) with a descriptive social norm?	Why	3
2.1	Does the messenger-recipient relationship (i.e., whether the messenger is seen as a collaborative partner or as an opponent) influence the effectiveness of nudging?	How	3
3	Which timing factors are proposed to be of influence on the Auditee's willingness to listen or not to listen to the Auditor's risk warning message?	Why	4
3.1	How do the timing factors influence (in general) the auditee's decision to listen (or not to listen) to the risk warning message?	How	4
4	Which timing factors determine <i>when</i> is the right moment (thus, not too early and not too late) for the internal auditor to communicate the risk-warning message that makes the auditee listen to the internal auditor?	What	5

Framework Research Design

In table 1-2 we present the main characteristics of the conceptual and the technical research design that we use in our studies.

Table 1-2. Framework empirical research design

Conceptual Research Design	Chapter 2	Chapter 3	Chapter 4	Chapter 5
Research Question	Explanatory	Explanatory	Explorative	Explorative
Effects	Main Moderation	Main Moderation	Main	Main
Dependent Variable	Continue	Continue	Deaf Effect (indicator of IA effectiveness)	Deaf Effect (indicator of IA effectiveness)
Independent Variable	Collaborative Top Management Support	Collaborative Nudging with Descriptive Social Norm	Timing factors	Timing factors
Theories	Stewardship Theory Whistleblowing Theory	Stewardship Theory Focus theory of Normative Conduct Nudging concepts	-	-
Technical Research Design	Chapter 2	Chapter 3	Chapter 4	Chapter 5
Research Strategy	Laboratory Experiment	Laboratory Experiment	Focus Group interviews	Q Methodological study
Research Design	Between Group	Between Group	Mixed Design (qualitative data and content analysis)	Mixed Design (qualitative data and content analysis)
Participants	93 Students	171 Students	15 Internal auditors 15 Managers	26 Internal auditors 26 Managers
Data Analysis	Moderated Regression Analysis	Partial Least Squared	Iterative Coding	Q method factor analysis
Data Validity	MANOVA, Cronbach Alpha, AVE, Exploratory & Confirmatory Factor Analysis	MANOVA, Cronbach Alpha, AVE, Exploratory & Confirmatory Factor analysis	Protocol Exploratory analysis	Statement set database
Tool	SPSS rel 21	smartPLS rel 2.0	Atlas.ti	software PQ method (version 2.35).

Structure of this Thesis

Figure 1-2 shows an overview of the structure of this thesis. Chapter 2 is an experiment with students and investigates the influence of organization power of the internal auditor through top management support on effectiveness of IA, based on Whistle Blowing Theory. Similarly, Chapter 3 is an experiment with students and investigates how nudging with descriptive social norm influences effectiveness of IA, based on nudging concepts. Chapter 4 is an exploratory study on timing factors and examined which timing factors have influence on the IA effectiveness and hence influences decision makers to listen or not to listen to the risk warning messages of the internal auditor. Chapter 5 is a Q methodology research on the importance of timing for effectiveness of IA focussing on the understanding of the timing factors that might be of influence on the IA effectiveness and the importance thereof for the internal auditors and management (the auditees). In Chapter 6 we include our discussion about the most important findings and conclusions resulting of our studies in this thesis, theoretical and practical implications, the limitations and suggestions for further research and we end with a brief reflection about this thesis.

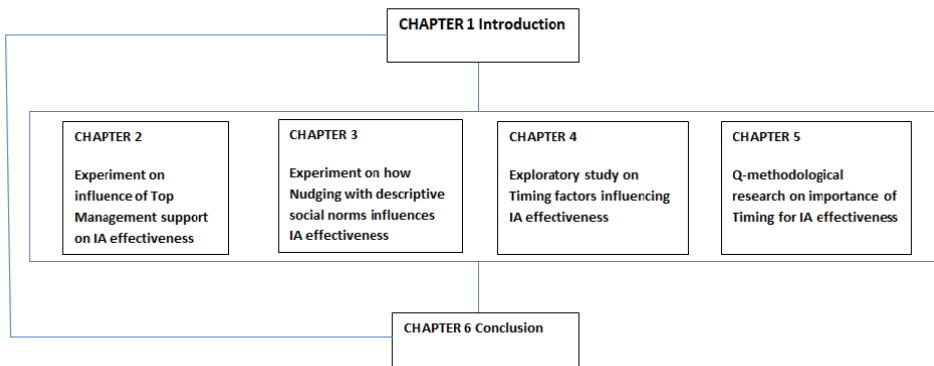


Figure 1-2. Structure of this thesis

This study offers a multi-method approach of studying IA effectiveness. All four studies have been accepted by and presented at the European Conference on Internal Audit and Corporate Governance in April 2014 throughout April 2017. One study has been submitted to international journal and is in reviewing procedure. Two out of four studies are in preparation to be submitted to international journals in due course. In the below table 1-3 the results and the status of our studies in this thesis are described in more detail.

Table 1-3. Overview of the individual chapters of this thesis and their status

Chapter	Title	Results	Status	Outlet
1	Introduction			
2	Does the Organization Power through Top Management Support help Internal Auditors reduce the Deaf Effect for Risk Warnings	<p>1) The continuation of a course of action (deaf response to a risk warning) is not significantly influenced by the organization power of the internal auditor. Based on literature we expected that high top management support would have a positive influence on internal audit effectiveness; however this is not always the case.</p> <p>2) The influence of MRR on the deaf effect is strengthened when the messenger has low organization power. When the messenger has low organization power, decision makers are more likely to let their continuation-decision be influenced by the messenger-recipient relationship, i.e. when the messenger is seen as a collaborative partner rather than an opponent.</p> <p>3) The results of our study indicate that high organization power of the internal auditor (through high top management support) is helpful and even necessary for reducing the deaf effect on risk warnings when the auditor is seen as an opponent. In the contrary, high organization power of the internal auditor (through high top management support) may be contra-productive and will not reduce the deaf effect on risk warnings when the auditor is seen as a collaborative partner.</p>	Winner of the Best paper Award 2014	Presented in the 12th European Conference on Internal Audit and Corporate Governance in Italy
3	Nudging with Descriptive Social Norms to Overcome the Deaf Effect for IT Project Risk Warnings	<p>1) Nudging with a descriptive social norm can significantly reduce the deaf effect response to a risk warning issued by an internal auditor.</p> <p>2) The influence of a descriptive social norm on the deaf effect is strengthened when the messenger is seen as a collaborative partner rather than an opponent. When the messenger is seen as a collaborative partner, decision makers are more likely to pay attention to the risk warning message of the internal auditor. However, when the messenger is seen as an opponent, nudging with a descriptive social norm is ineffective.</p> <p>3) Decision makers are less likely to continue a failing course of action when the messenger who delivers a risk warning is seen as a collaborative partner rather than an opponent. This finding is consistent with a previously reported study and has replication value.</p>	After an additional pilot with practitioners with Qualtrics, decision was made to finalize initial paper based on experiment with students.	Presented in the 13th European Conference on Internal Audit and Corporate Governance in United Kingdom
			Final paper submitted in December 2017 and is under review.	EJIS

Table 1-3. Overview of the individual chapters of this thesis and their status (*continued*)

Chapter	Title	Results	Status	Outlet
4	The influence of 'Timing' on the effectiveness of the Internal Audit function	<p>1) We identify and provide an overview of the timing factors that may be of influence on the effectiveness of the IA function and provide and obtain a better understanding thereof. These timing factors can serve as useful indicators for the Auditors and the Auditees for managing the effectiveness of the IA function.</p> <p>2) The analysis of the data generated during all five Focus Groups interviews, revealed that the timing factors indicated by the participants are multiple and diverse, dependable whether these were indicated by the Auditees or the Auditors. In mostly all instances, we noted that both the Auditors and the Auditees recognize the these timing factors to be relevant for the effectiveness of the IA. In some instances the Auditors and the Auditees expressed a different view of the timing factors.</p> <p>3) During the Focus Group discussions it appeared that the timing factors emerging from our discussions were experienced by the participants as 'eye opener' as they admitted to have not thought of the timing factors before to have an impact on the effectiveness of the internal auditor.</p>	<p>Paper is submitted and accepted for 16th European Conference on Internal Audit and Corporate Governance. Thereafter it will be prepared for submission in a Journal.</p>	<p>Presented in the 14th European Conference on Internal Audit and Corporate Governance in The Netherlands.</p> <p>Outlet to be decided</p>
5	Views on the Influence of 'Timing' on the Effectiveness of the Internal Audit Function: A Q-methodological Study	<p>Our study revealed five distinct views of auditors and auditees about the timing:</p> <p>Viewpoint 1 'Communicate important issues immediately, no matter what' can be found among both the auditors and the auditees. In this Viewpoint it was emphasized that important issues should be communicated immediately to auditees, no matter of other conditions such as e.g. the stage of the audit investigation and having collected sufficient fact evidence.</p> <p>In Viewpoint 2 'Establish good relation first, then communicate issues'; both the auditors and the auditees shared the view that the quality of the relation the auditor has with the auditee is prevailing factor for the timing.</p> <p>Viewpoint 3 'Communicate when changes are still possible, not afterwards' can be also found among auditees and has a strong focus on hearing about the risks during decision making processes (e.g. strategic events, projects) when taking corrective actions are still possible and changes are made on time.</p> <p>Viewpoint 4 'Communicate risk warnings when you have evidence' is also a view that can be found among the auditors and the auditees. It emphasizes having sufficient fact evidence as a precondition for the timing of the communication of the risk warning message by the auditor.</p> <p>Viewpoint 5 'Communicate immediately, and remain independent' is shared view among auditors and auditees. In this Viewpoint the timing is not determined by what others prefer as timings related to subjective aspects. The immediate communication of serious issues is important but the emphasize is on the independence of the auditor when choosing the right timing for the communication of the risk warning message.</p>	<p>Final paper in preparation for submission in June 2018.</p>	<p>Presented in the 15th European Conference on Internal Audit and Corporate Governance in Greece.</p> <p>Auditing: A Journal of Practice & Theory</p>
6	Conclusion			

Clarification of contribution

The researches as part of the thesis and the thesis as a final outcome are produced by the author (myself) in collaboration with the promotors (Prof. dr. H.R. Commandeur), co-promotor (Dr. A.L.P. Nuijten), Dr. Nick Benschop, Prof. dr. M. Keil and Prof. dr. Job van Exel. Below I indicate the contributions for each Chapter as follows:

- Chapter 1 & 6: Drafted by the author, improved and finalised based on review feedback by promotor and co-promotor.
- Chapter 2: The initial research ideas were result of preliminary discussions with the promotor and co-promotor. The author performed literature research, defined a research design, executed the experiment (data collection) and data analyses and wrote the paper included in this thesis. The promotor and co-promotor guided the author throughout the entire process by giving feedback and advice for improvements. The co-promotor provided guidance in the statistical analysis of the data collected by the experiment and the use of the tools for this purpose. The co-promotor and promotor provided feedback and input for rework of the paper which is currently under review at a Journal.
- Chapter 3: The initial research ideas were result of preliminary discussions with the promotor and co-promotor. The author performed literature research, defined a research design, executed the experiment (data collection) and data analyses and wrote the draft paper included in this thesis. The promotor and co-promotor guided the author throughout the entire process by giving feedback and advice for improvements. The co-promotor provided guidance in the statistical analysis of the data collected by the experiment and the use of the tools for this purpose. The co-promotor and prof. dr. M. Keil provided feedback and valuable input for rework of the revised paper which is currently under review at a Journal.
- Chapter 4: The initial research idea was preliminary discussed and aligned with the promotor and co-promotor. The author performed the entire research by herself starting from literature research, defining the research design, execution of the qualitative research (data collection), data analyses and writing the papers included in this thesis. The promotor and co-promotor guided the author throughout the entire process by giving feedback and advice for improvements. For the data analysis Dr. Nick Benschop provided advice about tooling and its usage.
- Chapter 5: The initial research idea was preliminary discussed and aligned with the promotor and co-promotor. The author performed the entire research by herself starting from literature research, defining the research design, data collection and writing the draft paper. Prof. dr. Job van Exel performed the data analysis, reported the results and explained to the author the analysis method, the steps performed to come to the results based on the data. The promotor and co-promotor guided the author throughout the entire process by giving feedback and advice for improve-

ments, mostly focussed on the results of the study documented in the paper. The co-promotor and dr. Job van Exel provided further feedback and valuable input for rework of the revised paper which is currently in preparation for submission at a Journal.