INNOVATION AUDITING THE AUDIT & THE AUDITOR

(FROM THE PERSPECTIVE OF THE INTERNAL AUDITOR)

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ABSTRACT

There are many innovation audits that aim to contribute to increased innovativeness through systematic monitoring and review. In line with this the purpose of this study is to build knowledge that increases both the academic and the practical user-value of innovation audits.

Previous research in the innovation audit area is mainly focused on the audit tool and to some extent the auditing process, with a strong bias towards what to audit, rarely addressing more than just the measuring- and assessment phases. Most audits involve internal staff in audit-related work such as self-assessments, and thus employees from the audited organisation can also be regarded as internal auditors (executors). Previous research indicates that the ability of the internal auditor impacts the audit’s execution and that the audit design affects how auditor-demanding the execution of the audit becomes. Despite this there is very little research that concerns the internal auditor’s role in the auditing process.

To better understand how the abilities of individual internal auditors affect the audit process, I formulated two questions for the licentiate thesis: What types of shortcomings in the audit process are influenced by deficient auditor maturity? and What are the consequences of these shortcomings on the audit process? The concept of auditor maturity is here used familiarly to describe the internal auditors’ level of ability to independently perform their auditing tasks in an appropriate manner without any further support than what is provided by the audit tool.

The empirical data were collected in two qualitative case studies with 21 participants from two SMEs. 92 written questionnaire and 23 interviews were conducted and complemented by a literature review. My use of two subdivisions of the audit process is central to the thesis and to my knowledge not previously used: firstly the division into three phases: the pre-assessment phase, the assessment phase and the post-assessment phase, and secondly the division into three parts: the audit (the tool), the auditor (the executor) and the auditing (the execution). The analytical focus is on shortcomings in the internal auditors’ ability to execute their auditing tasks.

Several shortcomings in this respect were identified and can be grouped based on the following characteristics: Conceptual, Contextual, Auditor interaction, Strategic & operational and Adaption.

The main contribution of this research is by highlighting the internal auditor’s role in the audit process, to discuss all the phases of the process and to introduce the perspectives of audit, auditor and auditing under the unifying concept of the audit process.
Det finns många innovations-audits som syftar till ökad innovativitet genom systematisk mätning och granskning. I linje med det är den här studiens syfte att bygga kunskap som ökar både den akademiska och den praktiska användarnyttan av innovations-audits.


Ett flertal tillkortakommanden i auditororns förmåga att utföra sina audit uppgifter identifierades och kan grupperas utifrån följande karaktärsdrag; Konceptuella, Kontextuella, Auditor interaktion, Strategisk och operationell samt Anpassning.

Forskningens främsta akademiska och praktiska bidrag är att lyfta och tydliggöra den interna auditororns roll i audit-processen, att modellera och diskutera processens samtliga faser samt att föra in de tre perspektiven audit, auditor och auditing under det sammanhållande begreppet audit-process.
To all of you - that in one way or another has enabled this thesis.
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INTRODUCTION
1. INTRODUCTION

The aim of this chapter is to give you a brief introduction to the research that is presented in this thesis. Firstly I will give you the background and motivation of the research and introduce some central concepts that are frequently used in the coming chapters. Based on that the aim, objective and research questions are presented, followed by a description of the research scope and delimitations. Finally you are given the outline of the thesis.

1.1 Competitiveness through innovation

The field of innovation management has developed aggressively over the last fifty years and is now on the top of the strategic agenda of not only businesses but organisations of all sizes, entire countries (Den nationella innovationsstrategin, Näringsdepartementet, 2012) and even whole continents (European Commission, Innovation Union, 2014) The field has broadened and opened up and innovation has gone from a closed in-house technological push perspective to today’s open, co-productive approach. Some fifty years ago innovation was mainly focused on the development of new innovative physical, and often technological products. Today innovation is considered to be potentially anything new that is developed, implemented and produces value within its area of use. (Ortt and van der Duin, 2008)

Physical products are of course still in focus but so are also e.g. novel business modes, processes and services. (Ortt and van der Duin, 2008, Van de Ven et al., 2008). Larger parts of the organisations and their context have become involved both in the production of innovative outcomes (Chesbrough, 2004; Bessant, 2003; Xu, 2007) as well as becoming the focus of the innovations in terms of e.g. organisational-, social- and business model innovation. (Crossan and Apaydin, 2010, Donald and Carol Bruckner, 2004, Osterwalder et al., 2010)

Managing innovation today involves the entire internal and external organisation and its context in the process of innovation (Xu, 2007). As the field has developed, the linear perspective of the innovation process has been left behind in favour of a non-linear systemic perspective (Adams et al., 2006) where the more radical end of innovation is described as complex and unpredictable, but not random (Van de Ven et al., 2008).

Since the field of innovation is fragmented and definitions vary widely within the area (Adams et al., 2006) this calls for an explanation of what is considered to be innovation in the context of this text. Innovation is here considered to be anything new developed to successfully create value within its area of use. It is based on the OECD definition from 2005 “the implementation of a new or significantly improved product (goods or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.” (OECD, 2005) It could be incrementally or radically new, but must to some extent be new, developed, successful and value creating.
Innovation is further considered as a high-level concept that could be divided into more distinct definitions (Van de Ven et al., 2008). But in line with Van de Ven et al. I think that the negative effects of a fragmented definition are bigger than the positive effects of a coherent definition, which is why innovation here is considered to be a higher-level concept that could be both incremental or radical and that includes concepts focusing on more specific approaches to innovation, such as New Product Development (NPD), Research and Development (RnD) or Technical Innovation (Ortt and van der Duin, 2008, Van de Ven et al., 2008). If e.g. NPD or RnD leads to a change that incorporates these four elements - new, developed, successful and value creating - it is innovation. If any are missing, it is not.

Further, innovation is the novel outcome and result of innovating that is the innovation-doing, the actual execution of the innovation process. Innovation management is the “governance and organisation” of all the activities that leads to innovation (Ortt and van der Duin, 2008). The abilities and assets required to execute the innovation process together form the capabilities to innovate (Björkdahl and Börjesson, 2012; Essman, 2009). Since innovating is considered to be a strategic core competence of a competitive company the managing, nurturing and enhancing of these should be the focus of innovation management (Xu, 2007).

Since innovation by definition is change and deviation from what has been (Tidd & Bessant, 2009; Van de Ven et al., 2008), it is not enough to manage innovation in a way that preserves what is already done. An organisation that is unable to meet and exceed the changes in requirements risks decreasing its relative innovativeness and its innovative capability will be lost over time (Sniukas, 2010; Markides, 2001; Hamel & Prahalad, 1996).

1.2 Auditing innovation
Auditing innovation implies systematically reviewing innovation in an organisation (Chiesa et al., 1996) and is considered to be one way to gain better understanding about a firm’s state of innovation and constitutes a trigger for improving a firm’s capabilities to innovate (Björkdahl and Börjesson, 2012). As we shall see further on the field is fragmented and there is no “one way” to audit innovation. Despite the variations of individual audits the overall audit purpose, according to Birchall et al., is to guide firms in their decision making (Birchall et al., 2011) and to facilitate for firms in the establishment of courses of improvement (Essman, 2009) outlining the “stages of maturation paths” (Röglinger et al., 2012).

Audits are, however, criticised for being abstract, providing a weak support for day-to-day use (Adams et al., 2006) and progression. Innovation auditing does not only provide a basis for increased innovativeness but also seems to require that the people that execute the audits (auditors) possess a certain degree of maturity to be able to benefit from the audits as intended.

Let me now just sum up what you have read so far in this initial part of the chapter:

- The main characteristic of innovation, the novelty trait, means that innovation is in relative, but constant, change and progression.
- If innovativeness is kept unchanged and stable, relative innovativeness decreases over time.
- Innovation is considered to be increasingly important for an organisation’s long- and short-term competitive ability.
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- Innovation management is the “governance and organisation” of all the activities that in a more or less complex and unpredictable setting leads to innovation.
- Audits can provide a better understanding of the current state of innovation and trigger improvement in innovativeness.
- The fundamental purpose of audits is to be a guide in decision-making, and to facilitate and outline a path of progression, but audits provide little support for this.
- Auditors are the ones that execute the audit and they seem to need to possess an ability to execute their auditing tasks appropriately.
- Maturity is here used familiarly and is considered to be the level of practice adopted that makes the individual auditors able to execute their auditing tasks appropriately.

1.3 Research aim, objective of the thesis and research questions

From the introduction above it can be concluded that innovation is a strategically important focus of the competitive organisation of today. What can also be concluded is that innovation management is a complex task that has to cope with both the dynamic character of innovation and the width of the concept that potentially includes more than it excludes. No wonder that innovation audits are in demand on both policy- (DeEP, 2014; OECD, 2005) and firm-levels (Adams et al., 2006). Despite the potential innovation audits are criticised for being weak in their progressive support and practical use (Adams et al., 2006, Birchall et al., 2011). Based on this the overall research aim of this thesis is formulated as follows:

*The overall aim of this research is to contribute to the development of knowledge that supports the use of innovation audits as a tool for progressive development of organisational innovativeness.*

Despite the fact that previous research has shown how different types of innovation audits are more or less auditor-demanding, few existing innovation audits pay attention to the auditors and their roles in the auditing process. This is so even though many audits are for self-assessment use and almost all innovation auditing does, to some extent, involve internal auditors in the auditing process. This therefore motivates a research that further focuses on the role of the internal auditor. With the intention of addressing a practical need and a theoretical gap, the objective of the thesis is formulated as follows:

*The objective of this thesis is to develop a better knowledge of how the auditor maturity of individual internal auditors impacts the audit process.*

The thesis is a collection of four conference papers. Three of the papers (1-3) are based on empirical findings from two case studies that stretched over three years. The studies originated in the problem of how to support the development of increased innovativeness in established SMEs. The focus changed iteratively as my understanding of the problem evolved. Empirical data were separately collected in four sets and are further described in the method chapter. The fourth paper is a literature review that was used to bind the previous papers closer to one another. After that fourth article was written, the two interlinked research questions below were formulated and used to guide a re-analysis of the articles in line with the aim and objective of the thesis.

**RQ 1:** What types of shortcomings in the audit process are influenced by deficient auditor maturity?

**RQ 2:** What are the consequences of these shortcomings on the auditing process?
1.4 The papers collected in the thesis

Before presenting the actual method you are here given the RQs of each paper and a short description of their background, the problem they are based on, how the papers are related and finally how they fit together under the integrated question of this licentiate thesis.

Background; Paper 1. The starting point for the first article was that established SMEs need support for increased innovativeness in general but still need to be individualised. Innovation audits were considered to be a tool that could provide both development support and basic knowledge about the current state of the participating firms. It was to serve as a diagnostic tool that could provide a body of information to focus discussions around to find an indication of where to direct future research and support.

Focus, purpose and delimitations; Paper 1. The audit used was a commonly used best practice based self-assessment model by well-experienced and reputable researchers. Practical experience made both me and my colleague expect that the exact design and content of the audit would be of less importance in this phase. We basically expected any audit of this kind to broaden the firms’ perspective on innovation. Again with practical experience in mind we came to suspect that the audit statements might be perceived as abstract and difficult to relate to and thereby a problem in themselves.

Research question; Paper 1. To get a better understanding of what could actually be inferred from the auditing, a complementary interview was added to the audit. Interviews were given on a separate occasion after the audit was taken. The interview questions were based on the audit statements but rewritten as questions from a "how" perspective e.g. the statement “We are good at learning from other organisations” was reformulated to the interview question “How do you learn from other organisations”.

The research question was formulated as follows: How might a complementary interview affect the understanding of the result of the innovation audit when the interview is based on the same statements used in the audit?

Background; Paper 2. Findings from paper 1 showed that the interview revealed that different individuals taking the audit referred in vastly different ways to the various concepts used in audit. The differences in interpretation of the statements were sometimes so big that the statements basically acquired a totally different meaning.

Focus, purpose and delimitations; Paper 2. These internal differences in interpretations seemed to be caused by some form of “gap” in the organisation’s perceived continuity. We considered these “gaps” to negatively affect the development of innovative capability by e.g. reducing the use of audit results or as communicative obstacles.

To better understand how the development of increased innovativeness could be supported the second paper focused on analysing data to see what negative gaps could be identified.

Research question; Paper 2. What negative innovation-related gaps can be identified in the SMEs participating in the study?

The findings presented in paper two showed several gaps but they were difficult to separate and only two clusters seemed meaningful. These were the gaps of individual origin caused by
differences in personal experiences and the gaps of organisational origin caused by e.g. positions and work tasks. The practical implications of this were unclear other than that it is of importance to be aware of the fact that the differences that enrich the innovation work through their multidisciplinarity also seemed to hamper innovative efforts.

**Background Paper 3** The findings from both the previous papers showed several kinds of divergences that were believed to hinder the development of innovativeness. Some of these, e.g. conflicting incentives, were of organisational origin rather than individual. This time I wanted to go beyond the individuals and look at the organisational level.

**Focus, purpose and delimitations; Paper 3.** I wanted to see how innovation, directly or indirectly, was integrated throughout the different levels and areas of the organisation. Formalised, informal, deliberate and unconscious integration was sought for in an extensive review of the strategic policy document of one of the firms.

**Research question; Paper 3.** How is innovation integrated into the participating SMEs’ business strategy?

Innovation was found to be strongly centred to the individual persons of top management. Innovation was moreover strongly linked to the top levels of formal business strategy but was not formalised. The integration of innovation at practical action-oriented levels of operationalised strategy was both weak and informal.

**Background; Paper 4.** In the last article I took a step back to return to the auditing context. After all, the previous articles and their RQs originated in the need of support for increased innovativeness. When summing up it seemed to me that variations in skill and experience of the individuals constituted the unifying factor in terms of what affected the ability to support the development of innovativeness. The staff from the audited organisation often have a highly active role in the auditing process where the audited in varying degrees also become auditors of different backgrounds and expertise. Despite that the skill and experience of the individual in the audit process is seldom highlighted as an important aspect of the auditing process.

**Focus, purpose and delimitations; Paper 4.** This time I wanted primarily to put the focus beyond both the individuals and the organisations, focusing on the support. The purpose was to find out more about how skill and experience were considered in the context of auditing literature. There is a stronger focus on the content of audits than on the auditing and I chose to separate the audit from auditing and the auditor – considering the audit to be the tool, auditing the use of the tool and the auditor to be the executor.

**Research question; Paper 4.** How does existing literature on innovation auditing take into consideration the skill and experience of the individuals involved in the auditing process?

**Focus, purpose and delimitations; Thesis.** Few articles were found to take skill and experience into explicit consideration but a majority contained examples of situations where the skill or experience of the auditor affected the audit process. Innovation auditing seemed not only to provide a basis for increased innovativeness but also seemed to require that the assessors who participated in the audit process possessed a certain degree of ability to execute the auditing to be able to execute the audit process as intended. After the literature review I therefore felt the need to address and conceptualise this auditing ability and chose to use the word maturity in a familiarly way to do so and formulated the two research questions below
to guide a re-analysis of the articles.

**Research questions; Thesis. RQ 1**: What types of shortcomings in the audit process are influenced by deficient auditor maturity?  
**RQ 2**: What are the consequences of these shortcomings on the auditing process?

The first question, *What types of shortcomings in the audit process are influenced by deficient auditor maturity?*, aimed at guiding the research towards a better understanding of what auditor abilities there are that affect the audit process. This was done by seeking to identify flaws in the execution of the audit process that as a whole, or in part, is due to inadequate audit maturity of the individual auditor.

The second question, *What are the consequences of these shortcomings on the auditing process?*, aimed at guiding the research towards a better understanding of how deficient auditing maturity affects the execution and progression of the auditing process.

### 1.4 Scope and delimitations

Maturity is here used familiarly and audit maturity is considered to be the level of appropriate practice adopted that makes the individual auditor able to execute her (or his) auditing tasks appropriately without requiring any further support than what is already provided by the audit. The higher the maturity the more advanced situations can be handled. Maturity is an accumulated auditor ability that enables the auditor to execute his or her auditing tasks. Organisational maturity and maturation is closely related to the subject but not the focus of the research.

The scope is here delimited to the internal auditor that is here considered to be all the individuals that both are employed by the audited organisation and execute one or more auditing tasks during the auditing process, here called *the auditor*. Individuals that are not employed by the audited organisation but in one way or another are part of the audit process (external auditors) are here considered *not* to be part of the auditing (execution of the audit) but rather an external support provided to the internal auditor.

The point of reference in the analysis is the execution of the audit process, the auditing. The auditing is considered to consist of all the auditing tasks that the assessor needs to undertake to execute the audit. An auditor can, but does not have to, be part of the entire auditing process. The focus is on the shortcomings in these individual internal auditors’ abilities, to independently act throughout the auditing process without requiring further support than what is already provided by the audit. The aim is to see what shortcomings there are and how these affect the innovation auditing process.

### 1.5 Outline of the thesis

Chapter 1 introduces the background of the research area and presents the aim and delimitations of the research. Chapter 2 presents the frame of reference from three perspectives: the audit tool (the audit), the executors (the auditors) and the execution process (the auditing). In chapter 3 the research methodology and design are presented. Chapter 4 presents an overview of the findings from the four papers that are collected in this thesis and re-analysed in chapter 5. Chapter 6 is the final chapter where the results, overall conclusion and contribution are discussed and future research is suggested.
FRAME OF REFERENCE
2. FRAME OF REFERENCE

The dynamic and progressive trait of innovation makes the maturation process a closely intertwined part of the development of both individual innovative capabilities and cumulative organisational innovativeness. One innovation management tool used to facilitate increased innovativeness is audits - auditing, maturity and maturation therefore become closely interlinked – even if not explicitly expressed that way. The relation between the audit, audit process and execution thereof here constitutes the theoretical base for the research on how the innovation maturity of single auditors and/or audit groups affects the audit process and the organisational progression towards increased innovativeness.

I have chosen to frame the reference literature in this chapter based on a structure that to my knowledge has not previously been used. The structure is based on my division of the audit-process into three perspectives: Audit, Auditor and Auditing. In the coming sections of this chapter I will present to you the theory on innovation audits from these three overlapping but clearly distinguished perspectives. The first, the Audit, is about the tool, the support, the contents of the audit that structures and supports the auditor throughout the auditing process. The second is about the Auditor, the executor of the audit, the one or ones who actually use the audit, their role and what the execution of audits requires from them. Finally, the third is about Auditing, the process of executing the audit. My intention of clustering the theory into these three categories has taken the eyes away from e.g. the fragmentation of the field and instead focused on the audit process as a whole.

Before going into these three sections on innovation audits you are given a section that address the definition and fragmentation of the field and how I relate and position myself in relation to that. Finally the chapter concludes with a short section of critique from the area and a short summarisation.

2.1 Innovation - a deviation from what has been

Even though the field of innovation is fragmented and definitions have varied widely both over time (Ortt and van der Duin, 2008) and within the area (Adams et al., 2006) innovation is approached in this thesis as a high-level concept that can be divided into more distinct definitions (Van de Ven et al., 2008). The reason is that I do not address any specific area of innovation and therefore think a coherent definition is the most appropriate in this context.

Innovation in the context of this thesis is considered to be about the development, introduction and application of something new that benefits the unit of adoption it is designed to benefit. West et al., 2004) It is based on OECDs\(^1\) definition and enhances both incremental and radical innovation and includes concepts focusing on more specific approaches to innovation such as New Product Development (NPD), Research and Development (RnD) or Technical Innovation (Ortt and van der Duin, 2008, Van de Ven et al., 2008). If e.g. NPD or RnD leads to a change that incorporates these four elements – new, developed, successful, and value creating- it is innovation. If any is missing, it is not.

\(^1\) The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or
No matter who is innovating, what the area of innovation is or what unit it is that benefits from the innovation, innovation is by definition change and deviation from what has been (West et al., 2004; Tidd & Bessant, 2009; Van de Ven et al., 2008). Innovation is the novel outcome and result of innovating, that is the actual execution of the innovation process (Tidd and Bessant, 2013), the innovation doing. The abilities and assets required executing the innovation process together form the capabilities to innovate (Björkdahl and Börjesson, 2012; Essman, 2009). Governing and organising all those activities that lead to innovation is the management of innovation (Ortt and van der Duin, 2008). And since innovating is considered to be a strategic core competence of a competitive company the management and enhancement of innovation management should be in managerial focus (Xu, 2007).

Since innovation by definition is the deviation from what has been (West et al., 2004; Tidd & Bessant, 2009; Van de Ven et al., 2008), it is not enough to manage innovation in a way that preserves what is already done. An organisation that is unable to meet and exceed the changes in requirements risks to decrease its relative innovativeness (Sniukas, 2010; Markides, 2001; Hamel & Prahalad, 1996). Companies that lack or have lost their dynamic capability e.g. by growing large and inflexible, no longer respond accurately to changes in the environment. They are often described as having the capacity and scale that makes it possible for them to hold on to rooted practices and being too good at meeting the current needs of customers, and capable of doing more of the same, irrespective of its long-term inefficiency, which is why relative innovativeness and innovative capability is lost over time. (Assink, 2006; Hamel and Prahalad, 1996; Parolini and Parolini, 2012; Sniukas, 2010) The products offered are no longer novel and are likely to be replaced by a new more innovative product (Markides, 2001) on markets in decline that are highly exposed to competition (Moultrie et al., 2007). Instead, maintained innovativeness in a dynamic environment requires a dynamic ability to respond and adjust to the environment (Leonard-Barton, 1992). Dynamic innovation capabilities constitute a firm's accumulated ability to innovate and thereto dynamically leverage and reconfigure its internal and external abilities so that its innovative capability better meets the new environment (Xu et al., 2007; Teece et al., 1997; Zollo and Winter, 2002). Thus dynamic capabilities are considered to be a prerequisite for sustainable innovativeness and should therefore be the focus of innovation management (Helfat et al., 2007; Teece et al., 1997; Sniukas, 2010).

This unceasing need, not only to develop, but to constantly progress, change and develop appears to me to share similarities with, at least in an everyday sense, the concepts of maturity and maturation. I think the processes of learning and growing more mature are closely interlinked, critical and intertwined parts of the maintenance and development of both individual innovative capabilities and cumulative organisational innovativeness. I will therefore come back to the concepts of maturity and maturation. In the first section about the audit, maturity is represented both in the form of maturity- models and -scales and the often implicit audit purpose to drive progression and maturation. In the second section about the auditor, auditor dependency is briefly compared to the concept of maturity and finally in the last section about auditing the variation of auditor support over the audit process is discussed.

2.2 Audit, auditor and auditing
Auditing innovation is to systematically review innovation in an organisation (Chiesa et al., 1996) and is considered to be one way to gain better understanding about a firm’s state of innovation and to constitute a trigger for improving a firm’s capabilities to innovate
(Björkdahl and Börjesson, 2012). As we shall see further on the field is fragmented and there is no “one way” to audit innovation and just as there is no single definition of the concept of innovation there exists no single innovation audit that covers it all (Adams et al., 2006; Essman, 2009). The consequence of the reasoning about innovation as a higher-level concept is that the concept of audits too must be kept open. Innovation auditing cannot be restricted to specific areas, nor can certain areas be excluded (as e.g. innovation management or NPD) as long as the purpose is to systematically review innovation. Several models and methods are thereby part of the innovation audit concept as e.g. score cards (e.g. balanced scorecards (Bremser and Barsky, 2004) innovation score cards (Chiesa et al., 1996)), maturity models (e.g. ICMM (Essmann, 2009), QMM (Berg, 2004) Maturity grids (Maier et al., 2012), Intellectual capital framework (Kerssens-van Drongeln and Biderbeek, 1999), cascading methods (Bremser and Barsky, 2004) and inspirational indicators (Nilsson et al., 2010).

Fraser argues that what at first sight seems to be a fragmentation in terms of approaches is rather a result of variations in focus. Innovation, Product Development, RnD effectiveness and Product Design he stresses are after all not the same (Ibid). Jokela et al (2006) also stresses the large amount of models and the fact that the understanding of one model is not enough to understand another (Jokela et al., 2006) It should therefore be essential to consider the audited area in relation to a specific domain of practice (Esterhuizena et al., 2012) e.g. innovation. Essman on the other hand argues that the fragmentation does not refer to the specifics of domain but rather that the variances of the central concept are defined and described in different models (Essman, 2009).

*I would like to stress that even if I treat innovation in this thesis as a higher level concept that incorporates several more defined concepts such as e.g. RnD or Open innovation, that does not make them the same; it just makes them part of the same. This means that several different audit scopes can be used to audit innovation without claiming to audit the same “part” of innovation. Therefore one audit cannot fit all purposes – even though several characteristics can be relevant across different scopes.*

*I have chosen to divide and treat the audit process as consisting of three perspectives; Audit, Auditor and Auditing. These are overlapping but clearly distinguished perspectives that I hope can help you, the reader, to see beyond e.g. the fragmentation of the field and instead focus on the audit process as a whole.*

### 2.3 The Audit

As mentioned initially in this chapter the innovation audit here is considered to be the innovation audit tool. The content of audits is what structures and supports the auditor in the auditing process. This coming section will present to you the existing research and literature on innovation audits, their aim, content and design.

As initially shown the field is fragmented, but despite that reviews like the one done by Adams et al (2006) show that there is an extensive overlap between different audits. Even if the aim and purpose (see table 2.3) of the audits differs and are labelled differently they are often based on similar concepts where the current state of the audited is assessed in relation to what is considered to be best practice (Björkdahl and Börjesson, 2012). In contrast to Björkdahl and Börjesson (2012) I also think there are considerable similarities in design and content as well (see e.g. table 2.1).

**The content of the most common structure of innovation audits** is further described
below, but could be summarised as sharing a structure that starts in an audit-specific focus that branches into areas (table 2.1) critical to innovation within the audited scope. Each area is then further refined through area specific indicators that describe best practice, often formulated as pre-defined statements. The assessors are then to score the relative performance of the audited organisation in relation to these statements. An estimation of how well the current state of the organisation matches the indicator is then given as an answer on either a Likert- or a maturity scale (table 2.2) (e.g. Adams et al., 2006; Björkdahl and Börjesson, 2012; Cohn, 2013; Chiesa et al., 1996; Hull et al., 2000; Nilsson et al., 2010; Radnor and Noke, 2002). When the audit focuses on innovation maturity, or a maturity scale is used, the audit content is moreover arranged in a ladder structure (figure 2.1), clustering the indicators in levels of maturity.

2.3.1 Audit focus
Irrespective of the model and method used the fragmentation of the field is especially visual in terms of a large and widespread body of audit areas. This is not especially surprising since innovation by definition could be basically anything and different audits focus on different specific areas within the broader definition of innovation as e.g. technical innovation (Chiesa et al, 1996), product innovation (Cormican and O’Sullivan, 2004), new product development (Radnor and Noke, 2002) knowledge management practices for innovation (Hull et al., 2000), RnD performance (Kerssens-van Drongeln and Biderbeek, 1999) innovation processes (Berg, 2004), innovation capability in innovation teams (Nilsson et al., 2010), capability maturity (Jokela et al., 2006) and open innovation (Enkel et al., 2011). In addition there are audits that take a more holistic grip on the area and assess e.g. innovation management (Adams et al, 2006; Tidd and Bessant, 2009; Cohn, 2013), innovation capability (Essman, 2009) or organisational climate and capabilities for innovation (Björkdahl and Börjesson, 2012). The fragmentation of the field of innovation as well as the auditing is sometimes addressed as a problem and a more holistic framework is said to be needed (Adams et al., 2006; Birchall et al., 2011; Biloslavo, 2005; Fraser et al., 2002; Jokela et al., 2006).

Much of the innovation audit literature has a strong focus on the audit content, often based on literature reviews. Areas of a specific innovation focus (e.g. innovation management) is identified and clustered (Hull et al., 2000) e.g. strategy, linkages, processes, organisation, learning (Tidd and Bessant, 2013) in a way that best describes what needs to be taken into consideration, often described as critical success factors (Cormican and O’Sullivan, 2004), representing the fundamentals (Radnor and Noke, 2002) and holistic framework etc. When developed models are practically tested, results are often described with focus on the content of the model e.g. tests have been done to confirm that firms find the areas interesting and relevant, not whether these areas really drive innovativeness or whether auditing these areas can really be related to the innovation performance they claim to measure (Adams et al., 2006; Birchall et al., 2011). Examples of areas are presented in table 2.1 below.

<table>
<thead>
<tr>
<th>Areas audited</th>
<th>Area name and reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>Inputs (Adams et al., 2006) Idea generation (Verhaege and Kfir, 2002), Resource availability (Burgelman and Kfir, 2002), Creativity and human resources (Goffin and Pfeiffer, 1999), Technology acquisition networking (Verhaeghe and Kfir, 2002), Innovation elicitation (Nilsson et al., 2010)</td>
</tr>
<tr>
<td>Knowledge management</td>
<td>Knowledge management (Adams et al., 2006; Hull et al., 2010), Resource provision (Chiesa et al., 1996), Understanding relevant technological developments (Burgelman et al., 2004), Networking (Verhaeghe and Kfir, 2002), Learning and growth perspective (Bremser and Barsky, 2004), Innovation and learning perspective (Kerssens-van Drongeln and Biderbeek, 1999), Knowledge management processes (Biloslavo, 2005), Teams (platform of understanding)</td>
</tr>
</tbody>
</table>
Strategy

Strategy (Adams et al., 2006; Tidd and Bessant, 2013), NPD Strategy (Cooper and Kleinschmidt, 1995), Strategy and leadership ((Cormican and O’Sullivan, 2004), Innovation strategy (Goffin and Pfeiffer, 1999), Strategic management (Burgelman et al., 2004), Strategy for innovation (Björkdahl and Börjesson, 2012), Strategic management (Biloslavo, 2005), Market orientation (NP strategy) (Panizzolo, 2010).

Organisation and culture

Organisation and culture (Adams et al., 2006; Cohn, 2013), organisational culture (Cooper and Kleinschmidt, 1995), Leadership (Chiesa et al., 1996), Culture and climate (Cormican and O’Sullivan, 2004), Structural and cultural context of the organisation (Burgelman et al., 2004), Culture (Björkdahl and Börjesson, 2012), Organisational context and learning (Björkdahl and Börjesson, 2012), Ways of working (Nilsson et al., 2010), Normative management (Biloslavo, 2005), production integration (involving manufacturing personnel in the design phase) (Panizzolo, 2010).

Portfolio management

Portfolio management (Adams et al., 2006), NPD process (Cooper and Kleinschmidt, 1995), Systems and tools (Chiesa et al., 1996), Planning and selection (Cormican and O’Sullivan, 2004), Portfolio management (Goffin and Pfeiffer, 1999), Development (Verhaeghe and Kfir, 2002), Product and services (Cohn, 2013), Competitive analysis (Moultrie et al., 2007), Business position (Cohn, 2013).

Project management

Project management (Adams et al., 2006), Communication and collaboration (Cormican and O’Sullivan, 2004), Systems and decision rules (Björkdahl and Börjesson, 2012), Technology and production (Cohn, 2013), Product development (Coombs et al., 1998), Ongoing user involvement (Moultrie et al., 2007), Product specification (Moultrie et al., 2007), Project selection (Nilsson et al., 2010).

Commercialisation


Future focus

Future focus (Birchall et al, 2011).

Impact


Capabilities and image

Capabilities and image (Birchall et al, 2011).

Sustainability and overall effectiveness

Sustainability and overall effectiveness (Birchall et al, 2011).

Prioritisation

Prioritisation (Björkdahl and Börjesson, 2012).

Idea management

Idea management (Björkdahl and Börjesson, 2012).

External environment and linkages

External environment and linkages (Björkdahl and Börjesson, 2012), Customer perspective (Bremser and Barsky, 2004), Market knowledge (Cohn, 2013), Market segmentation (Moultrie et al., 2007), Competitive analysis (Moultrie et al., 2007), Market orientation (understanding customer needs) and Production integration (involving suppliers in the design phase) (Panizzolo, 2010), Context (Radnor and Noke, 2002), Linkages (Tidd and Bessant, 2013), Knowledge repository and external reputation (Loch and Tapper, 2002).

Implementation

Implementation (Björkdahl and Börjesson, 2012).

Systems and decision rules

Systems and decision rules Implementation (Björkdahl and Börjesson, 2012).

Financial perspective

Financial perspective (Bremser and Barsky, 2004; Kersssens van-Drongelen et al., 1999).

Customer and User

Customer perspective (Bremser and Barsky, 2004), Investigating user needs (Moultrie et al., 2007), Customer support (Loch and Tapper, 2002).

Market

Market knowledge (Cohn, 2013; Hull et al., 2010), Market segmentation (Moultrie et al., 2007), Market Impact (Birchall et al, 2011), Market orientation (Panizzolo, 2010).

Products and services

Products and services (Cohn, 2013).

Investigation

Investigation (Coombs et al, 1998).
Post launch management
Operation, Technology and Production
Assets
Business model and process
Leadership
Teams
Management
Service

<table>
<thead>
<tr>
<th>Post launch management</th>
<th>Post launch management (Coombs et al., 1998)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation, Technology and Production</td>
<td>Operation management (Biloslavo, 2005), Technology and production (Cohn, 2013) Technology knowledge (Hull et al., 2010), Knowledge of operations (Hull et al., 2010), Production integration (Panizzolo, 2010), New technologies and breakthrough concepts (Loch and Tapper, 2002)</td>
</tr>
<tr>
<td>Assets</td>
<td>Assets (technology and people) (Biloslavo, 2005)</td>
</tr>
<tr>
<td>Business model and process</td>
<td>Value of innovation (B model and processes) (Biloslavo, 2005), Internal business process perspective (Brems and Barsky, 2004; Kerssens van-Drongelen et al., 1999), Process management (Panizzolo, 2010), Processes (Tidd and Bessant, 2013), Entrepreneurial service innovation process related (Ozyilmaz and Berg, 2002)</td>
</tr>
<tr>
<td>Leadership</td>
<td>Leadership (Radnor and Noke, 2002)</td>
</tr>
<tr>
<td>Teams</td>
<td>Teams (Radnor and Noke, 2002)</td>
</tr>
<tr>
<td>Management</td>
<td>Management related (Ozyilmaz and Berg, 2002)</td>
</tr>
<tr>
<td>Service</td>
<td>Service related (Ozyilmaz and Berg, 2002)</td>
</tr>
</tbody>
</table>

Table 2.1 Examples of audit areas. (Blue text is areas represented in more than one category; blue is the second category.)

2.3.2 Indicators and scales
The indicators constitute the most defined description of the areas audited, often in the form of a set of pre-formulated statements e.g. “we systematically search for new product ideas” (Tidd and Bessant, 2013) that is considered to describe good or best practice e.g. systematically searching for new product ideas (Tidd and Bessant, 2013) (see e.g. Cormican and O’Sullivan, 2004; Alegre et al, 2006; Björkdahl and Börjesson, 2012). The benefits of using best practice based auditing are that it allows assessed organisations not only to visualise their own current state but also allows the audited ones to benchmark themselves against best practice (e.g. Cormican and O’Sullivan, 2004) and can furthermore provide the auditors with explicit judgment criteria that reduce the complexity of assessment (Panizzolo et al., 2010). Despite the benefits the use of best practice is questioned in the context of auditing innovation (Philips, 2006). Innovation is after all successful change and deviation from what is and has been (Tidd and Bessant, 2009; Van de Ven et al., 2008). What is considered to be best practice has moreover changed as the field has developed and changed over time. So, even though every timeframe has had its own dominant best practice, the novelty trait of innovation means that successful innovators have often acted outside what has been considered best practice of their generation. (Ortt et al, 2008). Therefore innovation cannot be successfully based on copying what already exists, at least not at the more radical end of the spectrum (Van de Ven et al., 2008), and the use of best practice as a driver of innovation is therefore questionable (Philips et al., 2006).

I think that self-assessment has been a feature of all the audits I have come across up to now. When these self-assessments and answers are given it is most often done on a Likert or maturity scale. The scale, independent of which sort, supports the assessor when estimating the match between its own current state and the statement (e.g. Alegre et al., 2006; Björkdahl and Börjesson, 2012; Cormican and O’Sullivan, 2004). Together the statements and answering scale provide a number of reference points that allows the assessor to anchor the current state of the assessed organisation in a poor-excellent- or high-low-maturity-dimension of innovation. The differences between the different scales used for assessment are in the number and detail of the reference points they provide (Moultrie et al., 2007). The answering scales can make the judgment criteria more or less explicit and thereby affect the auditing complexity (Panizzolo et al., 2010). Binary scales provide the least detail (Table 2.2, scale 1) and maturity grids are richest in detail, providing the auditor with multiple anchoring descriptions along the scale (Table 2.2, scale 5).
Table 2.2 Types of assessment scales (Moultrie et al., 2007)

**Maturity scales represent one out of at least two examples** of how maturity can be part of innovation audits; a maturity scale can be used as part of a tool without maturity being the primary audit focus. An example of this is e.g. Chiesa et al. (1996) that uses a four-staged best practice based maturity grid to audit technical innovation management; the other way is when a maturity model is used and the maturity of something is the primary scope of the audit. An example of this is models that audit innovation capability maturity (Essman, 2009) or open innovation maturity (Enkel et al., 2011). Basically all maturity models and scales share the design of a ladder (Figure 2.1) that structures a number of separated maturity levels in steps. Each step describes the characteristic performance of that level of maturity against which the audited firm can evaluate itself (Essmann, 2009, Röglinger et al., 2012, Fraser et al., 2002). Even if the labels and number of maturity levels differs somewhat between different models they have in common that the first maturity level contains “ad-hoc performance” and the highest level of maturity “integrated world-class performance” (Essman, 2009; Berg, 2004) This is also the reason why best practice based indicators that use a Likert or anchored Likert scale (Table 2.2, scale 2-4) can be seen as a form of a simple maturity model providing best practice (world class) at one end of the scale and ad-hoc at the other. (Fraser et al., 2002) In such simpler best practice based maturity grids only one extreme level is explicitly described, which is often the highest level describing best practice. The scale refers to the top-level characteristics in a way that allows codification of the level within the area of best practice but without the explicit description of each level (Ibid) while a “full” maturity grid provides the characteristics of all the maturity levels assessed. “Full” maturity grids therefore provide a more nuanced assessment support to the auditors than the scales that do not provide explicit level descriptions (Panizzolo et al., 2010). Besides providing a higher detail in their support, maturity grids also allow the assessment scale to have a nonlinear representation that e.g.
Likert scales cannot have since single levels are not explicitly described. (Moultrie et al., 2007)

**Maturity-scales and -models share a ladder structure** that separates and describes maturity levels in steps (figure 2.1). Each step describes the characteristic performance of that level of maturity (see Table 2.2, scale 5) against which the audited firm can evaluate itself (Essmann, 2009, Röglinger et al., 2012, Fraser et al., 2002). Quality management is often referred to as the origin of maturity models (Fraser et al., 2002) but the characteristic ladder design originated earlier with inspiration from Mazlow’s hierarchy, economic growth and progression of IT in organisations (Röglinger et al., 2012). Two variants of maturity models are **staged** and **continuous** models. *Staged* models build on a cumulative set of “key process areas” that need to be fulfilled to progress to the next level (Essman, 2009; Fraser 2002). A company does not necessarily start at the first, lowest level where no requirements have to be fulfilled but due to Essman a company at maturity level 4 must have fulfilled and institutionalised all the requirements of levels 2,3 and 4 (Essman, 2009). In contrast to the *staged* models continuous models separate different processes and rate the performance of the processes assessed separately. (Jokela, 2006; Fraser 2002) A continuous model thereby allows a company to focus on improvements of capabilities in a specific process.

![Figure 2.1 Example of maturity ladder structure](image)

### 2.3.3 Aim and purpose

The aim of individual innovation audits varies widely, but is often more fragmented in terms of focus area than purpose (Table 2.3) and can be of descriptive, prescriptive or comparative character (Röglinger et al, 2012; de Bruin, 2005). If the purpose is **descriptive** the models support the determination of *what is* (e.g. identification of the current state). Descriptive models need to provide verifiable assessment criteria for each stage and level. Comparative models allow internal or external benchmarking. If the purpose of the model is **prescriptive** the model can also be used to identify desired states of e.g. increased maturity or improvements, and should moreover provide guidance about *how to progress* to that desired state. Prescriptive models need to support the evaluation of different alternatives, provide a decision calculus and to support the matching between alternatives and objectives. (Röglinger, 2012) (Röglinger et al., 2012, De Bruin, 2005).
Aims and references for individual audits

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Aims and references for individual audits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement</td>
<td>Identify areas for improvement (Adams et al., 2006), Highlight areas that require attention (Cormican and O’Sullivan, 2004), Improve HI-involvement innovation (Hallgren, 2009), Identify gaps between CS and desired state (Radnor and Noke, 2002), Identify opportunities for improvements (Biloslov, 2005), Provide information that can be used in developing action plans for improving performance (Chiesa et al., 1996), Increase innovativeness of processes and activities (Nilsson et al., 2010), A guide to continuous improvement (Tidd and Bessant, 2013), Team-building that enables and empowers (Cohn, 2013)</td>
</tr>
<tr>
<td>Benchmarking</td>
<td>For internal/external benchmarking (Alegre et al., 2006), Measure performance against BP (Cormican and O’Sullivan, 2004), Benchmark its competitors (Biloslov, 2005), Benchmark to see if you are doing as well as others (Tidd and Bessant, 2013), Comparative analysis of status and progress relative to competitors (Cohn, 2013), Benchmarking between companies (Coombs et al., 1998)</td>
</tr>
<tr>
<td>Explaining</td>
<td>Explaining key dimensions of capabilities for innovation (Björkdahl and Börjesson, 2012), Understanding the relation between Knowledge and Innovation (Hull et al., 2000), Benchmark to see if you are doing as well as others (Tidd and Bessant, 2013), Mirror strengths and weaknesses (Cohn, 2013)</td>
</tr>
<tr>
<td>Identify</td>
<td>Identify critical success factors (Cormican and O’Sullivan, 2004), Map current state (Cohn, 2013), Prospective tool (Cohn, 2013), Identify gaps between CS and desired state (Radnor and Noke, 2002), Identify areas for improvement (Adams et al., 2006), Identify strengths and weaknesses of its innovation potential (Biloslov, 2005), To see if you are doing the right things (Tidd and Bessant, 2013), Examine their own practice (Coombs et al., 1998), Identify a gap that can then be closed by subsequent improvement actions (Fraser et al., 2002)</td>
</tr>
<tr>
<td>Measure</td>
<td>Measure performance against BP (Cormican and O’Sullivan, 2004), Monitoring tool (Cohn, 2013), Rate CS and importance of KMP (Hull, 2000), Diagnostic tool (Radnor and Noke, 2002), Measure effectiveness of initiated development projects (Biloslov, 2005), Monitoring tool to assess how it is progressing (Cohn, 2013)</td>
</tr>
<tr>
<td>Engage</td>
<td>Engage key players (Cohn, 2013), Achieve HI-involvement innovation (Hallgren, 2009), Team-building that enables and empowers (Cohn, 2013)</td>
</tr>
<tr>
<td>Action</td>
<td>Determine actionable and prioritised plans (Cohn, 2013), Assess whether action needs to be taken (Hull, 2000), Lead planned change processes (Biloslov, 2005), Information that can be used in developing action plans (Chiesa et al., 1996), Telling where it needs to innovate; identify a gap that can then be closed by subsequent improvement actions (Fraser et al., 2002)</td>
</tr>
<tr>
<td>Awareness</td>
<td>Increased awareness of processes and activities (Nilsson et al., 2010), Learning resource to acquire knowledge (Tidd and Bessant, 2013)</td>
</tr>
</tbody>
</table>

Table 2.3 Examples of audit purpose (Blue text is areas represented in more than one category; blue is the second category.)

Despite the variations of individual audits the overall audit purpose, due to Birchall et al. (2011), is to guide firms in their decision making. Essman takes this one step further and states that the fundamental purpose of an innovation maturity audit is to facilitate for firms in the establishment of an improvement course (Essman, 2009) outlining the “stages of maturation paths” (Röglinger et al., 2012). Even if progression and maturation is not an explicit auditing purpose, maturity, progression and maturation often have a large indirect focus of many innovation audits giving these an indirect prescriptive purpose whether labelled as maturity models or not (Fraser et al., 2002; Röglinger et al., 2012). Even if the explicit auditing purpose is not always progression and maturation the structure of maturity ladders and best practice based indicators very clearly stresses the “next level”. Due to Röglinger all maturity models implicitly expect all organisations sooner or later to reach the highest level of maturity, which would require progression between the maturity levels (maturation) (Röglinger et al, 2012). Since the use of best practice statements in combination with Likert
scales due to Fraser et al. would equate a majority of all innovation audits to simple maturity models (Fraser et al., 2002) the “next level” and progression focus would thereby implicitly be present in most innovation audits. Despite the implicitly built in focus on progression maturity models are criticised for the use of a predefined “end-state” rather than factors that “actually influence evolution and change (Röglinger, 2012). Regardless of the audit focus the ladder construction builds on the assumption that there is a predictable pattern of evolution in the organisations (Röglinger, 2012). Critics mean that it is not clarified whether the characteristics of different stages of maturity can be identified and clearly separated in stages like this. In line with this maturity models are criticised for their over-simplification of reality and for the use of a one-fits-all standard that ignores the existence of “multiple and possibly equifinal maturation paths” which may limit its applicability (Röglinger, 2012), especially since the wide variations in conceptualisations of maturity in the literature show that there is more than one leverage point to achieve maturity (Maier et al, 2012).

The most basic purpose of auditing is, in line with the above, to stimulate progression and, for lack of a better word, maturation, for the organisation to learn how to be more able within the audited area. In the context of innovation auditing there are several models that describe the characteristics of different levels of maturity within a specific audit scope but the concept of maturity is most often not as well addressed. When looking beyond the detailed description of different maturity stages and instead focusing on how the concept of maturity and maturation is described, I find the concept of maturity to be described by the following traits: maturity is a state reached through the advancement from an initial state to a more advanced state. (Fraser et al., 2002) Maturity is described to be a state where an appropriate practice has been adopted (Fraser et al, 2002) and the subject of maturity is optimally fit for its purpose (Essman, 2009) The degree or level of maturity describes the extent to which the aspects of the maturity subject in focus are defined, managed, controlled (Enkel et al., 2011), effective (Enkel et al., 2011; Moultrie et al., 2007), systematic (Berg, 2004), institutionalised (Moultrie et al., 2007), incorporated (Kenny, 2006) Maturation is an evolutionary process of advancement where the subject progresses towards a higher more developed level of maturity through learning and the adoption of appropriate practice (Fraser et al., 2002)

Based on the above I have chosen to use the word maturity in the everyday sense, considering maturity level to be the level of appropriate practice adopted and maturation to be the progression process of evolvement towards higher degrees of appropriate practice. Both an individual, a group of individuals and the organisation can hold maturity. When a maturity holder has reached a higher level of maturity it means that more advanced and demanding situations can be handled in an appropriate way. My main interest is in innovation progression and maturation from an organisational perspective, but since the audits are executed by individuals, or groups of individuals and these individual auditors both enter information to the system and impact the organisational development of new learning by their perspectives on new information (Granberg and Ohlsson, 2009). The focus of this thesis is on the level of the individual which leads us to the next section of this chapter – the auditor.

2.4 The Auditor

As mentioned initially in this chapter the Auditor here is considered to be the executor of the audit, the one that actually uses the audit. Just to avoid confusion I would like to stress that the auditors are here considered to be all the people that participate in the audit’s execution. I have chosen to separate the auditors into two groups: internal and external. External auditors are e.g. external facilitators and internal auditors are e.g. employers of the audited organisation that participate in the auditing as self-assessors providing current state
information. This coming section will present to you how contemporary research and literature on innovation audits address the auditor’s role and what the execution of audits requires from the auditors.

The auditor is the person, or group of persons, that actually executes the audit. The auditors can be internal, external or a combination of both. Internal auditors are assessors from the audited organisation, self-evaluating their own organisation (e.g. Nilsson et al, 2010, Hull et al., 2000). External auditors are assessors from outside the audited organisation (or unit) that is audited. External auditors do not often execute the entire audit but rather act as facilitators providing support to internal assessors (Hallgren, 2009, Loch and Tapper, 2002, Chiesa et al., 1996) through all or part of the auditing process. (Fraser et al., 2002) Assessors can be single individuals or groups of assessors but the constellation of auditors used or recommended is seldom explicitly described or motivated in the auditing literature in terms of e.g. who is actually executing the audit, the number or origin of auditors, or selection criteria (Adams et al., 2006, Tidd and Bessant, 2013). When the literature mentions the auditors it is often done in a subordinate way. Auditors are often reflected to in retrospect mentioning that e.g. “the external assessor stated that…” (Loch and Tapper, 2002) from which it could be inferred that external assessors were part of the auditing process. One of the few auditor specific recommendations given on a regular basis is that the audit representation should be broad and multidisciplinary (Hallgren, 2009; Nilsson et al., 2010), often motivated as making the assessor group more objective as a result of the many perspectives they bring into the auditing situation (Björkdahl and Börjesson, 2012, Chiesa et al., 1996). A couple of articles specifically highlight the positive effects of team use (Chiesa et al., 1996; Fraser et al., 2002) and some are directly targeted towards teams, meant to be collaboratively used by a group of assessors (Cohn, 2013; Hallgren, 2009; Nilsson et al., 2010).

2.4.1 Auditor dependency
Even though the people who are to execute the audit or part of the audit are seldom mentioned in an explicit way different audit models are varying dependent on the auditor’s skill and experience (Biazzo and Bernardi, 2002; Panizzolo et al., 2010). The assessment logic and level of abstraction of an audit can be used to cluster assessment approaches and models (Panizzolo et al., 2010). Models that provide the auditor with explicit judgment criteria that can substitute the judgment skills of single evaluators are classed to be of a low abstraction level (Panizzolo et al., 2010). These models are considered to be the least demanding ones in terms of evaluation difficulty (Biazzo and Bernardi, 2003) and are those that are least dependent upon the skills and experience of the auditors that execute them (the lower left in figure 2.2 below) (Panizzolo et al., 2010).
On the other end of the spectrum are the audits that do not provide explicit judgment criteria but only evaluation dimensions and guidelines for analysis, and are considered to be of a high abstraction level. The evaluation process of these audits is generally more difficult to handle and is more dependent upon the skill and experience of the auditor since the tool does not substitute the judgment skills of single auditors. Along the continuum of evaluation logic, conformity-based logic as used in best practice and excellence models is the least dependent on the skill and experience of the auditor. Most demanding to evaluate are the audits that use causality based evaluation logic (the upper right in figure 2.2). (Panizzolo et al, 2010)

When relating the evaluation difficulty of Biazzo and Bernardi (2002) and the assessment abstraction of Panizzolo et al (2010) to the definition of maturity (level of appropriate practice adopted) and maturation (progression process of evolvement towards higher degrees of appropriate practice) these four concepts come through as two sides of the same coin(?). Biazzo and Bernardi and Panizzolo et al address how the support provided by the audit tool can increase or decrease auditing complexity and thereby affect the required level of practice held by the auditor to be able to execute the audit. The level of adopted practices held by the auditor gives us the very opposite perspective: describing how well the individual auditor is able to execute an audit of a certain complexity level.

I will henceforward refer to auditor maturity as the practices adopted that make the individual auditor able to execute the auditing in an appropriate way.

2.5 Auditing
Auditing is the actual execution of the audit, the audit doing, overlapping but still clearly separable from the audit and the auditor.
Literature spend less efforts on the execution of the audits, the auditing, than on the tool itself - the audit. The assessed current state is often suggested to be used to visualise how the current state relates to the desired state of the organisation (e.g. Radnor and Noke, 2002; Fraser et al., 2002) and best practice provided by the audit is often implicitly or explicitly treated as synonymous with desired state. If gaps are revealed between current and desired state these are suggested as possible starting points for the formulation and implementation of action plans (Chiesa et al., 1996; Fraser et al., 2002; Hull, 2000). There are many examples of audits where the purpose directly or indirectly focuses on development and progression e.g. identifying improvement areas (Adams et al., 2006), finding gaps between current and desired state (Radnor and Noke, 2002) and to constitute a potential base for action plans and improvements (Chiesa et al., 1996, Adams et al., 2006; Biloslavo, 2005). But even if the purpose of the audit is often to explain central dimensions, their impact on innovation (Björkdahl and Börjesson, 2012; Hull et al., 2000) and are meant to be a base for progression, few articles address the issue of how to actually do (Birchall et al., 2011). The very doing and execution of the audit is seldom directly addressed in the audit literature, lacking a clear agreement of how measures give input to improvement activities (Birchall et al., 2011). The result of this is that the support for the execution and use of the audits is perceived as abstract and providing too little support for “day-to-day use” (Adams et al., 2006) and moreover lacks consistency in terms of how to measure (Birchall et al., 2011).

Nilsson et al (2010) and Hallgren (2009) belong to the few that explicitly have focus on the process of executing and contextualisation of the audit. Both Nilsson et al. and Hallgren share focus on a group of assessors (Hallgren, 2009; Nilsson et al., 2010). Both models describe a process that involves the assessor group in pre-assessment activities where the tool, purpose and indicators are contextualised; execution of the assessment and a post assessment implementation phase (Ibid). Hallgren’s method contains a pre-phase where the group is presupposed to be trained and educated in the area of innovation, and this training is the base for the following contextualisation, development and execution of the assessments (Hallberg, 2009). The process descriptions are, however, rather vague (e.g. “educating and training the IS-group in innovation” and “The IS group is responsible for the process, implementation, setting milestones, planning events, etc.”) and lack details that describe the content of the process in detail. The main focus is on stressing Hi-involvement and action-based contextualisation, which should give a direct implementation effect. (Ibid) Björkdahl and Börjesson consider Hallgren’s approach to innovation auditing to be too unstructured and that it cannot be defined at an audit (Björkdahl and Börjesson, 2012). Nilsson on the other hand provides more details, providing a structure and suggesting areas to iteratively address before, during and after the assessment (Nilsson et al., 2010). The phase where the tool and indicators are to be developed is detailed, providing both assessment areas (e.g. impact) and a full set of indicators to be inspired from (e.g. number of collaboration activities with internal and external stakeholders. Suggested issues to address before and after the assessment are, however, of a higher abstraction level e.g. “reassess your innovation strategy […] based on earlier innovations and achievements as well as at the organisation’s overall strategy” and e.g. “use your tailored measurement program for encouragement of innovation, for feedback, and for communication” (Ibid).

Most audits only explicitly address a small part of the audit process, often the assessment, but implicitly indicate that the audit process stretches far beyond that. Innovation audit literature often also includes inexplicitly described audit tasks that need to be executed both after and before the very assessment to benefit from the auditing. Post-assessment tasks such as e.g. interpretation of results, formulation of action plans, implementation of development
activities and monitoring of these are commonly mentioned but not addressed from a how-to perspective. Pre-assessment tasks are also often implicitly mentioned and often from an empirical retro perspective, highlighting lack of support and priming activities that prepare internal auditors for their auditing tasks. Without further defining what auditing tasks form part of the auditing process I find it useful to treat and address the audit process as three staged, containing the following three phases: pre-assessment-phase, assessment-phase and post-assessment-phase. Each of the phases consists of a number of assessment tasks that the assessor needs to take care of to execute the auditing to fulfil the purpose of the auditing process. My intention of clustering the process into these three phases has been to use them to visualise how the auditor role varies over the audit process, both in terms of how demanding it is but also to better see how the audit support is distributed over the process.

Audit quality
Innovation audits and maturity models are criticised for often lacking empirical foundation (Adams et al., 2006; de Bruin, 2005). There is a lack of actual applications and little information exists on what benefits one can expect from maturity models (Röglinger, 2012). Birchall et al. further argues that too many of the models lack testing of validity and reliability. In line with this Adams et al. in their literature review found several measurement gaps where there was deficient evidence on whether measures really capture the right drivers or outputs. Further they found several omission gaps where important innovation management aspects lacked related measures. (Adams et al., 2006) Birchall et al. partly attribute these problems to the lack of sound models of innovation, which makes the conceptualisation of the measures difficult. (Birchall, 2011) Röglinger et al. highlights that there is little information on realistic benefits and stresses that the organisations must select models according to the “purpose of use and scope they want to apply the model for” (Röglinger et al., 2002).

2.6 Concluding summary
- The audit process can be seen as consisting of three, overlapping but clearly distinguished parts: Audit, Auditor and Auditing, where the Audit is the tool that provides support, the Auditor are the executor, the one that actually takes the organisation through the audit process and Auditing is the very execution of the audit, the audit doing.
- The audit process comprises several stages that can roughly be described in three phases: Pre-Assessment Phase, Assessment Phase and Post-Assessment Phase.
- The audit can by its construction provide the auditor with support that reduces the complexity of the auditing tasks and thereby lessens auditor dependency.
- An audit needs to provide different support for prescriptive, descriptive and comparative purposes.
- Auditor maturity is the practices adopted that make the auditor able to execute the auditing in an appropriate way.
- When an auditor has adopted the appropriate practices, audit maturity can compensate the lack of explicit judgment support provided by the audit.
- The abstraction level of single audits varies over the audit process.
- Audits provide more support in terms of what to audit than how-to and who-to.
- Audits provide more comparative and descriptive support than prescriptive and progressive oriented support.
Even if the audit process can be clearly divided to theoretically consist of the pre-assessment, assessment and post-assessment phases it is still difficult to determine what auditing tasks should be considered as part of the audit process. Many audits address only a small part of the process (often the assessment phase) but implicitly indicate that the audit process includes inexplicitly described audit tasks as well such as interpretation of results, formulation of action plans, implementation of development activities and monitoring of these. Without further defining what auditing tasks form part of the auditing process it is difficult, not to say impossible, to determine whether an individual auditor has been able to execute his or her auditing tasks in an appropriate way. Since the research questions are centred on the relation between auditor maturity of single auditors and the auditing process, the issue needs to be addressed. I have chosen to treat innovation auditing as a high level concept that includes more than it excludes and therefore find it meaningless (and impossible) to define a list of specified tasks that would cover “it all”. Instead I have allowed myself to be guided by the fact that I consider the facilitation and contribution to the development and progression of the audited to be the most basic audit purpose. Starting in that I therefore consider the will and intention of the audited company to be the factor that determines whether an activity should be considered an auditing task or not – even when certain tasks are not explicitly specified in an audit. One single audit can consist of both auditing tasks supported with explicit judgment criteria and other auditing tasks left without any support at all. To gain a better understanding of how to use innovation audits as a tool that can support the management of a phenomenon as dynamic and changing as innovation I would like to know more about the relation between individual auditor maturity and the execution of the audit process. I have therefore formulated the following research questions:

**RQ 1:** What types of shortcomings in the audit process are influenced by deficient auditor maturity?

**RQ 2:** What are the consequences of these shortcomings on the auditing process?
3

METHODOLOGY
3. METHODOLOGY

Since there exists no shared “one truth” my beliefs and perception of the reality within which I act affects everything I do. So also when it comes to this research (Merriam, 1994). My perception of reality is largely affected and formed by the social construct within which I act (Gummesson, 2000). To give you a better chance to judge whether you agree with me on the conclusions done and the relevance of my research it is therefore important that you understand the methods I have used in my research. The research philosophy tells us the values of a researcher and what he or she perceives to be valuable knowledge and how it can be qualitatively developed due to its setting (Saunders et al., 2012).

In this chapter I therefore start with a brief presentation of the philosophy on the basis of which I have made the choices of what, how and why to do what I have done, and how that has formed my research approach, method and process. After that follows a more detailed description of method for collection and analysis of data. Finally I conclude the chapter with a discussion on the research quality.

3.1 Research perspective

In the context of innovation my research stance is pragmatic and I will here try to explain to you why and what that has meant in this specific research.

Innovation is to me a highly dynamic phenomenon that comes out of a constant interaction between infinite numbers of constantly changing factors. Together these factors form an unlimited and unpredictable (but not random) number of potential innovations. From this unlimited stock of opportunities a less voluminous number of (again) unpredictable but not random opportunities for radical innovations falls out and becomes realised. These radical innovations are then reconfigured at an accelerating decomposition rate into new, less radical innovations. The further downstream from the originating radical innovation you come the more predictable and manageable is the innovation but also more substitutable.

I believe that in such a context there exists no single point of view that could cover it all and therefore several interpretations can be invoked and considered parallel realities. I do on the one hand believe that there exists a reality that is independent of our perception and interpretation of it (realism) (Maxwell, 2013, Saunders et al., 2012). The impact of a radical innovation will radically change the conditions on the market whether an RnD manager will believe it or not. But on the other hand different actors on the market perceive the situation differently owing to their own view of the situation. A company that does not believe that the innovation will change the market conditions will keep on acting within that constructed reality. That is why I as a pragmatist believe that the research philosophy position cannot be chosen other than for the purpose of the research. It is only within the delineation of the research questions that the appropriateness of one or more methods becomes apparent due to their suitability to answer a specific question. (Saunders et al., 2012)
The research conducted within the context of this thesis has focused on the people of the organisation in their role as self-assessing actors within an innovation auditing setting. This gives a research context where people’s interpretation of the specific auditing situation, the organisational setting as well as the very concept of innovation will affect their actions and interaction with others (Saunders et al., 2012). In such a context the very meaning of the research question would be lost if approached from a scientific position that advocates lawlike generalisations. Instead, it has been a situation where I felt it appropriate to approach the situation from the perspective of the interpretivist (Saunders et al., 2012) and qualitative research methods being used. The social construct as well as the subjective interpretation of individual persons of the participating organisations has been given a central role in the collection of empirical data as well as its interpretation.

This thesis is a collection of papers, appended to the thesis, where research design and method are already described, despite the fact that have I chosen to give a rather extensive description of both research method and design in the coming pages. My reason to do so is because I want the choices and design of the research to be as transparent and accessible to the reader as possible. My conception of the validity threats and how they can, and have been, dealt with is after all one of the key issues in qualitative research (Maxwell, 2013).

### 3.2 Research Method and rationales

This thesis is a collection of four papers brought together under a unifying Kappa (introductory chapter). Three of the articles are based on empirical results from two case studies; the fourth does not contain any new empirical data but is based on a literature study. After the fourth paper a new literature study was conducted, two new unifying research questions were formulated, and new analysis variables were selected and made a basis for a re-analysis of the papers. Despite that, research methods and rationales for data collection and analysis are presented below.

The design of the two case studies conducted has primarily been a result of two reasons: manageability and feasibility.

It was manageable since it was important for me to create a setting where I would be close to the reality of the research objects and where the study was small enough to make an in-depth analysis of the data manageable (Saunders et al., 2009). Therefore a small case study was found to be the most appropriate approach for the collection of the empirical data, partly because it was manageable in terms of data volume, but also in terms of having a structure manageable enough to allow changes to be made as the research progressed (Yin, 2009, Saunders et al., 2012).

It was moreover feasible since both typical and extreme cases can motivate a small study (Yin, 2009) and it was considered possible to find cases that were considered to be a typical organisation in the case study context (a producing SME, privately owned, subcontractor but with its own products located in the Mälardalen region). Several professionals with extensive experience from both academic and practical roles in the case company context participated in the process of selecting the participant.

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2 Kappa is a Swedish word for a coat. Metaphorically you have the Kappa outside of the other clothes (the papers) before going out (presenting the thesis), which strengthens and improves their function. ☺️
Two longitudinal case studies and a literature study were conducted (fig. 1): Case study A and Case study B. Study A had a multiple case design with two cases (Company A and Company B) containing three embedded units of analysis (a, b and c). Study B was a single case study with one single unit of analysis from one of the companies (company B). (Yin, 2009) The case studies were followed by a literature study.

Findings from data collection A-F resulted in four papers; three of the articles are based on empirical findings from data collection A-E; the fourth does not contain any new empirical data but is based on the findings from data collection F, a literature study. After the fourth paper the literature was supplemented with some new literature and re-studied, two new unifying research questions were formulated, new analysis variables selected and made a basis for a re-analysis of the papers which resulted in the licenti ate kappa. (Figure 3.2)

**Figure 3.1:** Overview of data collections to papers 1-4

**Figure 3.2:** Overview of research process in relation to papers and licentiate kappa

### 3.3 Operationalisation of research questions
In the kappa of the thesis the four collected papers are bound together under the two research questions below to focus on the self-assessment use of innovation audits and auditor maturity.

**RQ 1**: What types of shortcomings in the audit process are influenced by deficient auditor maturity?

**RQ 2**: What are the consequences of these shortcomings on the auditing process?

The objects of the analysis are the internal auditors in relation to their auditing tasks in the auditing process – those of the auditors that are also part of the audited organisations, here called auditors. The point of reference in the analysis is the execution of the audit process, the auditing. Auditing is here considered to consist of all the activities that the auditor is involved in when undertaking the audit process. These activities can be of pre-assessment character (e.g. establishment of goals), post-assessment character (e.g. formulation of action plans or implementing changes), as well as of direct assessment character (e.g. self-assessments of the current state). Auditor maturity is here considered to be the practices adopted that make an auditor able to execute the auditing in an appropriate way. The analysis is primarily concerned with identifying what types of shortcomings there might be in the auditor’s ability to execute the auditing in an appropriate way without requiring more support than what is already provided by the audit, and what consequences these have on the audit process.

Table 3.1 summarises the operationalization of the research questions by giving an overview of the concepts studied: how they relate to the audit process, the variables selected and analysed, techniques for data-collection and –analysis, and contribution to the research questions.

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Data collection A</th>
<th>Data collection B</th>
<th>Data collection C</th>
<th>Data collection D</th>
<th>Data collection E</th>
<th>Data collection F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic - Data collection construct</td>
<td>Innovation management holistic</td>
<td>Innovation management holistic</td>
<td>Management of innovation process</td>
<td>Management of strategic integration of innovation</td>
<td>Auditor skill and experience in innovation audit papers</td>
<td>Individual auditor maturity</td>
</tr>
<tr>
<td>Data collection technique</td>
<td>Semi structured interview (40 questions)</td>
<td>Mixed methods observations and Questionnaire (1238 questions)</td>
<td>Discussion based interviews, policy documents</td>
<td>Literature review, All Indian and Google Scholar</td>
<td>Paper 1-4 existing literature</td>
<td></td>
</tr>
<tr>
<td>Data collection focus</td>
<td>Current state of innovation management</td>
<td>Current state of innovation management</td>
<td>Execution and support of search, selection, implementation and capture</td>
<td>Integration of innovation in business strategy</td>
<td>Skill and experience of the auditor</td>
<td>Auditor maturity</td>
</tr>
<tr>
<td>Auditing process part</td>
<td>Assessment-phase</td>
<td>Assessment-phase</td>
<td>Pre- and post-assessment-phase</td>
<td>Post- and post-assessment-phase</td>
<td>All phases of the auditing process</td>
<td>All phases of the auditing process</td>
</tr>
<tr>
<td>Analysis focus - variables analysed</td>
<td>Patterns, area balance, scores, answer rate</td>
<td>Discrepancy, answer rate, content rate, answer content, comparison over time</td>
<td>Integration: type, locus, character, importance of accordance with desired state</td>
<td>Considered in paper: character of object, locus, process stage</td>
<td>Shortcomings, auditing tasks, type, audit process phase, enabling factors to execute, consequences on audit process</td>
<td></td>
</tr>
<tr>
<td>Main data analysis technique</td>
<td>Inductively coded</td>
<td>Inductively coded</td>
<td>Inductively coded</td>
<td>Inductively coded</td>
<td>Inductively coded</td>
<td>Inductively coded</td>
</tr>
<tr>
<td>Main outcome - contribution to RQs</td>
<td>Understanding of auditor’s assessment maturity</td>
<td>Understanding of origin of auditor maturity</td>
<td>Understanding of origin of auditor maturity</td>
<td>Understanding of consequences of auditor maturity on strategic integration and operationalization of innovation</td>
<td>Understanding of the internal auditor’s role in the auditing process in relation to audit support</td>
<td>Understanding of auditor maturity in relation to the audit process</td>
</tr>
</tbody>
</table>

Table 3.1 Data collection constructs and operationalization of these (inspired by Blessing and Chakrabarti, 2009)
3.3 Research process
Below follows a presentation of the case company selection, method for data collection and interpretation.

The case studies were part of a locally founded project in Eskilstuna, located in the Mälardalen region of Sweden. The selection criteria when choosing the participating companies for the case studies were that they should be a typical, producing and successful SME from the region. They should all have an interest in developing a more innovative structure in their companies, be willing to give researchers access to all levels of employees and share experiences with the other companies participating in the project. The companies are located in Eskilstuna, have successfully introduced innovations at their markets and are among the leading companies in their field.

Company A is one of the leaders in their niche of components in the car manufacturing industry and their customers are spread all over the world. Company B is an electronics consultant, which develops and produces electronic components to be built into other products.

At company A 11 people out of a total staff of 65 participated and at company B 10 people out of a total staff of 38 participated. The participants represented both management and personnel from different departments within the companies. The CEOs were to choose all participating personnel without any other influence from the researchers except for the request to strive towards such a broad representation of departments/working areas and functions as possible since that is often advocated in innovation literature as is preferred when developing innovation capability (Fraser et al., 2002, Hallgren, 2009).

3.3.1 Data collection A and B
Data collection A and B are closely interlinked, but conducted separately and therefore described separately.

Data collection A
Data collection A was conducted by the use of an established innovation audit (Appendix A). The audit involved the participants in the assessment phase where they self-assessed their own organisation. Aim of the data collection was to establish a point of reference against which coming findings could be referred and compared.

The focus of the audit by Tidd and Bessant (Tidd and Bessant, 2009) is innovation management and covers five areas considered to be critical for successful innovation management. The audit was chosen because it is part of a comprehensive theoretical context developed by well-reputed scientists with long experience from academia as well as industry.

The audit consists of 40 predefined best practice based statements, eight statements from each of five areas, considered to be innovation-critical (Strategy, Processes, Organisation, Linkages and Learning) (Tidd and Bessant, 2013). It is a written self-assessment audit, where the assessor, on a seven grade Likert scale is to estimate how well each statement describes “the way we do things around here” e.g. we are good at learning from other organisations, 1=not true at all, 7=very true.

To be able to use the audit as a self-assessment tool in the participating companies studied where the business language was Swedish, it was concluded that the audit needed to be
translated from English to Swedish. Since the data collected were not to be compared to data collected with audits in the original or other languages there was no risk of translation related discrepancies (Saunders et al., 2012) and a direct translation (Ibid) of the original audit was done, from English to Swedish (Appendix B). Audits were conducted on-site at each of the companies. All respondents from company A took the audit on one occasion and all respondents from company B on another occasion. Instructions as well as definitions were written at each audit but also given verbally before being handed out to the respondents. The average time to answer the audit was about 20 minutes. The respondents sat in the same room when taking the audit but answered them individually.

**Data processing and analysis**

Before analysed, the data from the audits was clustered in the five predefined (Blessing and Chakrabarti, 2009) areas of the audit. In the second stage the variables in table 3.2 were used to analyse the clustered data.

<table>
<thead>
<tr>
<th>Data processing</th>
<th>Deductively coded</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Strategy</em></td>
<td></td>
</tr>
<tr>
<td><em>Processes</em></td>
<td></td>
</tr>
<tr>
<td><em>Organisation</em></td>
<td></td>
</tr>
<tr>
<td><em>Linkages</em></td>
<td></td>
</tr>
<tr>
<td><em>Learning</em></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables focused on when analysing the data from collection A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit score</td>
<td>Average score</td>
</tr>
<tr>
<td></td>
<td>Highest</td>
</tr>
<tr>
<td></td>
<td>Lowest</td>
</tr>
<tr>
<td>Score distribution related to</td>
<td>Respondents</td>
</tr>
<tr>
<td></td>
<td>Audit areas</td>
</tr>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>Comparison between</td>
<td>Companies</td>
</tr>
<tr>
<td></td>
<td>Audit areas</td>
</tr>
<tr>
<td></td>
<td>Respondents</td>
</tr>
<tr>
<td></td>
<td>Score distribution</td>
</tr>
</tbody>
</table>

Table 3.2 Analysis methods and variables: data collection A, case study A.

**Data collection B**

Data collection B was conducted to give an additional perspective on the audit data. The purpose was to shed explanatory light over the audit information and gain a better understanding of what information could actually be read out of the audit data. To reveal relations between the more descriptive information gained from the previous audit data a semi-structured interview was found to provide an appropriate mix of structure and flexibility (Saunders et al., 2009). The interviews were based on 40 open-ended questions (Peterson, 2000) constituting a reformulation of the 40 audit statements rewritten as questions from a how perspective, e.g. the statement “We are good at learning from other organisations” was reformulated to the question “How do you learn from other organisations?”.

All respondents conducted the audit before taking the interview. The audit and interviews were sometimes conducted on the same day but more often on different days, with not more than one week between the audit and interview. Interviews were done face-to-face and when
needed questions were rephrased and further explanations given, but the respondents and interviewer did not interact in discussions about the answers. The average interview lasted for 70 minutes during which notes were taken and the interview was recorded.

**Data processing and analysis**
Data from the interviews were qualitatively processed in two steps before analysed. In the first stage notes and audio recordings were used to guide the selection of data samples to transcribe (Saunders et al., 2012). Secondly the data were clustered in the five predefined (Blessing and Chakrabarti, 2009) areas of the audit. The variables in table 3.3 below were then used to analyse the coded and transcribed data.

<table>
<thead>
<tr>
<th>Data processing</th>
<th>Deductively coded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Strategy</td>
</tr>
<tr>
<td></td>
<td>• Processes</td>
</tr>
<tr>
<td></td>
<td>• Organisation</td>
</tr>
<tr>
<td></td>
<td>• Linkages</td>
</tr>
<tr>
<td></td>
<td>• Learning</td>
</tr>
</tbody>
</table>

Data sampling (selected parts transcribed)

<table>
<thead>
<tr>
<th>Variables focused on when analysing the data from collection B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer rate</td>
</tr>
<tr>
<td>• No. of blank answers</td>
</tr>
<tr>
<td>• Pattern of blank answers</td>
</tr>
<tr>
<td>• Rate and pattern of answers compared with predefined categories (above)</td>
</tr>
<tr>
<td>• Comparison with audit data</td>
</tr>
</tbody>
</table>

| Content                                                      |
| • Detail in answers                                          |
| • Detail in answers compared with predefined categories (above) |
| • Comparison with audit data                                 |

**Table 3.3 Analysis methods and variables: data collection B, case study A.**

3.3.2 **Data collection C**
Data collection C was conducted during a workshop series in four steps following the four phases of the innovation process model designed by Tidd and Bessant (Tidd and Bessant, 2009). The model describes the innovation process by the following four blocks: Search, Select, Implement and Capture. Despite its linearity the model was chosen for two reasons: first because it is part of a comprehensive theoretical context also including the audit used in data collection A and B, and developed by well-reputed scientists with long experience from academia as well as from industry; secondly because the simplicity of the model makes it easy to communicate and ease people’s conceptual understanding of innovation management.

The participants of the workshop series were the same persons who had earlier participated in the audit and the interview. Inspired by the research of Hallgren (Hallgren, 2009) three groups were formed, one group of senior management from both companies (Group M), and two company specific Innovation groups (I-groups), I-group A from company A and I-group B from company B. The I-groups consisted of a mix of middle management and employees with a broad representation of departments and functions but no senior management.
In total 12 workshops (Table 3.4) were held, and each workshop step was first held with Group-M, and then each of the I-groups, one at a time. Each workshop step was held with all three groups within a time span of one week. The workshops followed the same structure each time, always starting with a short introduction to the day and a written questionnaire followed by reflecting discussions. The discussions were based on the focus of the workshop, the findings from previous data collections and examples of good practice. Each workshop was held about every fifth week and lasted for, on average, 2 hours.

The questions were related to the topic of the workshop (e.g. search) and focused on both management and operational level to capture both the executive and the supportive perspective of the process, e.g. who is encouraged to search for opportunities for innovation/who encourages you to search for opportunities for innovation. In total four questionnaires containing 20 open questions each were directed towards the respondents, one at each workshop. The average time to answer the questionnaire was about 30 minutes. Of these 4x20 questions were 4x4 questions used in my research (Appendix D).

<table>
<thead>
<tr>
<th>Group-M</th>
<th>Workshop 1</th>
<th>Workshop 2</th>
<th>Workshop 3</th>
<th>Workshop 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Questionnaire</td>
<td>Questionnaire</td>
<td>Questionnaire implement</td>
<td>Questionnaire capture</td>
</tr>
<tr>
<td>I-group A</td>
<td>search</td>
<td>select</td>
<td>select</td>
<td>select</td>
</tr>
<tr>
<td>I-group B</td>
<td>search</td>
<td>select</td>
<td>select</td>
<td>select</td>
</tr>
</tbody>
</table>

Table 3.4 Data collection C, workshop series
The data from the workshops were mainly collected through the written Questionnaires but complemented with notes and audio recordings. Notes and observations were mainly focused on what is by Yin described as level two and three questions, questions not directed towards the individual respondents but directed towards the individual case and patterns across the units of analysis (Yin, 2009).

**Data processing and analysis**
Due to the volume of the information in the audio recordings these were not transcribed but listened to several times and used to support the written information in questionnaires and notes. The variables in table 3.5 below were used to qualitatively analyse the collected data.

<table>
<thead>
<tr>
<th>Data processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deductively coded</td>
</tr>
<tr>
<td>• Search</td>
</tr>
<tr>
<td>• Select</td>
</tr>
<tr>
<td>• Implement</td>
</tr>
<tr>
<td>• Capture</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables focused on when analysing the data from collection C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discrepancies between</td>
</tr>
<tr>
<td>• Individuals</td>
</tr>
<tr>
<td>• Positions</td>
</tr>
<tr>
<td>• Process phases</td>
</tr>
<tr>
<td>• Changes over time</td>
</tr>
<tr>
<td>Answers and content</td>
</tr>
<tr>
<td>• Number of answers</td>
</tr>
<tr>
<td>• Character of answers (short/detailed answers)</td>
</tr>
<tr>
<td>• Content</td>
</tr>
</tbody>
</table>
3.3.3 Data collection D

Data was collected through two interviews with the CEO and one senior manager from company B. Company A left the project just before this phase of the project due to structural changes in the senior management of the company and did not participate in data collection D. The data collection focus was strategic innovation integration and was built around the Balanced Scorecard (scorecard) used as the strategic policy document of the company. The Balanced Scorecard was used as the backbone in an interview guide (Blessing and Chakrabarti, 2009) focusing on if and how innovation was an integrated part of the scorecard areas.

At the first interview managers described the use of the Balanced Scorecard, explained in detail how they worked with it, the time perspectives, and who participated in the work of formulating strategic goals and actions. The Balanced Scorecard addressed four strategic levels spanning from strategic long-term vision to explicit short-term activities. The scorecard consisted of three areas specified in goals related to four perspectives. Each goal was further specified through explicit activities for each of the functions in the organisation.

At the second interview managers worked themselves through the document, one area at a time, starting at the long-term strategic top level and working down to the short-term strategic level of actions. At the interview the managers reviewed the scorecard with focus on identifying if, where and how innovation, directly or indirectly was an integrated part of the strategy. At each level of the scorecard and for each area, managers were asked if innovation was an explicit, formulated part of that area and whether innovation could be considered an indirect part of the area. The data were collected through written notes and audio recordings (Blessing and Chakrabarti, 2009). Recordings were sometimes supported by simultaneous verbalisation (Ibid) to better capture parts of the discussion.

Data processing and analysis

Data from the interviews was qualitatively processed in two steps before analysed. In the first stage the audio recordings were listened to several times, and areas were post-defined and inductively coded (Blessing and Chakrabarti, 2009). In the second stage the categories found in the previous stage were used to identify recorded sections relevant to transcribe (Saunders et al., 2012). The variables in table 3.6 below were then used to analyse the coded and transcribed data.

<table>
<thead>
<tr>
<th>Data processing</th>
<th>Inductively coded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Innovation integration (e.g. if/if not, reason)</td>
</tr>
<tr>
<td></td>
<td>Type of integration (e.g. indirect or explicit)</td>
</tr>
<tr>
<td></td>
<td>Strategic function of innovation (promotes or requires innovation)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data sampling (selected parts transcribed)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Variables focused on when analysing the data from collection C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic level compared with</td>
</tr>
<tr>
<td>- Strategic integration</td>
</tr>
</tbody>
</table>

Table 3.5 Analysis method and variables: data collection C, case study A.
Type of strategic integration
- Explicit or indirect
  - Locus of integration (e.g., policy documents, individual persons)
- Purpose or cause of the integration type

Strategic effects compared with
- Desired state and development
- Operationalisation
- Management

<table>
<thead>
<tr>
<th>Table 3.6 Data processing and analysis variables and methods: data collection D, case study B.</th>
</tr>
</thead>
</table>

### 3.3.4 Data collection E – literature review

The empiric data from data collection A-D were supplemented with data from a literature review. The literature was searched for in two databases: Google Scholar (2013-09-01) using the seminal paper “development of a technical innovation audit” by Chiesa et al. (1996) to find articles that have cited this paper. These were sorted by relevance (464 hits) and only articles with more than 50 citations were considered (the first 40 articles).

The ABI/Inform Global database was used (2013-09-03) to search abstracts of peer reviewed, scholarly journals published between 1996-2013 for the words “Innovation and (Audit or Measure or Assess)” (1884 hits). The search was refined by using just the words “Innovation and Audit” (329 hits). The search was further refined by including only journals with a direct focus on innovation (e.g., the journal of Product Innovation Management) or a focus in close relation to innovation (e.g., international journal of entrepreneurial behaviour and research) (20 hits).

This first selection gave 59 unique articles. A second selection was made where abstracts and reference lists for these were read to find articles about auditing innovation. Words closely related to audit and innovation were used (but not predetermined) in this search. Example of words used were: audit, evaluation, measure, assess and innovation, new product development (NPD), innovation capabilities. In total 33 papers were selected and read with focus on general audit related information (table 3.7)

| General audit related information |
|---|---|
| Purpose | E.g., develop tool, review, test |
| Scope of auditing | E.g., RnD, NPD, capabilities, processes |
| Audit focus | E.g., audit areas/Audit method |
| Audit data collection method | Statements/Questions |
| Auditor | E.g., self-evaluator, external evaluator, facilitator, mix |
| Point of reference | E.g., best practice, contextualisation |

| Table 3.7 Example of audit related words used in selection of articles |

After reading the papers the sample was further restricted owing to their relevance and finally 23 articles were selected as relevant. The articles are from a diverse perspective within the area of auditing innovation. Some had a focus on developing audit tools, some on what is the measure practice, and a few focus on the process of contextualisation and the auditing
process. A checklist (Saunders et al., 2012) with the following five headings was used as a structure for the search and collection of data (Table 3.8).

<table>
<thead>
<tr>
<th>Skill and Experience</th>
<th>Yes/No/Indirect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill considered:</td>
<td>Yes/No/Indirect</td>
<td></td>
</tr>
<tr>
<td>Experience considered:</td>
<td>Yes/No/Indirect</td>
<td></td>
</tr>
<tr>
<td>If considered, what role does that/these</td>
<td>Auditor/Audited/Other</td>
<td></td>
</tr>
<tr>
<td>individuals have in the auditing process?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any signs of skill and experience related issues</td>
<td>Yes/No</td>
<td>Skill/Experience/Other</td>
</tr>
<tr>
<td>affecting the audit?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.8 Headings used in coding sheets data collection E

**Analysis of articles from the perspective the unifying RQs**

After the literature review I felt the need to introduce and define the concept of maturity in the context of auditing. The reasons to do so were fourfold:

- My perspective on auditing is that the main purpose is to drive progression which to me seemed, at least familiarly, related to maturation;
- Secondly internal staff is to a higher or lower degree always involved in the audit process and the ability of individual auditors to execute their auditing tasks and influence the audit process;
- Thirdly audits are, due to the support they provide, more or less abstract and therefore more or less dependent upon the abilities of the auditors;
- And last, but not least, auditing (the execution of the audit) is seldom directly addressed and the audits provide support that often vary over the audit process, which is why I wanted to know more about how the maturity of individual auditors impacts the auditing process.

I chose to use maturity in a everyday sense and consider auditor maturity to be when an auditor possesses the required abilities to execute her auditing tasks appropriately without requiring any further support than what is already provided by the audit. Adding this to what I have done before I formulated two unifying research questions to be used to re-analyse the articles 1-4 for the licentiate kappa:

**RQ 1:** What types of shortcomings in the audit process are influenced by deficient auditor maturity?

**RQ 2:** What are the consequences of these shortcomings on the audit process?

Besides the concept of audit maturity it is also necessary to define and explain what is meant by shortcomings and audit process before it is possible to answer the research questions. The audit process comprises the actual steps that take the organisation through the audit process. To be able to re-analyse the papers I first had to frame the two more concepts that are closely interlinked with each other in the research questions: shortcomings and deficient auditor maturity.

The definition above means that the auditing task is the point of reference that decides whether an auditor holds a satisfactory level of auditor maturity or not. When an auditor has the required abilities to execute the auditing tasks appropriately, the auditor maturity is of a satisfactory level (when not requiring any further support than what is already provided by the audit). It was therefore critical to determine what auditing tasks should be considered as part
of the audit process since that is the reference point that decides whether an individual auditor has been able to execute his or her auditing tasks in an appropriate way. One problem, however, is that many audits address only a small part of the process (often the assessment phase) but this implicitly indicates that the audit process also includes inexplicitly described audit tasks such as interpretation of results, formulation of action plans, implementation of development activities and the monitoring of these. I have chosen to treat innovation auditing as a high level concept that includes more than it excludes and therefore find it meaningless (and impossible) to define a list of specified tasks that would cover “it all”. Instead I have allowed myself to be guided by the fact that I consider the facilitation and contribution to the development and progression of the audited to be the most basic audit purpose. Starting in that, I therefore consider the will and intention of the audited company to be the factor that determines whether an activity should be considered an auditing task or not – even when certain tasks are not explicitly specified in an audit. One single audit process can therefore consist of both explicitly specified auditing tasks supported with explicit judgment criteria and other implicitly specified auditing tasks are left without any support at all.

Data processing and analysis
Articles 1-4 were re-analysed without any further preparatory data processing. The two research questions were used to identify the variables presented in table 3.9 below that were then used to analyse the content of the articles.

<table>
<thead>
<tr>
<th>Data processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articles 1-4 were used without any further data processing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables focused on when analysing the articles from the perspective of the unifying RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4 Quality</td>
</tr>
<tr>
<td>At the very heart of research is the question of whether the findings are reliable and their interpretations valid enough to contribute to the knowledgebase of the field and the practice of use. In the coming section I will therefore address first the question of validity and then reliability.</td>
</tr>
<tr>
<td>3.4.1 Validity</td>
</tr>
<tr>
<td>Validity is here approached from a qualitative perspective in line with the use of Maxwell – as a concept describing the correctness and credibility of the content addressed, without</td>
</tr>
</tbody>
</table>
implying the existence of any objective truth against which the content can be valued. (Maxwell, 2013)

**Internal validity**
The case companies were involved and interacted with several external actors (researchers, other companies) in different innovation related situations throughout the project within which the cases were conducted (e.g. workshops, innovation groups, interviews and observations). I consider this enhanced focus on innovation throughout the case studies to be a major threat to research quality. It has been an enhanced focus on innovation after the assessment in the firms that has probably contaminated the results in at least two ways: focus on the audited area after the self-assessment has been higher than what is normal for a typical case; more external expertise of innovation has been provided than what is representative for an average case. It is impossible to tell how this has affected the results and to what degree; but I find undoubtedly that the interaction and mutual learning have caused both the researcher and the participants to develop (Blessing and Chakrabarti, 2009, Saunders et al., 2012). If the research had focused on finding a positive correlation between the self-assessment and increases in innovativeness or the like, the internal validity would have been threatened in a way that would, in my opinion, have made the findings questionable. But since this research focuses on the shortcomings in maturity, I considered the results to be reliable enough to conclude that the extent of shortcomings found in these cases is probably not distorted in such a way that it overestimates the presence of shortcomings in a more average self-assessment situation, rather the other way around.

**Construct validity**
When a concept (as auditor maturity) cannot be directly observed and lacks generally agreed measures to use, it has to be measured through other characteristics that constitute part of that construct (Blessing and Chakrabarti, 2009). To select and distinguish such measurable non-static characteristics (Ibid) that really represent what is intended is especially challenging in case study research (Yin, 2009). Since a qualitative case study can cover a variety of construct variables it is for validity reasons essential to define the central concepts (Blessing and Chakrabarti, 2009; Yin, 2009). The definition creates both transparency and enables the selection of adequate measures (Blessing and Chakrabarti, 2009). It is after all harder to measure the undefined. ☺

The definition of the central concepts of the research construct (audit, auditor, auditing, audit process, maturity, auditor maturity and shortcomings) and identifying non-static variables of the research construct (table 3:1) that allows operationalization are therefore what I consider to be the most important action taken to strengthen the construct validity of this research since it makes it possible to identify, document and qualitatively put findings in relation to the research question (Blessing and Chakrabarti, 2009; Yin, 2009).

**External validity**
Both typical and extreme cases can motivate a small study (Yin, 2009) of these cases where we searched for typical companies. Several professionals with extensive experience from both academic and practical roles in the case company context participated in the process of selecting case companies that were representative for the context researched. Their collected knowledge and experience enhances both tacit and explicit knowledge that stretches beyond any checklist available and have been able to select companies considered by these individuals to be typical. (Yin, 2009) The results of a small study like this are not generalisable in traditional positivistic meaning, despite the fact that empirical data were
collected from companies considered to be typical. Perhaps is the lack of generalisability that increases the value of this study the most (Maxwell, 2013) since the in-depth character of the research enabled the shedding of light on social constructs and behaviours that would otherwise not have been detected.

3.4.2 Reliability
Since qualitative studies like the ones described here are affected by all the individuals participating in data collection as well as interpretation, the results are of course contaminated by an unlimited number of factors such as values, beliefs, experience and interaction between the participants. All these factors affect collection, raw data and interpretations in a way that risks lessening both the reproducibility and the consistency of judgment between different individuals. (Boyatzis, 1998, Saunders et al., 2012) This dependency upon context and individuals makes reliability in a traditional meaning a concept hard to apply in qualitative studies (Merriam, 1994).

In a context like this it is perhaps more relevant to talk about consistency and dependency (Merriam, 1994) than reliability. I have therefore strived to systemise methods, document activities and context in a way that gives a good traceability in terms of both data collection and analysis. A questionnaires, audit, interview and framing guides for each occasion used in data collection A-C were written. Data collection D was based on two discussion based interviews that were more difficult to structure in advance but where the company’s strategic policy document was used to structure and guide the interviews. Since the context and setting, independently of the use of written guides, is affected by social interaction every occasion was audio recorded to give a good traceability and ensure that it was possible to return to raw data in the analysis phase. All the data - guides, written raw data and audio recordings - were stored in a research database.
FINDINGS
4. FINDINGS

In this chapter, I will present the main findings from the four papers collected in this thesis. The findings will be presented in four sections, one for each paper. Each section will be introduced by a brief description of the setting of the data collection and followed by a short summary of the major findings. If you wish to have a more detailed description of the data collection you are referred to the methodology chapter and for more detailed descriptions of the findings, please see the appended papers.

4.1 Paper 1
Paper 1 was based on the first data collection in a study that stretched over three years. Two SMEs with participants representing all managerial levels and functions participated in a self-assessment audit based on 40 statements on Innovation management. The audit was followed by an interview where the statements from the audit were rewritten and given from a how perspective.

4.1.1 Findings paper 1
Findings from paper 1 are grouped under the following three headings:

- Spontaneous answering scale
- Unanswered questions vs. unanswered statements
- Understanding of concepts and the current situation

**Spontaneous answering scale**
Interview answers were given on a spontaneous five-graded scale. Regardless of the content of the answer and interview area all the interview answers could be fitted into one of five subgroups at this scale. The scale ranged, at one extreme, from not being able to answer the question, to - at the other extreme - being able to give an answer that described not only how a certain behaviour was conducted but also why it is conducted and in that way. All five subgroups of the scale were:

<table>
<thead>
<tr>
<th>Not able to answer</th>
<th>Able to answer if done</th>
<th>Able to answer what is done</th>
<th>Able to answer how it is done</th>
<th>Able to answer why it is done</th>
</tr>
</thead>
</table>

**Table 4.1 Spontaneous answering scale**

**Unanswered questions vs. unanswered statements**
In total all the respondents together were given 840 audit statements, e.g. *we work well in teams*, and 840 complementary interview questions e.g. How do you work in teams? The response rate shows that four of the statements were left unanswered and 103 of the complementary questions were answered with “I don’t know”. This means that the number of interview questions where the respondents were unable to answer was 25 times higher than the number of statements left blank. For 99 indicators the respondents estimated how well
these indicators described the current state of "how we do things around here" despite the fact that they answered the related interview questions "I don’t know".

Seven out of ten statements connected with a question that received the most “I don’t know” answers scored higher in the audit than the average statement of the area. This means that the questions that received most “I don’t know” answers were assessed as better describing “the way we do things around here” than the average statement of that area.

Understanding of concepts and the current situation
According to the interview answers, the reason for not being able to answer the interview questions were mainly two;

- The respondents did not know “how”, “what” or sometimes even “if” the organisation worked with what was asked for, e.g. working in teams. “I don't know” answers were often explained with the statement “It is not my area”.

- The respondent did not fully understand the meaning of the area asked for. For instance when asked “how do you work in teams?” the respondent lacked knowledge about the central concept of the question, e.g. didn’t know what teams there were or didn’t understand what was meant by “teams”.

4.1.2 Summary paper 1 findings
The findings from Paper 1 can be summarised as follows:
- Respondents were unable to answer 103 interview questions
- Not fully understanding the meaning of the area or central concepts of the questions asked was the main reason why respondents were unable to answer these.
- Lack of knowledge and understanding of meaning and concepts were explained with the statement “it is not my area”.
- Four audit statements were left blank.
- Statements related to questions with the most “I don’t know answers” scored higher than the average statement of that area.

4.2 Paper 2
Paper 2 was based on the second data collection aiming to gain a better understanding of internal innovation related deviations. Data were collected through a series of innovation management workshops with the same participants as in data collection I. Each respondent answered 80 written questions.

4.2.1 Findings paper 2
The findings from paper 2 are grouped under the following three headings:
- Not seeing it the same way
- Aiming for more than what is done
- Origin of deviation

Not seeing it the same way
Several areas of perceived divergence were found. One example is the lack of a shared definition of innovation in the firms, which is why people throughout the organisations

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3 tables with average audit score distributed among respondents, companies, audited areas and the relation between areas and “I don't know-answers” are found in paper 1, appendix X
referred to innovation in a widely spread range of personal definitions. This is why people, when referring to capabilities for innovation, innovativeness, prerequisites for innovation and innovative outcomes referred to vastly different things.

Senior managers generally experienced that they encouraged employees to a larger degree of participation in innovation related activities than what employees did. Managers, for example, felt that they encouraged all the employees to search every day for innovative opportunities, in new environments as well as in their current working environments, looking for both new opportunities in their current field of business as well as potentially new business concepts. Employees on the other hand felt encouraged to search for incremental improvements in their current working settings, they did not feel that time for searching was prioritised unless customer initiated or problem driven and only mentioned the needs of current customers, new technology or new products in their current field of business as prioritised search areas. The only exception was employees from RnD who felt a lack of time but still felt encouraged to prioritise to invest their time in exploring innovation opportunities.

Aiming for more than what is done

Innovative aim and action was also shown to diverge from each other in several ways. The ambition and stated aim to reach goals of more radical innovation and an expanded portfolio of innovation in terms of both areas of innovation and implementation was not met in terms of activities. Neither was the ambition to involve all the employees in innovation met with activities that promoted this. Employees often referred to an experience of conflicting incentives.

Origin of deviation

The deviations identified were of either individual origin caused by differences in personal experiences or of organisational origin caused by e.g. positions and work tasks.

The deviations of organisational origin consisted of gaps between e.g. different positions, functions or steps of execution caused by organisational structure and execution. Other examples are when different positions or functions perceived the same situation differently owing to differences in given or accessible information and assigned participation in formal innovating. Other organisational gaps were those that separated innovative aim and initiated activities. The most distinctive were the perceived differences between positions of management and operational employees in terms of prioritised innovation related work.

The deviations of individual origin were gaps that originated from differences bound to the individual person in terms of e.g. innovation related abilities, understanding and perception based on experience and practice independent of their current employment and position.

4.2.2 Summary paper 2 findings

The findings from paper 2 can be summarised as follows:

- People referred to innovation in widely different ways
- Innovative aim and action often deviated, aiming for more advanced levels whilst acting in line with more incremental levels
- The deviations found had either an organisational or an individual origin.
4.3 Paper 3
The third data collection was conducted as discussion-based interviews with the CEO and one senior manager from the steering group. These interviews were based on the balanced scorecard used as a strategic steering document at the company. Formalised, informal, deliberate and unconscious integration was sought for in a review of the strategic steering document of one of the firms that also participated in data collections A and B.

4.3.1 Findings paper 3
The findings from paper 3 are grouped under the following three headings:

- Centred to individual persons
- Strategic integration
- Hindering strategic innovation

Centered to individual persons
The review showed that innovation was not strategically formalised and was moreover strongly centred to the individual persons of top management. Senior management, and particularly the CEO, showed high innovation strategic awareness in terms of purpose, aim, areas of radical/incremental and time perspective but also about areas that innovation could be extended towards. The senior management of the company had a clear idea of how they needed and wanted to use innovation.

Strategic integration
Review of the strategic policy document showed that innovation was not a formulated and explicit part of the content at any of the four strategic levels. Neither did the company have any formulated and shared definition of innovation or what the purpose of working with innovation was, despite the fact that innovation was informally integrated at all strategic levels even though the degree of integration varied strongly between different levels. Linkages to the top levels of formal business strategy were strong, but weak and informal at the practical action-oriented levels of operationalised strategy.

Hindering strategic innovation
The senior management expressed a desire to work more strategically with innovation and considered themselves to be required to innovate continuously to be able to keep a leading position in their business. It was particularly stressed that there was a need of increased structure, defined activities, clarity and communicability in their innovative efforts. The CEO referred to the lack of a company-specific definition of innovation as one of the major hindrances for formulating explicit strategic goals for innovation. That in turn was considered to constitute the greatest single obstacle to the development of clear innovation activities and measurable parameters that would enable innovation to be monitored, measured and evaluated.

4.3.2 Summary paper 3 findings
The findings from paper 3 can be summarised as follows:

- Strategic innovation is centred to the senior management
- There was no formal integration of innovation in the business strategy
- Innovation was informally integrated at all strategic levels.
- The further out in the organisation the less integration
- Top management knew what they wanted to achieve with innovation but lacked knowledge of how to do this.
4.4 Paper 4
The aim of Paper 4 was to take a step back and bridge the findings of the other papers by once again returning to the auditing context. The focus of the literature review conducted was to find out more about how skill and experience were considered in the context of auditing literature.

4.4.1 Findings paper 4
The findings from paper 4 are grouped under the following three headings:

- Prescriptive and descriptive considerations
- Perceived divergence
- Hindering the auditing process
- Indirectly affecting the auditing process

**Prescriptive and descriptive considerations**
A little more than half of the articles (13 out of 23) describe situations, effects, acts or happenings where skill and experience have directly or indirectly affected the auditing. A majority of these (19 out of 23) did not make any explicit considerations about skill and experience as something that needs to be regarded in the auditing context. These articles give retro-perspective descriptions of situations, effects, acts or happenings where skill and experience have directly or indirectly affected the auditing. Almost all (12 out of 13) of the nonexplicitly descriptive examples address skill and experience held by a process-internal assessor where the auditor is also part of the audited organisation.

Only two articles gave explicit prescriptive considerations about skill and experience as something that needs to be considered when executing the audit. Equally few (two) made explicit retro-perspective considerations about how skill and experience either affected or were considered in the auditing process. In contrast to the example above three out of four of the explicit examples are from a process external perspective where the possessor of skill and experience is a process-external part providing external expertise (facilitator, expert competence) to the auditing process.

A vast majority (9) out of the thirteen examples of skill and experience affecting the auditing process are from situations related to the use of the audit – the auditing.

**Perceived divergence**
One category of examples highlights how differences in skill and experience are a cause for perceived divergence. These examples stress how different the individual’s perception and understanding differ and therefore affect how they define central concepts, perceive the innovation process or the current performance audited. This results in auditing situations where not everyone understands the situation in the same way and assessments of individual respondents are unreliable.

**Hindering the auditing process**
Another category of examples is where the skill of the assessors (or rather the lack of skill) results in an inability to conduct the audit. Examples here describe how assessors are unable to define development areas, develop measurement metrics or apply and retain new knowledge. The reasons given are lack of knowledge about how to do, lack of insight
concerning the area and being too far from the processes audited in their daily work.

In addition to these examples of negative impact from poor skill and experience there was also an example of a situation where poor skill and experience gave positive side effects. This was a situation where poor skill and experience did not only hinder the auditing but also initiated discussions and raised awareness. The participating firm in that example considered this to be one of the most valuable outcomes of the auditing process.

**Indirectly affecting the audit process**

Finally there are examples that indirectly relate to the skill and experience of the assessors’ impact on the auditing process. There were three sorts of indirect impact on the auditing process: simplifications, setting and contradictory advice. The examples of simplification are descriptions of when assessors have spontaneously simplified the audits or when managers have simplified audits to gain acceptance among those who are audited. The setting is when skill and experience are not mentioned but when the process leader needs to behave in a certain way to gain acceptance from the assessors, in other words needs to have a certain skill. Finally there is the example where skill and experience are not mentioned, but a firm that audited below average in the audit where managers are said to be required to develop appropriate structures and systems to improve.

**4.4.2 Summary paper 4 findings**

The findings from paper 4 can be summarised as follows:

- The articles mentioning skill and experience could be categorised in four clusters: to consider, perceived divergence, inabilities and indirect.
- Most articles address skill and experience in a descriptive retro-perspective; few address it from a prescriptive perspective.
- A majority of the examples are from the auditing situation.
- Poor skill and experience do not have to be purely negative; they can also awake discussions and raise awareness.
5. ANALYSIS

The concept of auditor maturity is here used familiarly considered to be when an auditor possesses the required abilities to execute her auditing tasks appropriately without requiring any further support than what is already provided by the audit. By seeing innovation auditing in this way, it becomes not only the basis for increased innovativeness but it also requires auditors to possess a certain degree of auditor maturity to be able to execute the auditing process in an appropriate way. Based on this perspective, the findings are here analysed under the two research questions:

RQ 1: What types of shortcomings in the audit process are influenced by deficient auditor maturity?
RQ 2: What are the consequences of these shortcomings on the auditing process?

In general the assessment areas and corresponding indicators are by far the part of the audits that provide the most support in terms of explicit judgment criteria (Chiesa et al., 1996, Adams et al., 2006). Explicit support brings the complexity of assessment to its lowest levels (Panizzolo et al., 2010). The audit used in the case studies (Tidd and Bessant, 2013) is no exception, providing best practice based areas and predefined statements to guide the assessment phase. The indicators allowed the case companies to identify their current state of practice (Berg, 2004, Cohn, 2013) within the five areas that describe what is considered to constitute good innovation management practice (Tidd and Bessant, 2013). The assessment could be seen as a benchmark against the best practice based indicators (Cormican and O’Sullivan, 2004) which would allow not only a description of the current state, but also an identification of gaps and improvement areas in relation to the best practice description provided (Radnor and Noke, 2002), which could be used as a starting point for action plans and improvements (Biloslavio, 2005, Fraser et al., 2002, Hull et al., 2000).

Audit phases before and after the actual assessment (here called the pre- and post-assessment-phases) is often more abstractly described (Adams et al., 2006), providing little (or no) explicit and prescriptive support (Adams et al., 2006, Birchall et al., 2011, Röglinger et al., 2012). The audit used is no exception in this respect either (Tidd and Bessant, 2013) since it provides no prescriptive support (Röglinger et al., 2012) and no explicit support in either of the pre- or post-assessment phases. The lack of explicit auditor support therefore makes the execution of these audit phases more complex and dependent on the auditor’s ability (Panizzolo et al., 2010). It would therefore not be especially surprising if there were less auditor-related shortcomings in the assessment phase than in the post-assessment phase of the audit process.

5.1 Shortcomings
All the data collections revealed several signs of shortcomings that impacted both auditor maturity and the auditing process, shortcomings that prevented the audit process from being appropriately executed and from proceeding in line with the intentions of the audited companies.
Despite the assumption above that the distribution of explicit support over the auditing process would impact auditor-related shortcomings in different phases of the auditing process, shortcomings were found both in the assessment phase and the post-assessment phase. Observed shortcomings and their impact on the audit process can be clustered in the following categories: Conceptual shortcomings, Contextual shortcomings, Auditor interactional shortcomings, Strategic and operational shortcomings, and Adaptation shortcomings. In order to facilitate for the reader I have chosen to present my findings here already, in the form of a summary table. After the table follows a presentation of the analysis that led to the conclusions summarised in table 5.1 below.

<table>
<thead>
<tr>
<th>Categories of shortcomings</th>
<th>Conceptual shortcomings</th>
<th>Contextual shortcomings</th>
<th>Auditor interactional shortcomings</th>
<th>Strategic and operational shortcomings</th>
<th>Adaptation shortcomings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consequences in the pre-assessment phase</td>
<td>Prevented the process from progressing.</td>
<td>Not identified.</td>
<td>Not identified.</td>
<td>Prevented the re-assessment phase from progressing.</td>
<td></td>
</tr>
<tr>
<td>Symptom</td>
<td>Inability to formulate audit aim.</td>
<td>Not identified.</td>
<td>Not identified.</td>
<td>Inability to formulate metrics for a second re-assessment phase.</td>
<td>Inability to formulate metrics for a second re-assessment phase.</td>
</tr>
<tr>
<td>Consequences in the assessment phase</td>
<td>Reliability</td>
<td>Reliability</td>
<td>Reliability</td>
<td>Prevented the process from progressing</td>
<td>Prevented the process from progressing</td>
</tr>
<tr>
<td>Symptom</td>
<td>Weak or lacking understanding of central concepts</td>
<td>Weak or lacking knowledge of CS</td>
<td>Subjective assessment base</td>
<td>Inability to relate metrics to desired measures</td>
<td>Inability to contextualise metrics to better fit the organisation</td>
</tr>
<tr>
<td>Consequences in the post-assessment phase</td>
<td>Reliability and preventing the process from progressing</td>
<td>Reliability</td>
<td>Prevented the process from progressing</td>
<td>Hindered organisational involvement and prevented the process from progressing</td>
<td>Hindered organisational involvement and prevented the process from progressing</td>
</tr>
<tr>
<td>Symptom</td>
<td>Low reliability in results used as a base for activities. Inability to formulate goals and actions.</td>
<td>Weak reliability in assessment results used as base for activities.</td>
<td>Hindered communication and strategising.</td>
<td>Inability to identify incentives and formulate activities.</td>
<td>Inability to strategise, formulate organisation-specific goals and improvement activities.</td>
</tr>
</tbody>
</table>

Table 5.1 Shortcomings and consequences of these in the auditing process phases

5.1.1 Conceptual shortcomings.
Since the audit used provided explicit guidance from best practice based audit areas and preformulated assessment statements (Tidd and Bessant, 2013), the assessment phase provided low auditor complexity (Panizzolo et al., 2010). Despite that data collection B showed that the auditors were unable to understand the central concepts that they were asked
to assess (data collection B, paper 1). The lack of understanding of the concepts did not in itself prevent the auditors from executing the assessment since they still executed the assessment regardless of the lack of understanding (data collection A, paper 1). The auditors, despite the lack of understanding, assessed how well one or more, not fully understood, statements matched the current state of the audited organisation. Since such an assessment is more or less guesswork of low reliability (Boyatzis, 1998) the results are obviously affected in the assessment phase since the auditing was not executed in an appropriate way. But skewed assessment results do potentially also have consequences throughout the entire audit process since activities in the post-assessment phase to a large extent are meant to be built upon the assessment results (Adams et al., 2006, Björkdahl and Börjesson, 2012, Chiesa et al., 1996, Essmann, 2009, Hallgren, 2009).

Further the findings showed that the lack of knowledge and understanding about the central concept of the area audited also has consequences on the post-assessment auditing. The audit used provides a best practice based statement combined with a Likert scale (Tidd and Bessant, 2013) that makes the audit equivalent to a simple maturity model (Fraser et al., 2002). So even though the primary scope of the audit is not progression and maturation it still allows the current state to be positioned on a poor-excellent dimension that visualises a simple progression path (Fraser et al., 2002; Moultrie et al., 2007). Despite this, auditors were unable to formulate strategic goals and activities for progression in the post-assessment phase (papers 3 and paper 4). Data collection D (paper 3) showed that the inability to relate aim and activities to a desired state were of a very basic origin; even though the auditors were able to formulate a desired state they were notable to define, describe and specify the content and the way to get there. A direct consequence of this was of course that it complicated the operationalisation of long-term goals (Ibid). This reminds us about the situation described by Nilsson et al., where auditors in a similar way have had too little insight in the area audited to be able to formulate desired changes and could not use the audit in an efficient way without preceding support in the pre-assessment phase (Nilsson et al., 2010, paper 4).

Many of the shortcomings observed could be traced back to insufficient understanding of central concepts, but take other more specific expressions and are shown as shortcomings to e.g. contextualise, correlate and bridge perceived divergences. These are further addressed under the respective clusters below.

From the above it is concluded that: Shortcomings in auditors’ understanding of central concepts of the audited area impact both auditor maturity and the auditing process. The conceptual shortcomings of the audited area have been shown to have consequences on all of the phases in the auditing process. This category of shortcomings has been shown to affect the reliability of assessment results as well as preventing the formulation and implementation of action plans.

5.1.2 Contextual Shortcomings

In a similar way as highlighted by Chiesa et al. as early as in 1996 (paper 4), findings from both the assessment- and post-assessment phases show that internal auditors’ organisational belonging4 affected their knowledge of and familiarity with the current state audited (paper 1, paper 2). In the assessment phase auditors referred to the assessment areas as “not my area” (data collection B, paper 1) which affected their assessment ability in a way that reminds us of

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4 This differed according to where auditors were positioned organisationally e.g. economy or RnD or what position they held e.g. engineer or sales management.
how Chiesa et al. showed that auditors were sometimes “too far from the audited” to be the best assessors (Paper 4). As in the example of lacking understanding of central concepts, the lack of ability to render the current state of the audited area did not in itself prevent auditors from executing the assessment (data collection A). But these assessments too became more or less guesswork of low reliability since they were based on assessments of a current state that the auditors were not familiar with and unable to describe (Boyatzis, 1998).

From the above is concluded:
*The auditors’ lack of knowledge of and familiarity with the current state assessed within the audited organisation affects both auditor maturity and the auditing process. These contextual shortcomings directly affect the reliability of the assessment results and potentially also the following post-assessment phase since the latter phase of the process is to a large extent built upon the assessment results.*

Auditor interactional shortcomings. A broad and multidisciplinary representation of the internal auditors is one of the few auditor specific recommendations given on regular basis (Hallgren, 2009, Nilsson et al., 2010), often motivated as being more objective as a result of the many perspectives (Björkdahl and Börjesson, 2012, Chiesa et al., 1996) but also as a way to ensure a broad and holistic involvement of personnel from the audited organisation (Xu et al., 2007). Data collection B did, however, show that a multidisciplinary auditor representation brought not only a lot of perspectives to the auditing situation but also auditor interactional shortcomings and subjectivity (paper 1 and 2, Moultrie et al., 2007).

Data collection B-E all showed examples of findings where differences in auditor perception resulted in interactional shortcomings that both prevented the auditing and decreased the reliability of the assessment results. The origin of the shortcomings was found to be divergence in perception among the auditors and these were identified to be of either individual or organisational origin (data collection C, paper 2). Individual auditors or groups of auditors perceived both current state and central concepts of the audit as widely different (paper 1). A perceptual divergence like this does not in itself have to affect the auditor’s ability to execute the assessment in an appropriate way. What does though affect the execution of the assessment phase is the individual auditors’ widely different interpreted audit statements (data collection B). Since single auditors have perceived, and therefore assessed, vastly different things, single audit results must be considered more or less subjective and the reliability of the assessment result is negatively affected (Moultrie et al., 2007). Divergence in perception did not only affect the execution and result of the assessment phase but also complicated communicability (papers 2 and 3) and strategic integration (paper 3) in the post-assessment phase.

From the above is concluded:
*Auditor interactional shortcomings affected the auditor’s ability to handle auditor divergences, detect and act upon them in a way that allows the audit to be executed in an appropriate way. This showed to impact the reliability of results in the assessment phase as well as communicability and strategic integration in the post-assessment phase.*

5.1.3 Strategic and operational shortcomings.
The audit used in the case studies is, as with most audits, mainly comparative and descriptive by nature. The audit allows comparison between best practice based indicators and the current state but does not provide any explicit means to support progression and maturation (De Bruin, 2005, Röglinger et al., 2012). This means that this, as with most audits, distributes the
support in a way that makes the post-assessment phase more abstract and demanding than the earlier assessment phase (Panizzolo et al., 2010). Support provided by audits of this kind leaves it to the auditors to identify how the current identified state relates to a desired state and how to approach the actions required to change (De Bruin, 2005). Both the empirical studies from the post assessment phase (data collection C and D) and the review (data collection E) showed examples where the auditors fell short in their attempts to identify the causal relations required to take action and interlink strategic aim and operational activities. These shortcomings could be related to the conceptual shortcomings too but were expressed as e.g. an inability to identify metrics that correlate to what they wanted to measure (paper 3, paper 4), an inability to relate and identify incentives that promoted a certain behaviour (paper 2) and an inability to formulate improvement activities (paper 4).

From the above is concluded:

**Shortcomings in auditors’ ability to understand the correlations between the desired state, activities and the effects of these affects the auditing process. These strategic and operational shortcomings affect the auditing process by preventing the formulation, support and execution of assessment, action plans and activities in all the phases of the auditing process.**

### 5.1.4 Adaption shortcomings.

Maintained innovativeness requires that the organisation can reconfigure its innovative abilities (Xu et al., 2007; Zollo and Winter, 2002) so that the organisation can progress and meet changes (Hamel and Prahalad, 1996; Markides, 2001; Sniukas, 2010). The auditing literature often mentions the utilisation of identified weaknesses (Adams et al., 2006) or gaps between the current and desired states (Radnor and Noke, 2002) as a potential base for action plans and improvements (Adams et al., 2006; Biloslavo, 2005; Chiesa et al., 1996). Since auditing does not have any stand-alone value these activities, however, have to be linked to something substantial such as goals and strategies (Nilsson et al., 2010). In line with this, auditors in senior management positions in data collection C express a wish to operationalise action plans to progress and develop in line with strategic aims (paper 3). But even though the audit provided a framework of both statements that described good practice and a working definition of innovation, these were not seen as valid in the strategic context of the company. Auditors considered it to be required to contextualise central concepts to be able to strategically incorporate innovation in the organisation, but the auditors lacked the knowledge and abilities required to transform knowledge and information to fit the context of the organisation. This situation reminds us about the one described by Chiesa et al. where the audited organisation was unable to contextualise metrics (paper 4 - Chiesa et al., 1996). The auditors themselves considered this shortcoming to be a major obstacle to formulate innovation-related activities, goals and measurement and to correlate and communicate these in a way that allowed them to operationalise a strategically desired state of theirs (paper 3). The effect of this is that despite the fact that the auditors could formulate what they wanted to achieve, they were not able describe how to involve the organisation (Xu et al., 2007) and progress as intended. Further, they considered the inability to contextualise to be the major obstacle to innovation strategic adaption (Ibid).

From the above is concluded:

**Shortcomings in the ability of auditors to contextualise the audit process to fit the audited organisation is shown to have an impact on the auditing process. These adaptation shortcomings affected the auditing process by preventing the auditors from formulating contextually relevant innovation-related goals, activities and measurements, and thereby had negative consequences on strategic integration and organisational involvement.**

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5.2 Discussion and conclusion
Auditor maturity in this thesis has been considered to be when an auditor possesses the required abilities to execute her (or his) auditing tasks appropriately without requiring any further support than what is already provided by the audit.

In the initial reasoning of this chapter, I observed that auditing is not only the basis for increased innovativeness but it also requires auditors to possess a certain degree of auditor maturity to be able to execute the auditing process. Another consequence of working with auditor maturity like this is that the audit and auditor maturity together could be considered to form a joint unit of auditing capacity. The aggregated auditing capacity would therefore consist of auditor ability in combination with auditing support provided by the audit in analogy with the reasoning by Biazzo & Bernardi and Panizzolo et al. (Biazzo. & Bernardi. 2002; Panazzolo et al., 2010).

The combined auditing capacity would then determine how complex auditing tasks the auditor would be able to execute (a complex auditing task where the level of complexity is reduced by explicit judgement criteria would make the auditing less demanding in terms of required auditor maturity). All auditor-related shortcomings that are not adequately compensated by the support provided by the audit would then affect the execution of the auditing process.

As already discussed in chapter 2 the question of what auditing tasks should be considered as part of the auditing process has been crucial for the analysis. This has been essential when analysing whether the auditors have had the required abilities to perform their auditing tasks in a satisfactory manner. Two choices came to form the basis for the analysis: the division of
the audit process into three phases (pre-assessment, assessment and post-assessment) and that I let the will and intention of the audited company determine whether an activity should be considered to be an auditing task or not.

These choices have enabled me to structure the findings and previous research in a way that, of course, is far from covering “it all” but indicates a pattern that forms a basis for discussion. If one starts in the process phases it is rather obvious that most audits have their main focus in the assessment phase. It is generally regarded as being more difficult to deduce what assessment activities are included in the pre- and post-assessment phases since there is often an implicit indication that the audit purpose also requires not directly mentioned auditing tasks. Approaching it this way makes it rather evident that both the priming and value-raising part of the process is lacking in explicit support in most audit tools, not all of course, but even if more contemporary audits address larger parts of the process the detail of the explicit support in the audits is still more focused on the assessment phase.

![Figure 5.3 Auditing process phases](image)

The consequences of the shortcomings were most obvious in the post-assessment phase since they often actually prevented the process from progressing. But even if the auditors were supported enough to execute their auditing tasks in the assessment phase it turned out that there was a lack of support for reflection over the results in such a way that the negative reliability could be turned into a learning and developing situation. In line with the MINT process described by Nilsson et al. (2012) the analysis indicates that there also exists a form of shorter re-assessment loops within the context of the main process (at least in the post-assessment phase). These are shorter assessment loops based on the audited organisations’ desire to assess and monitor how activities within the overall auditing process progresses. These shorter assessment loops too were shown to be affected by shortcomings in auditor maturity needs as well to be considered as part of the auditing process tasks.

![Figure 5.4 Re-assessment loops](image)

A variety of shortcomings have been identified in the data and I undoubtedly find it likely that further shortcomings would be identified if additional material were analysed or further studies were made. The shortcomings are sometimes of a very fundamental character (lack of understanding) and at other times take more symptomatic expressions (inability to correlate
activities and outcomes). All these expressions of shortcomings can be clustered but also reconfigured in a variety of ways that in a more or less detailed way distinguishes them from one another in different ways.

In analogy with the field of innovation auditing a high level of detail can sometimes be motivated by special requirements but at other times only causes fragmentation that makes the whole hard to grasp. But most of all I think it is important to remember that any category or any best practice is only valid in relation to its purpose and has a limited frame of e.g. time within which it is useful owing to the dynamic nature of innovation. Since my research questions do not request a certain level of detail I think a meta-level clustering of the characteristic features of auditor maturity that affects the audit process is of greater relevance than a more detailed one. But as mentioned above it is of course possible to re-configure these to better fit other purposes.

5.3 Revisiting the research questions

Two unifying research questions were formulated to guide the fulfillment of this thesis. The first question, What types of shortcomings in the audit process are influenced by deficient auditor maturity?, aimed at guiding the research towards a better understanding of what auditor abilities there are that affect the audit process. This was done by seeking to identify flaws in the execution of the audit process that as a whole, or in part, was due to inadequate audit maturity of the individual auditor.

Several shortcomings were identified that were considered as being related to the auditor’s insufficient abilities to perform their auditing tasks in a satisfactory manner using only the support provided by the audit. It was concluded that the identified shortcomings can be clustered in both types of shortcomings owing to their characteristics: Conceptual, Contextual, Auditor interactional, Strategic and operational, Adaption (header table 5.1) but can also be seen as types related to what is audited (assessment area and current state), who is auditing (perceived divergence) and how to audit (contextualisation and causal relations).

The second question, What are the consequences of these shortcomings on the auditing process?, aimed at guiding the research towards a better understanding of how auditor’s insufficient abilities to execute their auditing tasks without further support affects the execution and progression of the auditing process.

Insufficient abilities to execute the audit process were shown to have consequences on the results of the auditing process in both the short- and long-term perspectives. It can further be concluded that the consequences of deficient auditing maturity stretched far beyond the explicitly specified audit content. The consequences were shown to impact both the direct assessment results and implementation of actions built upon these results, and also on strategising and organisational involvement much further down the audit process than what was specified in the audit. Finally, deficient auditor maturity not only risked negatively affecting the reliability and quality of the auditing results, but also prevented the actual execution of the progression of the auditing process.

5.4 Research contributions

The overall aim of this research has been to contribute to increased understanding of how innovation audits could better be used as tools for both industrial and academic use by development of the knowledge of how the audit process is impacted by the ability of internal auditors to execute their audit tasks.
5.4.1 Scientific contribution

Previous research in the innovation audit area is mainly focused on the audit tool and to some extent the auditing process. This research complements previous research by extending the research of e.g. Panizolo et al and Biazzo and Bernardi, focusing on the auditor as an internal executor of the audit. This research contributes to the body of existing knowledge by discussing what the innovation audit process includes and how the capacity to audit could be seen as a joint capacity, constituted by the ability of the individual auditor and the support provided by the audit.

By answering the research questions, this research has highlighted the need to take into consideration auditor maturity, the audit-provided support and the impact these have on audit results when using audits to assess innovation. The identified deficiencies can very well be seen as opportunities to further develop the auditing as an academic tool that can help to better understand innovative organisations and how to support organisational progression within the area.

5.4.2 Practical contribution

This research has shown that auditor maturity of single auditors impacts the audit process and therefore needs to be taken into consideration when using auditing tools that contains elements of self-assessment. By answering the two research questions this research has practically highlighted the importance of managing and reflecting upon the auditor and the auditor’s role in auditing throughout the entire auditing process. It also encourages an approach to innovation auditing as a process for progression and increased organisational innovativeness. In its practical application, it is therefore important to highlight that the auditing tasks that the auditors need to be able to execute might not be specified and directly supported in the auditing tool. When using innovation audits it is vital to understand that the auditor requirements vary over the auditing process and need to be considered, managed, supported and handled differently in different phases of the process.

In the process of writing this thesis I was asked if it would be possible to condense this research into a bullet list of hands-on advice for the practitioner. Of course – so here it is, the bullet list of my research in 7 bullets.

Before starting up the auditing, even before choosing the audit to use - consider the first three bullets in the list and make sure that you pay attention to these questions even if you have engaged someone externally to take care of the auditing for you.

- **Audit, Auditor & Auditing** – These are three perspectives that need to be addressed since they will affect the value you create by using an innovation audit: the audit is the tool used, the auditors are the persons who execute the auditing tasks and auditing is the process of executing all three phases of the audit (see next bullet).

- **Process** – The audit process can be divided into three phases that all need to be considered and managed: the pre-assessment phase that contains the assessment preparations, the assessment phase, where the assessments are conducted and the post-assessment phase, where the results of the assessment are interpreted and transformed into valuables.

- **Purpose** – Always ask yourself what is the purpose in auditing your organisation - and give that question time. Ask yourself “What do we want to achieve by auditing our organisation”? Is it to assess whether you are progressing, to visualise the effects of innovation investments, to determine the current state, involve more of the organisation in innovation, build innovation capabilities, risk reduction …?
Now, keep the considerations from above in mind, when it is time to choose an audit, prepare for its use and assess its creation. The following bullets can be used to guide you through the preparation of your auditing. You can use them either to reflect on your own or as a basis for discussions if an external audit provider is engaged to prepare the audit process for you.

- **Audit** - Select a tool that fits your purpose and supports you through the audit process. It might sound a bit too obvious, but believe me – it is not.
  - What audit focus (what to audit) fits your audit purpose?
  - Does the audit provide sufficient detail on “what to audit” to support the auditors in their auditing tasks (in all phases)?
  - Does it cover all the phases of the process that you must undertake to achieve what you aim for?

- **Auditor** – Even though the auditor is the one that actually does the auditing, the doing, the “who to” is sometimes not even mentioned in the audit.
  - Are you using internal auditors, external auditors, or a mix of both?
  - Will the same auditors be used throughout the process? (Probably not.)
  - Do the auditors have the required abilities to execute their auditing tasks?

- **Auditing** – “How to” is often not very well described and offers a much weaker auditor support than what is provided in terms of “what to” audit.
  - Is the execution, the “how to”, of all audit phases sufficiently described to match the abilities of the auditors throughout all audit phases?
  - How do the auditors execute the auditing? Individually or in a group of auditors?

The answers to these questions are not always obvious and many audits leave several of them unaddressed. The most important point, in my opinion, might not be to find the answers to all these questions but rather to build awareness and reflect. Good luck with your auditing!

5.5 Future research

To my surprise the most interesting part of the work with this thesis has been the use of the divided perspective of the audit process and to consider existing research from these sub-perspectives. By discussing the auditing process as assessment-related phases and highlighting the perspectives of audit, auditor and auditing the audit process has revealed several opportunities for future research.

The interplay and interactivity between these perspectives - the audit, the auditor and the auditing - provides in itself an interesting research opportunity. But they become even more interesting and relevant in the pre- and post-assessment phases that are less researched than the assessment phase. The post-assessment phase interests me the most since it is in this phase that the assessment results are transformed into values for the audited. This is the phase where the assessed should gain leverage from the assessments conducted. Since almost all audits implicitly or explicitly aim to support progression and development, research in this phase is not only very relevant but also a important contribution to current research. Starting from the lack of a balanced interaction between tool support, executor ability and execution process this phase provides room for research that aims to support the progression of the audited.

Based on the above I suggest future research in which the interplay between the tool, the execution process and the auditor is studied with a focus on how they can be balanced to support the learning and reflection process of the audited organisation. This is still a wide
scope in a highly fragmented field and will therefore need to be further delimited to contribute in a trustworthy way. Therefore I further suggest that this interplay and balance is used as a framework to enhance more specific audit process elements such as the maturity of the audited or internal auditors, action plan development or organisational integration.

In parallel to this rather directly applicable area of future research I think it is also very interesting to lift the discussion to a higher level and conduct future studies from the perspective of the purpose of innovation auditing. Current audit literature has often both implicit and unmet purposes or very ambitious purposes that are only to a limited extent supported from the auditor and auditing perspective.

Independently of individual interest the area provides good opportunities for interesting and relevant research. Just the post-assessment phase alone provides an unlimited number of interesting and valuable opportunities for future research, from both the academic and the industrial perspective.
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APPENDIX A – Audit statements

Original audit translated to Swedish (Appendix B) and used in case study A, data collection A with participants from both company A and B.
Source: Managing Innovation, Tidd & Bessant (2009)

1. People have a clear idea of how innovation can help us compete.
2. We have processes in place to help us manage new product development effectively from idea to launch.
3. Our organization structure does not stifle innovation but helps it to happen.
4. There is a strong commitment to training and development of people.
5. We have good “win-win” relationships with our suppliers.
6. Our innovation strategy is clearly communicated so everyone knows the targets for improvement.
7. Our innovation projects are usually completed on time and within budget.
8. People work well together across departmental boundaries.
9. We take time to review our projects to improve our performance next time.
10. We are good at understanding the needs of our customers/end users.
11. People know what our distinctive competence is – what gives us a competitive edge.
12. We have effective mechanisms to make sure everyone (not just marketing) understands customer needs.
13. People are involved in suggesting ideas for improvements to products or processes.
14. We work well with universities and other research centers to help us develop our knowledge.
15. We learn from our mistakes.
16. We look ahead in a structured way (using forecasting tools and techniques) to try and imagine future threats and opportunities.
17. We have effective mechanisms for managing process change from idea through to successful implementation.
18. Our structure helps us to take decisions rapidly.
19. We work closely with our customers in exploring and developing new concepts.
20. We systematically compare our products and processes with other firms.
21. Our top team have a shared vision of how the company will develop through innovation.
22. We systematically search for new products ideas.
23. Communication is effective and works top-down, bottom-up and across the organization.
24. We collaborate with other firms to develop new products or processes.
25. We meet and share experiences with other firms to help us learn.
26. There is top management commitment and support for innovation.
27. We have mechanism in place to ensure early involvement of all departments in developing new products/processes.
28. Our reward and recognition system supports innovation.
29. We try to develop external network of people who can help us, e.g., with special knowledge.
30. We are good at capturing what we had learned so that others in the organization can make use of it.
31. We have processes in place to review new technological or market developments and what they mean for our firm’s strategy.
32. We have a clear system for choosing innovation projects.
33. We have a supportive climate for new ideas – people don’t have to leave the organization to make them happen.
34. We work closely with the local and national education system to communicate our needs for skills.
35. We are good at learning from other organizations.
36. There is a clear link between the innovation projects we carry out and the overall strategy of the business.
37. There is sufficient flexibility in our system for product development to allow small “fast-track” projects to happen.
38. We work well as a team.
39. We work closely with “lead users” to develop innovative new products and services.
40. We use measurement to help identify where and when we can improve our innovation management.
APPENDIX B – Audit statements in Swedish

Audit statements translated to Swedish used in case study A, data collection A with participants from both company A and B.
Source of original audit: Managing Innovation, Tidd & Bessant (2009)

1. Vi i vår organisation förstår hur innovationer gör oss mer konkurrenskraftiga.
2. I vår organisation finns etablerade processer som stödjer oss i arbetet med att effektivt utveckla nya produkter från idé till lansering.
3. Vår organisationsstruktur är inte ett innovationshinder utan bidrar till att nya innovationer kommer fram.
4. I vår organisation finns ett starkt åtagande avseende utbildning och utveckling av oss som arbetar här.
5. Vår organisation har goda "win-win" förhållanden till våra leverantörer.
6. Vår organisation har en innovationsstrategi som är tydligt kommunicerad så att alla känner till förbättringsmålen.
7. Innovationsprojekten i vår organisation avslutas vanligtvis i tid och inom ramen för lagd budget.
8. I vår organisation arbetar vi väl tillsammans över avdelningsgränserna.
9. I vår organisation tar vi oss tid att gå igenom och granska våra projekt för att kunna prestera bättre nästa gång.
10. Vi i vår organisation är duktiga på att förstå behoven hos våra kunder och slutanvändare.
11. I vår organisation vet vad som är karaktäriserande för vår kompetens - vad det är som ger oss vår konkurrensmässiga skärpa.
12. I vår organisation har vi effektiva mekanismer som försäkrar oss om att alla (inte bara försäljning) förstår kundernas behov.
13. I vår organisation involverar vi oss genom att föreslå förbättringar avseende produkter och processer.
15. I vår organisation lär vi av våra missnag.
16. I vår organisation ser vi framåt på ett strukturerat vis (använder verktyg och tekniker för förutsägelser och trendanalys) för att försöka föreställa oss framtida hot och möjligheter.
17. I vår organisation har vi effektiva mekanismer för att leda processförändringar från idé till framgångsrik implementering.
18. Strukturen i vår organisation hjälper oss att fatta snabba beslut.
19. I vår organisation arbetar vi nära våra kunder då vi utvecklar och utforskar nya koncept.
20. I vår organisation jämför vi systematiskt våra produkter och processer med andra företags processer och produkter.
21. Ledningsteamet i vår organisation har en delad vision av hur företaget ska utvecklas med hjälp av innovation.
22. I vår organisation söker vi systematiskt efter nya produktidéer.
23. I vår organisation har vi en effektiv kommunikation som fungerar uppifrån – ner, nerrifrån -upp, och tvärs över organisationen.
24. I vår organisation samarbetar vi med andra företag för att utveckla nya produkter/processer.
25. För att underlätta lärandet, träffar och utbyter vi erfarenheter med andra företag.
26. Ledningstoppen i vår organisation är engagerad och stödjer innovation.
27. I vår organisation finns mekanismer som säkrar tidig delaktighet från alla avdelningar vid utveckling av nya produkter/processer.
28. Vår organisation har ett belönings- och erkännandesystem som stödjer innovation.
29. I vår organisation försöker vi att utveckla externa nätverk med människor som kan hjälpa oss med t.ex. specialistkunskap.
30. I vår organisation är vi bra på att ta in vad vi lärt oss så att andra i organisationen kan dra nytta av det.
31. Vi har processer på plats i vår organisation för att överblicka ny teknologi eller marknadsutveckling och vad de betyder för vår firmas strategi.
32. I vår organisation har vi ett tydligt system för att välja innovationsprojekt.
33. I vår organisation har vi ett klimat som stödjer nya idéer – vi behöver inte lämna organisationen för att realisera våra idéer.
34. Vi i vår organisation arbetar nära det lokala och nationella utbildningssystemet för att kommunicera vårt behov av kunskap.
35. I vår organisation är vi bra på att lära av andra organisationer.
36. Det finns en klar länk mellan de innovationsprojekt vi genomför och organisationens övergripande strategi.
37. Flexibiliteten i vår organisation är tillräcklig för att vårt produktutvecklings system ska tillåta små ”snabbspårsprojekt”.
38. I vår organisation arbetar vi bra i team.
39. Vi i vår organisation arbetar nära de avancerade, ledande och drivande användare för att utveckla nya produkter och services.
40. I vår organisation har vi mätverktyg för att identifiera var och när vi kan förbättra vår innovationsledning.
APPENDIX C – Audit statements rephrased to a “how perspective”

Interview questions based on audit statements rephrased to a “how perspective” used in case study A, data collection B with participants from both company A and B.

Source of original audit: Managing Innovation, Tidd & Bessant (2009)

1. Hur gör innovationer er organisation mer konkurrenskraftiga?
2. Hur stödjer de etablerade processerna er i arbetet med att utveckla nya produkter från idé till lansering?
3. Hur bidrar organisationsstrukturken till att nya innovationer kommer fram?
4. Hur utbildas och utvecklas ni i er organisation?
5. Hur arbetar er organisation tillsammans med era leverantörer?
6. Hur kommuniceras er organisations innovationsstrategi och era förbättrings mål?
7. Hur gör ni i er organisation för att era innovationsprojekt ska bli klara inom lagd tids och budgetram.
8. Hur arbetar ni i er organisation över avdelningsgränserna?
9. Hur använder ni i er organisation sig av erfarenhet från genomförda projekt för att förbättra kommande projekt?
10. Hur skapar ni i er organisation förståelse för behoven hos kunder och slutanvändare?
11. Hur vet människor i er organisation vad som är karaktäriserande för er kompetens - vad det är som ger er konkurrensmässiga skärpa.
12. Hur gör ni i er organisation för att all (inte bara försäljning) ska förstå kundens behov.
13. Hur kommer förbättringsidéer avseende produkter och processer fram?
14. Hur samarbetar ni i er organisation med universitet och andra forskningscenter?
15. Hur lär ni i er organisation sig av era misstag?
16. Hur gör ni i er organisation för att försöka föreställa er framtidiga möjligheter och hot?
17. Hur ser ledarsskapet ut från idé till framgångsrik implementering vad gäller processförändringar?
18. Hur hjälper strukturen er att fatta snabba beslut?
19. Hur samarbetar ni i er organisation med er kunder i utvecklingen och utforskandet av nya koncept?
20. Hur jämför ni i er organisation era produkter och processer med andra företags processer och produkter?
21. Hur ser ledningsgruppens vision ut avseende hur företaget ska utvecklas med hjälp av innovation?
22. Hur söker ni i er organisation efter nya produktidéer?
23. Hur ser kommunikationen inom er organisation ut?
24. Hur samarbetar ni i er organisation med andra företag för att utveckla nya produkter/processer?
25. Hur lähr och delar ni i er organisation erfarenheter med andra företag?
26. Hur visar ledningsgruppen sitt engagemang och innovationsstöd?
27. Hur skapar ni i er organisation delaktighet från alla avdelningar vid utveckling av nya produkter/processer?

28. Hur får innovation belöning och erkännande?

29. Hur arbetar ni i er organisation med externa nätverk av människor som kan bidra med t ex specialistkunskap?

30. Hur sprider ni i er organisation lärdomar inom organisationen?

31. Hur överblickar ni i er organisation ny teknologi och marknadens utveckling och vad betyder det för ert företags strategi?

32. Hur väljer ni i er organisation innovationsprojekt?

33. Hur stödjer arbetsklimatet nya idéer?

34. Hur samarbetar ni i er organisation med och kommunicrar ert kunskapsbehov till det lokala och nationella utbildningssystemet?

35. Hur lär ni i er organisation sig av andra organisationer?

36. Hur hängerer organisations innovationsprojekt samman med verksamhetens övergripande strategi?

37. Hur ser flexibiliteten i er organisations produktutvecklingssystem ut när det gäller små ”snabbspårsprojekt”.

38. Hur arbetar ni i er organisation i team?

39. Hur arbetar ni i er organisation med de avancerade, ledande och drivande användarna för att utveckla nya produkter och tjänster?

40. Hur identifierar ni i er organisation sådant som kan förbättra er innovationsledning?
APPENDIX D – Workshop series questioner

Questions given at four workshops. Study A, data collection C with three participating groups from both company A and B.

Workshop 1 - Search
Frågor till båda I-grupperna
1. Vem uppmanar er att söka möjligheter till innovation
2. Vad uppmanas ni att söka efter för sorts innovationsmöjligheter
3. När uppmanas ni att söka efter möjligheter till innovation? (inte när ni blir uppmanade utan när ni blir uppmanade att…)
4. Var uppmanas ni att söka efter möjligheter till innovation?

Frågor till M-gruppen.
1. Vem uppmanar ni att söka möjligheter till innovation
2. Vad uppmanar ni dem att söka efter för sorts innovationsmöjligheter?
3. När uppmanas de att söka efter möjligheter till innovation? (inte när de blir uppmanade utan när de blir uppmanade att…)
4. Var uppmanas de att söka efter möjligheter till innovation?

Workshop 2 - Select
Frågor till samtliga grupper.
1. Vem väljer vilka innovationsmöjligheter som ska drivas vidare som innovationsprojekt?
2. Vad använder ni för beslutsunderlag när ni väljer vilka möjligheter till innovation som ska drivas vidare som innovationsprojekt?
3. När väljer ni att en möjlighet till innovation ska drivas vidare som ett innovationsprojekt?
4. På vilka grunder avslutar ni pågående innovationsprojekt?

Workshop 3 - Implement
Frågor till samtliga grupper.
1. Finns avsatt tid för fritt arbete utanför pågående och ordinarie arbete?
2. Finns det i ert företag mål för hur stor del av avkastning som kommer från produkter, services eller annat som lanserats under en viss tidsperiod.
   a. Om det finns: vilket tidsintervall använder ni er av, vilket mål har ni och vad använder ni för mätvariabler?
   b. Om det inte finns: mäter ni ändå andelen avkastning eller liknande som kommer från lanseringar gjorda under en viss tidsperiod och I så fall vilka mätvariabler använder ni?
3. Lista 8 succé drivare som du anser vara av avgörande betydelse då ni lanserar något nytt på marknaden.
4. Arbetar ni med medveten service utveckling i ert företag?
   a. Vilka services erbjuder ni era kunder och hur mäter ni era serviceintäkter?

Workshop 4 - Capture
Frågor till samtliga grupper.
1. Vad utvärderar/följer ni för att lära av ett genomfört innovationsprojekt?
2. Vad gör ni för att försäkra er om att erfarenheten från ett innovationsprojekt omvandlas till kunskap i organisationen?
3. Hur överför ni kunskap från individnivå till grupp- och organisationsnivå?
4. Hur arbetar ni för att försäkra er om att dokumenterad information omvandlas till kunskap?