WORKING PAPER

The imitation behaviors of junior auditors: Does it enhance or hamper audit quality?

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KEY TAKE-AWAYS

Imitation of senior auditors might be a valuable strategy for juniors to learn on-the-job and improve their performance. In this paper, the research team experimentally examines how a senior auditor's working style (high diligence vs. low diligence) interacts with the nature of the audit firm's promotion system (superior-based vs. consensus-based) to influence junior auditor judgment by affecting junior auditors' imitation behavior.

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FOUNDATION FOR AUDITING RESEARCH

Imitation behavior of junior auditors:

Does it enhance or hamper audit quality?

Abstract: Imitation of senior auditors might be a valuable strategy for juniors to learn on-the-job and improve their performance. In this paper, we experimentally examine how a senior auditor's working style (high diligence vs. low diligence) interacts with the nature of the audit firm's promotion system (superior-based vs. consensus-based) to influence junior auditor judgment by affecting junior auditors' imitation behavior. Our results show that the level of imitation is higher when junior auditors face a diligent auditor compared to a less diligent auditor, and this difference is more pronounced when the superior has a decisive voice in the promotion. However, such imitation does not generally improve audit quality. On the contrary, imitation deteriorates audit quality, specifically, when juniors imitate less diligent exemplars. Subsequent analysis shows that imitating a high diligent superior yields a positive impact on audit quality only when junior auditors are sufficiently familiar with and knowledgeable about the task.

Keywords: Imitation, Audit Quality, Promotion Incentives, Junior-Senior Auditor Relation.

I. INTRODUCTION

We examine how a senior auditor's working style (high diligence vs. low diligence) interacts with the nature of the firm's promotion system (superior-based vs. consensus-based) to influence junior auditor imitation. While auditing research has extensively focused on the way auditors inform their decisions (see Nelson and Tan 2005 for an overview), the literature on the role of imitation is limited and mainly anecdotical. Westermann et al. (2015), for example, indicate that copying or transferring ideas and practices from senior auditors can be an effective way for junior auditors to learn the "craft" of auditing. Similarly, Cannon (2016) argues that it is only natural for junior auditors to start their auditing careers by mimicking more senior colleagues in performing similar tasks. While junior auditors may view senior auditors as role models or experts to learn from following their example, we however know little about whether and when junior auditors tend to imitate their superiors[1] and how this affects their judgment.

In this study, we address the question of whether selective imitation exists on the part of the junior auditors. That is, do junior auditors choose to imitate only those superiors judged to be "good" while avoiding following "bad" examples? Based on sociological explanations for imitation, selective imitation cannot be readily assumed. If superiors in their authority position provide the model of how junior auditors *should* act in their professional role, and juniors would rely on their superior to infer norms of what constitutes appropriate or legitimate behavior (Dirsmith and Covaleski 1985), one can generally expect the junior auditor to follow their superiors' lead. Recent research also recognizes that "juniors have every reason to follow the example set by the superior who is their performance supervisor and rater" to establish a good reputation and to enhance their career opportunities within the firm (Emby et al. 2019). When such pressures are strong, imitation may occur even when it is not always desirable, meaning

[1] Senior and superior are used interchangeably in this article.

that "good" or "bad" examples are equally likely to be copied. This notion, however, seems inconsistent with two specific contextual and professional requirements that characterize the audit profession. First, as highlighted by audit standard setters, auditors should apply sufficient professional skepticism (e.g. IAASB 2018; IAESB 2018). Second, auditors are further held accountable towards both their internal and external stakeholders, such as clients, audit teams, superiors, and regulators (Koonce et al. 1995; Gibbins and Newton 1994; Peecher et al. 2013). Thus, auditors should be cognizant of the need to ensure that their judgments or decisions are justifiable (Tan and Shankar 2010). Therefore, even if auditors are generally prone to imitation, they likely will do so with some thoughtful consideration. More specifically, in this study, we propose that imitation does not happen blindly, irrespective of the superior's level of diligence.

The level of diligence between senior auditors can strongly vary due to profit or time pressure that senior auditors face (Bowlin et al. 2009; Knechel et al. 2013). We define a high diligent superior as a senior auditor who critically examines all available evidence and performs the necessary auditing steps according to regulation, before presenting the audit opinion. A low diligent superior, on the other hand, is a senior auditor who prioritizes efficiency in working and may overlook one or more pieces of evidence before presenting the audit opinion. In our theory, we advance two arguments for why a high diligent superior induces higher levels of junior auditor imitation, following the "good" example, compared to a low diligent superior.

First, the literature on subordinate-superior imitation suggest that model characteristics such as competence and credibility offer information about the appropriateness of imitation (e.g. Weiss 1977). To the extent that junior auditors assess the observed qualities of their role models carefully, as also indicated in Westermann et al. (2015), juniors may imitate selectively. Second, given that auditors must document sound justifications in their working papers (Shankar and Tan 2006), junior auditors may be more inclined to imitate the high diligent superior compared to the low diligent superior because the former is more likely to supply

various justifications supporting their conclusion. Thus, taken together, we predict that a high diligent superior induces higher levels of junior auditor imitation than a low diligent superior.

A further distinctive feature of superior-junior auditor relationships is that the superior can play an essential role in the future career trajectory and promotion opportunities of the junior auditor (Bol et al. 2018; Scandura and Viator 1994; Emby et al. 2019). In our study, we contrast promotion systems where the superior has a decisive voice in the junior auditor's promotion decision (i.e. superior-based promotion) with systems where the superior does not have such a decisive voice (i.e. consensus-based promotion). Research has suggested that power-dependence relations and reward expectancies can play an essential role in subordinate's imitative behavior (e.g. Weiss 1977). In particular, when the superior has high reward power, juniors may be more inclined to imitate. This power effect may induce auditors to imitate even "bad" examples because the justification pressure towards their direct superior and their own career concerns are weighted more heavily. However, if the junior auditor still applies sufficient skepticism, the promotion system may leave imitation of the low diligent superior unaffected, whereas imitation of the more diligent auditor can reasonably be expected to increase when the nature of the promotion system is superior-based as compared to consensus-based.

To test our theory, we conduct an experiment with junior auditors working at two Big 4 audit firms in the Netherlands. The junior auditors were expected to solve a complex audit case on fair value estimates (FVE) (Griffith 2014). Between subjects, we manipulated the superior's working style (high diligence vs. low diligence) and the nature of the junior auditor's promotion system (superior-based vs. consensus-based). We operationalized the superior's working style by sharing the working paper documentation of a prior fair value estimation case of a superior that junior auditors received for consultation. We operationalized the nature of the promotion system by describing a scenario where the junior was offered an opportunity for promotion in which the superior did or did not have a decisive voice. To assess participants' level of

imitation, we measured the extent to which they followed the same approach, working style, and audit opinion as their superior (direct measure/self-reported imitation). Answers regarding the fair values were used to measure the quality of the participants' audit judgment (Kadous and Zhou 2019; Griffith et al. 2015a). In the post-experimental questionnaire, we also recorded participants' backgrounds and personality traits that might have additional effects on the level of imitation.

As predicted, we find a significant interaction of the superior's working style and the nature of the promotion system on junior auditors' imitation. Specifically, when the superior is highly diligent, and the junior auditor is facing a superior-based promotion system, junior auditors are more likely to imitate. Moreover, we show that the effect of the promotion system is dependent on the level of diligence of the superior as we only observe a weak promotion effect for a high diligent and not a low diligent superior. The findings are encouraging in that junior auditors are not susceptible to blindly imitate a "bad" role model, even when being presented with promotion incentives.

The impact that this imitation has on audit quality is less straightforward. Our results show that in the few cases where junior auditors happen to imitate the low diligent superior, regardless of the nature of the promotion, it will result in significantly worse audit judgment. Surprisingly, even for the case where junior auditors imitate a high diligent superior, the audit quality does not necessarily improve. Further investigation shows that imitating a high diligent superior only renders a positive impact on audit quality when junior auditors are sufficiently familiar with the method of fair value estimates used in the task.

Our findings contribute both to academic research and practice. First, to our knowledge, we are the first to investigate the role of imitation in explaining auditor judgment. While in recent years, audit research pays increased attention to supervised on-the-job experience and learning and their effect on the development of specific work behaviors and attitudes (e.g.

Andiola et al. 2019; Westermann et al. 2015; Embly et al. 2019), research to date has not empirically investigated the role of imitation in shaping how junior auditors perform audits of complex estimates.

Second, with our research, we further aim to answer the following question: do junior auditors blindly follow their superior, or do they consider their superior's working style carefully?

This question is particularly relevant to study given the standard practice at many audit firms where senior auditors are sharing their working papers or document their working style to enhance knowledge development among junior auditors. Given that working styles can differ and, thus, not every superior may operate at equal standards (Jamal and Tan 2001; Tan and Libby 1997), it is imperative to understand whether and when imitation behavior occurs in the audit practice. Specifically, our findings demonstrate that not all superiors' working styles are equally influential. Rather than blindly following their superior, juniors tend to copy the working style of their superior more strongly when he or she shows a diligent working style.

Third, our findings complement emerging literature that examines how promotion policies within audit firms may influence individual auditor decisions (Knechel et al. 2013). We demonstrate that when exposed to a high diligent superior, junior auditors exhibit higher levels of imitation when this superior has a decisive influence on their opportunity to make a promotion, as compared to when this is not the case. However, junior auditors are not susceptible to imitate a low diligent superior, even when they know that his superior has a decisive voice in the junior's future promotion. This suggests that even though junior auditors face significant incentives to follow the "bad" example, they still uphold their skepticism, which is desirable in the audit practice. From a promotion design perspective, this would also mean that, while various management literatures advocate for consensus-based promotion systems, a superior-based system may still have its benefits.

Finally, our results can inform practitioners on how to improve junior auditors' learning, judgment, and decision making. Although we find that junior auditors are less likely to imitate the working style of a low diligent auditor, the subsequent analysis does show that imitation behavior towards a low diligent superior, regardless of promotion opportunity, deteriorates junior auditors' audit quality. Moreover, we find that the exemplar of a high diligent auditor solely is not sufficient to improve audit quality. This evidence is important since many junior auditors rely on their direct superior for guidance in performing complex audit tasks. As our results suggest, better audit judgment can only be achieved when junior auditors already possess adequate expertise before imitating a diligent senior auditor. Therefore, senior auditors that are tasked to mentor junior auditors should not only exhibit high levels of diligence, but should also proactively provide sufficient training to help junior auditors to understand the model and procedures, and to encourage critical thinking.

II. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

The challenges in auditing complex estimates are primarily attributed to the subjective and unobservable key assumptions that affect auditors' judgments regarding the estimates (e.g. PCAOB 2020). Determining sufficiency of the evidence, appropriation of valuation methods, and reasonableness of management assumptions of accounting estimates requires experiences to make logical judgments (e.g. Bratten et al. 2013; Cannon and Bedard 2017; Christensen et al. 2012). To support junior auditors in developing appropriate knowledge and skills, audit standard-setters and regulators (e.g. IAASB 2014; IAESB 2019) highlight the importance of on-the-job training and coaching by more senior auditors. Audit offices are also building knowledge databases in which working papers of colleagues are stored for consultation, and many juniors rely on their direct superior for guidance in performing complex audit tasks.

Prior research suggests that superiors can play a pivotal role in junior auditors' learning processes and junior auditors' judgments, which eventually have an effect on audit quality (e.g.

Andiola et al. 2019; Bol et al. 2018; DeFond and Zhang 2014; Emby et al. 2019; Francis 2011; Howieson et al. 2014; Peecher et al. 2010; Westermann et al. 2015). Yet, despite the increased concern with supervised on-the-job experience and knowledge development, little empirical research has been conducted on the occurrence and consequences of imitation when dealing with complex audit matters.

Junior Auditor Imitation

Consistent with Bandura (1971; 1977) and later applications of social learning theory on organizational behavior (e.g. Manz and Sims 1981; Weiss 1978), imitation can be defined as a learning process that occurs through emulation of salient role models. When environments are complex and dynamic, decision makers have to deal with large amounts of ambiguous information, and they use cognitive simplification processes to overcome uncertainty and conquer the information processing hurdle (Reger and Huff 1993; Schwenk 1984). In particular, they create cognitive categories or groups of individuals with relevant expertise or similarities and start to imitate the actions from these others belonging to that expert group or category (Gibson 2004). This notion translates well to the audit setting, given the clearly defined hierarchical structure of audit firms and the fact that auditors typically have a very structured set of social categories (Harding and Trotman 2009). It also brings in a social norms explanation for imitation suggesting that when individuals identify strongly with a social group (such as their direct superior or their senior colleagues), the behaviors of others in that group will have a significant influence on the observers' norms, and consequently their behaviors (see also Kedia et al. 2015). Individuals thus align their actions to an accepted reference point. The superior or senior auditor may in our case offer such a reference point to junior auditors[2]. That

[2] In recent years, accounting research also started to examine social influence pressures and their effect upon the development of specific work attitudes and behaviors. Studies show that accounting and audit professionals have a tendency to behave in a manner that is consistent with pressure from a superior, even if this behavior causes them to make decisions they would otherwise view as inappropriate (e.g. Brink et al. 2016; DeZoort and Lord 1994; Johnson et al. 2016; Lord and DeZoort 2001). However, obedience pressure and imitation behavior are two distinct phenomena, where the former involves direct cues or instructions from someone in authority, thus leaving little to

is, senior auditors are positioned to be a central source of information regarding role expectations, and juniors may come to accept the superior's behavior as the norm (Emby et al. 2019).

Institutional theories interpret such imitative behavior as a quest for legitimacy, where actions may be guided explicitly by what others in a position of authority say or do as a form of strategic behaviour to ensure future supports from them (Barreto and Baden-Fuller 2006). Legitimacy is a generalized perception or assumption that the actions of individuals are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions (Suchman 1995). Superiors or senior auditors can then act as legitimacy providers who are observers that have the status to assess the conformity of a junior auditor's behavior to their standards. Prior research on supervisory influence also indicates that subordinates are likely to mimic supervisors' behavior because supervisors interpret and make judgments about the behavior of their subordinates (e.g. Wimbush & Shepard 1994; Dineen et al. 2006). In other words, the behavior of supervisors provides the model for how subordinates *should* act in their professional roles.

The resulting imitation can be beneficial in the learning process of junior auditors as long as the superior provides a "good" example. Along these lines, prior research highlighted the positive side to auditors' social-learning behavior; that is, the dissemination of good auditing practices via superior-junior auditor interactions (e.g. Emby et al. 2019; Westermann et al. 2015). However, it can be problematic when junior auditors start to imitate in order to please or conform to the senior auditor's behavior without taking into account whether or not the senior sets the right example. In auditing, this tendency is likely fuelled by the fact that auditors expect to be and are accountable to their direct superior (Koonce et al. 1995; Turner 2001). Hence,

no room for self-choices, and the latter is the adoption in the absence of particular instructions (Bocchiaro and Zamperini 2012; Brehm and Kassin 1990; Zentall 2006). Thus, we cannot directly compare the two phenomena.

imitation could be a form of strategic behavior by junior auditors, recognizing that they care about how their superiors view them and that they have incentives to engage in impression-management activities and manage their reputations (Emby et al. 2019; Tan and Jamal 2006). This could particularly be the case if juniors want to assure future support from their superior, for example, when their promotion is being discussed. As a consequence, junior auditors could engage in imitative behavior even when this means adopting "bad" approaches, which then could come at the cost of lower audit quality.

In sum, while recent literature has hinted at the potential of junior auditor imitation in their interactions with their superior (e.g. Bol et al. 2018; Cannon 2016; Emby et al. 2019; Westermann et al. 2015), none of these studies have empirically tested to what extent and under which conditions junior auditors imitate their superiors when dealing with complex audit matters, and what the effect is on auditor judgment. We extend this line of research by examining whether there is selective imitation and the consequences thereof on audit quality.

Junior Auditor Imitation: The Effect of a High Diligent versus a Low Diligent Superior

The theoretical underpinnings of social learning theory and institutional theory suggest that junior auditors rely on inferences drawn from observing their superior's behaviors, primarily using their superior as reference in shaping their perceptions of norms about appropriate behaviors. In our context, this implies that the working style of junior auditors will reflect the approach and work ethics espoused by their immediate superior.

Nonetheless, we expect that in the audit setting, imitation in a junior-superior relationship does not occur unconditionally, without a meaningful evaluation of the role model being imitated. Building on Bandura's (1971; 1977) work, one can argue that the quality of the observed model influences the probability of observer imitating the modeled behavior. In particular, model characteristics such as competence and credibility provide information about the appropriateness of imitation and, hence, the likelihood of the observer receiving valued

outcomes for behaving similarly or expressing similar values (see also, Manz and Sims 1981; Weiss 1977; Weiss 1978). Along these lines, the evidence provided by Westermann et al. (2015) indicates the existence of "good" and "bad" role models, where auditors may be picky in imitating only those with desirable qualities. In a similar vein, we argue that the junior's perception of a superior's competence and diligence impacts the level of their imitative behavior. Specifically, since judgment justifiability is important in the audit setting (Kadous et al. 2013), auditors routinely assess the justifications that other auditors provide for their judgments, and they typically associate higher diligent auditors with better decision outcomes (Emby and Gibbins 1988; Davis and Solomon 1989; Kennedy et al. 1997; Shankar and Tan 2006). The quality inferred from observing the superior's working style and working paper justification will thus allow for a conscious choice whether or not to imitate[3]. Therefore, we expect that junior auditors are more likely to imitate a superior that shows high diligence in his/her working style (i.e. a superior who critically examines all available evidence and performs the required auditing steps, before presenting audit opinion) than a superior that shows low diligence (i.e. a superior who prioritizes efficiency in working and, as such, may omit several audit procedures and overlook evidence before presenting the audit opinion).

Furthermore, an idiosyncratic characteristic of an auditor compared to other professions is the need to apply professional skepticism (IAASB 2018; IAESB 2018). From the start junior auditors are heavily trained on critical thinking and having a questioning mind (Hurtt 2010; Nelson 2009). IAASB (2018) even views professional skepticism as a trait that should "lie at the heart of quality audit." IAASB does not only encourage auditors to exercise professional

[3] A recent study by Bol et al. (2018) on the transfer of tacit knowledge argues otherwise. The study finds a positive association in superior-junior auditors' tacit knowledge development and attributes this to the latter's imitative behavior. While one may question why subordinates would model themselves after supervisors with lower tacit knowledge, they argue that many subordinates will not be equipped to assess their supervisors' tacit knowledge, such that modelling behavior takes place independent of the supervisors' level of tacit knowledge. It is further argued that knowledge transfer through social interactions often happens in the absence of intent, so subordinates might not even be conscious of their mimicking. However, in the context of our study, we propose that imitation involves a conscious assessment where junior auditors are able to discriminate between "good" and "bad" working styles, resulting in more selective imitation.

skepticism in examining evidence, risk identification, and quality of judgments made but also in the interactions among engagement partners and other members in the engagement team (e.g. IAASB 2012; 2014; 2015; 2019), including their superior. Based on the values of professional skepticism, juniors may thus engage in a careful evaluation of the modeled behavior. This further supports our expectation that junior auditors will be more likely to imitate superiors showing a high diligent working style than superiors showing a low diligent working style.

Junior Auditor Imitation: The Interaction of Promotion System and Superior's Working Style

Additionally, we recognize that junior auditors look upon their superiors as role models *and* as direct performance evaluators (Emby et al. 2019), and predict that the effect of the superior's working style is contingent on the promotion system. Prior research has argued that power-dependence relations and the superior's reward power, in particular, influence the extent of subordinate's imitative behavior (e.g. Weiss 1977). Reward power is conceptualized in prior work as the importance of the superior's opinion in determining whether or not the subordinate receives particular outcomes, including getting a promotion. The accounting literature further indicates that individuals tend to adopt positions consistent with evaluators' preferences (e.g. Cohen and Trompeter 1998; Gibbins and Newton 1994; Jamal and Tan 2000; Peecher 1996; Tan et al. 1997; Tan and Shankar 2010; Turner 2001; Wilks 2002).

Accordingly, we argue that the nature of promotion systems will play a role in the strength of imitative behavior. When the promotion-system is superior-based, junior auditors may perceive a higher superior's authority in their career trajectory, compared to when the promotion system is consensus-based where superiors have a less decisive voice. As a result, we expect conformity pressures due to the superior's reward power to be strong and junior auditors to be more likely to engage in mimetic behavior, so they adhere to the senior auditor's working style in the hope of getting promoted. The potential trade-off junior auditors then need

to make is that, while such imitation enables them to increase their probability of being promoted, the likelihood of promotion can be obtained at the expense of proper judgment when the junior auditor imitates the "bad" example.

At the same time, however, auditors have not only career advancement incentives but also incentives related to auditing standards that make their broader accountability salient (Gibbins and Newton 1994). Taking this into account, imitation may not only be driven by strategic legitimacy-based considerations out of self-interest, but also by moral legitimacy concerns about whether the exemplified behavior is the "right thing to do" (Suchman 1995). In the case of the low diligent superior, the focus on commercialism, for example, runs contrary to general norms related to the auditors' professional image and putative role in protecting the public interest (Westermann et al. 2015), which may withhold juniors from imitating.

Thus, since auditors, more than in every other professional context, understand that judgment justifiability, ethical behavior, and professional skepticism are critical for their judgment and future reputation, we predict that junior auditors who are exposed to a high diligent superior will respond positively to promotion incentives, resulting in stronger imitative behavior. In contrast, junior auditors facing a low diligent superior will be less likely to do so if imitation happens consciously and juniors apply proper diligence in performing their task. In other words, the superior's working style and the nature of promotion system interact in such a way that the presence of promotion incentives only induces a higher level of imitative behavior in the presence of a high diligent superior, but not in case of a low diligent superior.

H1: Junior auditor imitation will be higher (lower) when a junior auditor faces a high (low) diligent superior and operates under a superior-based promotion system rather than under a consensus-based promotion system.

Junior Auditor Judgment: The Interaction of Promotion System and Superior's Working Style

In addition to hypothesizing that the superior's working style and nature of the promotion systems will interact to associate with junior auditor imitation, we also propose that this interaction will be positively related to junior auditor judgment. This prediction is consistent with research that looks at how senior-junior-relationships impact audit judgment, which posits that experienced auditors who possess higher (lower) knowledge provide their subordinates with richer (less) opportunities to develop their knowledge, leading to higher (lower) audit quality (e.g. Bol et al. 2018; DeFond and Zhang 2014; Francis 2011; Howieson et al. 2014; Westermann et al. 2015). We propose that the positive effect of high superior diligence is further increased by superior-based promotion.

> **H2:** Audit quality will be higher (lower) when a junior auditor faces a high (low) diligent superior and operates under a superior-based promotion system rather than under a consensus-based promotion system.

Exploring the Effects of Junior Auditor Imitation on Auditor Quality

Based on our theory above, we propose that junior auditors' imitation is mostly the result of a conscious assessment, which results in selective imitation. That is to say, junior auditors will be more likely to imitate the high diligent superior than the low diligent superior. They will learn from the "good" practice and be able to justify their own opinion more easily since the diligent superior is more critical and more elaborate in his/her audit opinion when performing similar tasks. In this case, junior auditors' judgment will improve as the level of imitating the good example increases. If imitation still occurs when paired with a superior who exhibits a low diligent working style, junior auditors may start to copy elements that may hamper the audit quality. For example, when mimicking the low diligence superior, junior auditors will apply a less rigorous testing attitude and will spend less time in examining all

evidence that is necessary to come to a solid judgment. Consequently, copying or imitating elements of such a low diligent working style may deteriorate the quality of the junior auditor. Therefore, we may argue that the higher the level of imitation towards a superior with a low (high) diligent working style, the lower (higher) audit quality.

However, we further wonder to which extent mimicking the diligent superior will always lead to improved auditor quality, in particular, when taking into account the complex tasks auditors often encounter. Cszasar and Siggelkow (2010), for example, found that it is also important to consider the breadth of imitation when exploring performance consequences in complex environments. Primarily when firms and their managers operate in a different context, imitation is likely to lead to performance penalties. Moreover, this effect tends to be larger, the larger the breadth of imitation. This assumption may also hold in an auditing context, where most cases are complex and where no case is identical (Griffith et al. 2015b; Knechel et al. 2013). Precisely copying every aspect of the working paper of the senior auditor may then be dangerous as imitation not only fails to import valuable (other) practices but also fails to create a variety of new ideas. These various possibilities lead us to test in a more exploratory way how junior auditor imitation affects audit quality under different working styles.

RQ: Does audit quality enhance or deteriorate with higher levels of imitation?

III. EXPERIMENTAL DESIGN AND METHOD

The participants were asked to solve a case of fair-value estimates (FVE) for a business unit of a company, in which we provided a general overview of the company, key financials, a discounted free cash flow analysis, and a management memo clarifying the assumptions related to the valuation of the FVE. We adopted the methodology and case study from existing studies by Kadous and Zhou (2019) and Griffith (2014). We enclose the experiment materials in the Appendix. We used a full factorial two-by-two between-subjects design. We manipulate superior's working style as high versus low diligent working style, and nature of promotion

system as either a superior-based versus consensus-based promotion system. To operationalize the superior's working style, we provided an example of a working paper of the superior for a related business unit, which has slightly different operations. Superior past working papers are usually available for juniors to consult in many audit firms and may offer room for imitation behavior. Next, we manipulated the nature of the promotion system by stating who determined their eligibility for promotion. To assess participants' level of imitation, we measured the extent to which they followed the same approach, working style, and audit opinion as their superior.

Participants and procedures

The participants of this experiment were junior auditors from two Big 4 firms in the Netherlands. We conducted the experiment in a paper-pencil format at major in-house training days. In total, 143 auditors participated in the experiment[4]. The experiment was run in 8 different sessions. Each session consisted of 13 to 30 auditors. In total, 35-37 participants represented each treatment group. To check the participants' understanding, we asked a simple question related to the industry in which our case company was active (i.e. automobile). Out of 143 participants, 4 participants answered this question incorrectly. Another participant provided more than ten missing answers in the questionnaire. When excluding these five participants, the total number of valid responses is equal to 138. We will use the responses from 138 participants for subsequent analysis. Demographic information (n=138) shows that our participant pool is still at a junior level. Participants are 26.99 years old on average, consist of 65.94% male and 31.88% female[5]. 85.51% of the participants originate from the Netherlands, and 90.58% hold a Master's degree or higher. About 96.34 % of participants have less than 6 years of work experience, with the majority of them having between 3-4 years of experience (63.76%). Besides, the majority (83.33%) of participants have only affiliated with one audit firm, the audit

[4] There were 146 auditors attended the sessions, however, 3 of them have decided not to participate in the experiment by not giving their consents.
[5] 2.17% of the participants refuse to disclose their genders.

firm they are currently working. Overall, we have a representative pool that allows us to offer a reliable test of our theory on how junior auditors imitate their senior colleagues.

One member of the author team was always present on the training day and instructed the participants to work individually and to fully concentrate on the case without talking to colleagues. We took care to measure variables as cleanly as possible comparable to in a lab experiment, whereby the key dependent variable was measured first before we collect any other information (e.g. mediators and process variables, demographics, and characteristics). To this end, we used a three-part procedure where each part was put into a separate envelope. Part 1 consisted of the case materials and initial exercise of evaluating the reasonableness of FVE. Part 2 consisted of the questions related to the likelihood of participants following the superior's working style. Part 3 consisted of participants' personal background questions and appraisal of the overall case materials. The participants received the envelopes in sequence and only received the next one when the previous one was completed[6]. The participants were given 45 minutes to solve all three envelopes.

Case Materials and Manipulations (part 1)

Case instructions suggested that participants would work in the role of junior auditors under a direct lead superior, named John Van Wijck. The case further described that their audit firm audited the financial statements for the year 2018 for their client Probe-IT. Probe-IT was a Dutch company specializing in assembling and producing electric cars and had two different strategic business units (SBUs), "Pure Electric" and "Hybrid". The company was already well-known to the audit firm as the client just signed for the second mandate. The case instructions mentioned that the values of the business unit are reported separately in the financial statements of the company. As their superior, John had previously evaluated the FVE of the company's

[6] Particularly, upon completion of an envelop, a participant would put his/her answers in the envelope and raised his or her hand to receive the next envelope.

Pure Electric SBU and his working paper was made available to participants. In the instructions, participants could further read that John, as their lead supervisor, made participants responsible for assessing the FVE of Hybrid SBU, which is different from the one John has assessed.

In order for our participants to conduct the task, we provided a management memo from the management of Probe-IT, which consists of calculation of Hybrid's FVE based on discounted cash flow and several underlying assumptions (i.e. the projections of future revenue, operating expenses, capital expenditure, discounted rate, taxation rate, long-term growth rate, and financing costs). In this memo, management concluded that no goodwill impairment needed to be made, given that FVE exceeded the book value of equity. Additionally, we also provided an overview of key financials of both SBUs in the year 2018 and John's working paper of Pure Electric SBU's FVE evaluation for the same year. Within the case descriptions, we manipulated the superior working style (via documentation of working papers) and the nature of promotion system. To increase external validity, we developed and validated the case materials based on interviews with a senior auditor at one of the Big 4 companies.

Superior's Working Style Manipulation

In all treatment conditions, we provided a brief overview of the superior's working style (variable: *Superior*) that resulted in different methods and conclusions based on the provided working paper. The superior John was described as a person with authority in the organization. In the low diligent case, he was described as a superior well-known for his capability to keep engagement within budget and work very efficiently, with quick, decisive action in completing his tasks. However, the audit procedures in the provided working paper of Pure Electric SBU consisted of several omitted steps under ISA 540. For instance, the working paper excluded the evaluation of the assumption of the discount rate and taxation rate in management valuation analysis. Also, less extensive testing was done for projected revenues. Besides, several other steps were not done very meticulously. As a result, the low diligent superior concluded that no

goodwill impairment needed to be made for Pure Electric SBU. On the other hand, in the high diligent superior case, John was described as someone who performed his tasks very carefully, critically examined available evidence, and strove to gather sufficient support before reaching his conclusions. The audit procedures in his working paper of Pure Electric SBU depicted more thorough steps and detailed analysis, which eventually led to the conclusion that a goodwill impairment was required for the pure electric division. While the working paper offered some guidance, it is important that the junior evaluates the "Hybrid" division, which has a different set of underlying assumptions[7].

The Nature of Promotion System Manipulation

The manipulation of the nature of promotion system (variable: *Promotion*) was done via narrative descriptions in the audit case. In both treatment groups, the superior expressed that "… this engagement constitutes a real opportunity to demonstrate your working style … and you have been made aware of your eligibility for promotion. In this regard, leaving a good impression is important." However, within the descriptions, we varied the extent to which the direct superior has a decisive voice in the promotion decision. In the setting of *superior-based promotion*, it was further stated, "As part of your review process, you know that a promotion is determined on the basis of an assessment of a performance review. Given that you have been repeatedly matched with your superior John, his voice will have a decisive impact on the eventual decision." While in the setting of *consensus-based promotion*, the narrative stated, "As part of your review process, you know that a promotion is determined on the basis of a consensus on your performance in the review committee. Note that the review committee consists of multiple superiors, of which the superior in the current engagement is only one."

[7] Participants can thus develop their own working style, and do not need to blindly imitate their superior. This offers a strong test for our theory to see if imitation occurs in a setting where an exemplar senior auditor is modeled (which they can but do not have to follow).

Key Variables

Junior Auditors' Audit Opinion (part 1)

We provided Hybrid's step-one analysis of the goodwill impairment test provided by the management, which concluded that the FVE of the hybrid division exceeds the book value, such that no impairment was required. Similar to prior studies, the case contains some important seeded cues indicating that the stated fair value was overstated, making the management's conclusion biased upward (Kadous and Zhou 2019; Griffith 2014). The participants were asked to evaluate the appropriateness of Hybrid's FVE for the year 2018 based on key financials, discounted cash flow analysis, management's memo, and past working paper of their superior. They needed to do so by answering the question "How likely is it that Hybrid's current FVE of EUR 3.2 billion is fairly stated?" (variable: *FVE_fairly_stated*). The participants responded to this question with a range from 0 = Very Unlikely to 10 = Very likely. Similar to prior studies, we use this variable as a proxy for audit quality (Kadous and Zhou 2019; Griffith et al. 2015a). Given that the case involves an overstatement, we reverse-code the variable whereby a higher value suggests that the junior auditor is more likely to believe that the FVE in the management memo is not fairly stated.

Imitation Questions (part 2)

In envelope two, we included three questions as indicators of the extent to which participants imitate their superior when solving the task. Specifically, participants responded to the following questions on a scale ranging from 0 = Not at all to 10 = Completely: "To what extent did you adopt your superior's approach related to the audit of the 'Pure Electric' SBU for auditing the FVE of the 'Hybrid' SBU?" (*Sup_adopt*); "To what extent did you align with the working style of John Van Wijck to audit the FVE of the 'Hybrid' SBU?" (*Sup_align*), "To what extent would your audit opinion be based on similar procedures described in John's working paper?" (*Sup_similar*). We drew on several studies (e.g. Weiss 1977; Williams 2007;

Reusen and Stouthuysen 2017) relying on constructs of alignment, similarity, and replication of procedures of the exemplar senior auditor. Imitation is regarded as a latent (unobservable) variable with three indicators *Sup_adopt*, *Sup_align*, and *Sup_similar,* with factor loadings for each indicator equal to 0.9039, 0.9152, and 0.8730, respectively[8]. The raw Cronbach Alpha is 0.8653, which means that it has high reliability. We label this variable as *Imitation_FS*. We use this variable as our dependent variable to test imitation behavior.

Subject Demographics (part 3)

The last envelope recorded demographic information of the participants by asking them to respond to a series of questions related to their personal background information such as age, gender, country of origin, highest education degree, years of audit experience, years of working experience with the current audit firm, industry expertise, and self-rated professional capabilities. Additionally, we measured the familiarity of junior auditors in handling a fair value estimates case (*Fam_fairvalue*) and working with a discounting cash flow model (*Fam_DCF*). We also measured certain personality traits that might affect individuals' tendency to imitate. Specifically, based on Smith et al. (2008) and Hurtt Professional Skepticism scale (Hurtt, 2010), we measured the participants' resilience, self-confidence, and questioning mind on seven-point scales ranging from 1 = Completely Disagree to 7 = Completely Agree. Lastly, we asked several questions to test the participants' understanding of the case and check the effectiveness of the manipulation, which we discuss in the next section.

IV. RESULTS AND DISCUSSION

Manipulation and Randomization Check

To assess the effectiveness of both superiors' working styles (*Superior*) and the nature of the promotion system (*Promotion*) manipulations, we provided four different statements

[8] Based on Imitation latent construct, we generate the factor score estimates that indicate each participant's relative standing on Imitation latent factor (DiStefano et al. 2009).

whereby two focused on the high diligent vs. the low diligent characteristic of the senior, respectively, and the two others referred to the nature of promotion as either consensus-based vs. superior-based.[9] Then we asked the participants to rate to which extent they agree to the statements, ranging from 0 = Completely Disagree to 7 = Completely Agree. The results of our ANOVA indicate that our manipulations are successful in that the superior variable loaded on the two manipulation checks assessing diligence of the senior (p's <0.01), while the promotion variable loaded on manipulation checks for the nature of promotion (p's <0.01).

To examine if randomization is successful, we run a MANOVA test to check if baseline indicators and demographic variables are not statistically different across our conditions. The indicators we use are firm (*Firm* – either one of the two Big 4 firms), gender (*Gender*), education (*Education*), years of working experience as an auditor (*Experience*), years of working experience as an auditor at the current firm (*Firm_tenure*), self-rated professional capabilities (*Professional_affinity*), and case familiarity (*Case_familiarity*) and fair value method familiarity (*Method_familiarity*). The results of the individual ANOVA's show none of our manipulated factors nor the interaction have p-values <0.10 (smallest p=0.21).

Test of Hypotheses

First, to test H1, we examine the tendency of junior auditors to imitate, based on the measure discussed in the method section. We expect that auditor imitation will be higher (lower) when a junior auditor faces a high (low) superior and operates under a superior-based promotion system rather than under a consensus-based promotion system. Then we test H2 or the interaction effect of the superior's working style and the nature of promotion system on the

[9] For superior type we asked following questions. "My superior performs his tasks very carefully, critically examines available evidence, and strives to gather sufficient support before reaching conclusions." (high diligent); "My superior works very efficiently, with quick, decisive action in completing his tasks." (low diligent). For promotion, we asked the following two items. "My promotion will be determined on the basis of an assessment of my performance by the superior with whom I have worked most often." (superior-based promotion). "My promotion will be determined on the basis of a consensus on my performance in the review committee, which consists of multiple superiors." (consensus-based promotion).

level of audit quality. Next, we explore the effect of imitation on junior auditors' audit quality controlling for the direct effect of superior's style. We conclude with path models to offer a more complete picture of how results connect to one another and to analyze more in detail what the effect is of a superior on audit quality controlling for the mediating effect of imitation.

Hypothesis 1: Impact on Imitation

Table 1 displays the results for hypothesis 1. The ANOVA results with imitation as a dependent variable show a strong main effect of supervisory style ($F=48.83$, $p<0.01$). While there is a tension concerning to whom juniors imitate, our results (see means in Panel A of Table 1) suggest that imitation is higher when facing a high diligent senior auditor compared to a low diligent senior auditor[10]. This hints to the fact that junior auditors apply some skepticism when deciding which working style they want to follow.

To test H1, we examine the interaction effect of supervisory working style and the nature of promotion. Results show that this interaction is significant ($F=3.86$, $p=0.0515$). H1 is thus confirmed. In line with this prediction, the means show that the difference in imitation between the high and low diligent senior auditor is more pronounced when the promotion is superior-based (6.86 vs. 4.93) compared to when it is consensus-based (6.30 vs. 5.24). The nature of promotion thus seems to enhance the tendency to imitate a high diligent superior. Moreover, when junior auditors are paired with a high-diligent superior, the effect of the nature of the promotion system is directionally consistent with our predictions, albeit not significant (6.83 vs. 6.30, $F=2.49$, $p=0.1171$). The nature of promotion system does not lead to enhanced imitation of the low-diligent superior (4.93 vs. 5.24, $F=1.44$, $p=0.2317$). Additional evidence confirms the strong main effect of superior type. Under both promotion systems, the tendency to imitate the high diligent senior is more substantial than for the low diligent auditor (p's

[10] Consistent with our manipulation, the more diligent senior was also viewed as less technically competent and his approach was perceived as less effective.

<0.01). Yet, consistent with our prediction, the F-values suggest that the effect size of the superior's working style is higher under the superior-based promotion system (F=39.50, p<0.01) compared to the consensus-based system (F=12.80, p<0.01). A contrast analysis[11] testing whether the effect of superior's style mainly arises under a superior-based promotion is also significant (F=50.28, p<0.01).

<Insert Table 1 about here >

Hypothesis 2: Impact on Audit Quality

In hypothesis 2, we check the impact of our factors on audit quality. We measure audit quality by reverse coding the item of whether the fair value was fairly stated or not. Table 2 displays the results. While H2 would suggest that audit quality would be affected more when facing a high diligent auditor compared to a low diligent auditor in particular under a superior-based promotion system, we do not find evidence for this interaction (p=0.9661). Our H2 is thus not confirmed. We do find a weak main effect of the superior's working style on the level of audit quality (F=3.56, p=0.0614). Simple effects are consistent with this effect, albeit not significant at conventional levels (p=0.1977, p=0.1717). Interestingly, a contrast analysis[12] testing whether audit quality is significantly higher in the cell where a superior is high diligent and where the promotion system is superior-based compared to the three other cells, is significant (F=3.69, p=0.0570). Thus, the highest quality is still achieved with a diligent superior and a superior-based promotion system.

<Insert Table 2 about here>

Exploration: The Effects of Imitation on Audit Quality (RQ)

So far, we only tested if our manipulations affect imitation and audit quality. The question remains if higher audit quality is achieved through imitation of the high-quality

[11] The contrast analysis is coded as {3, 1, -2, -2}.
[12] The contrast analysis is coded as {3, -1, -1, -1}.

auditor. While one would expect higher audit quality when juniors would mimic a high diligent superior, the exact copying of procedures without critical reflection on whether they apply to the new situation may also potentially hamper audit quality. In the case of imitation of the low-diligent auditor, the expectation is that this will deteriorate audit quality. In order to test whether imitation affects audit quality, we first run a basic ANOVA. As *AuditQuality* can be directly affected by the superior's working style, we run the ANOVA test with *AuditQuality* as the dependent variable and *Imitation_FS*, *Superior*, and the interaction of the two as independent variables. As shown in Table 3a, the interaction between *Superior* and *Imitation_FS* is insignificant (p=0.3033). However, the effect of *Superior* and *Imitation_FS* is statistically significant at the 1% level. Interestingly, Figure 1 shows that audit quality generally goes down with higher imitation behavior, in particular when facing a low diligent auditor. That is, the level of imitation is negatively related to audit quality.

<Insert Table 3 and Figure 1 about here>

In order to offer more detail, we split our data based on the superior's working style and run our ANOVA separately in the two groups. The dependent variable is *AuditQuality,* and *Imitation_FS* is the independent variable. The result of imitative behavior under the low diligent superior's working style group (Table 3b – Panel A2) shows a significant decrease in *AuditQuality* (F=11.07, p=0.0014). This suggests that junior auditors' imitative behavior towards a low diligent superior deteriorates audit quality. However, the result of the high diligent superior group (Table 3b – Panel A1) shows surprisingly no significant improvements in *AuditQuality* when people imitate more (F=2.12, p=0.1497). Figure 1 still shows a negative sloping line. Even though based on our imitation results, the level of imitation of junior auditors is higher for high diligent superior's working style, copying such a high diligent auditor does not seem to improve audit quality.

Post-hoc analysis: Junior auditor knowledge

In order to explain our results, we further explore whether junior auditor's existing knowledge to solve an audit task may influence both their likelihood to imitate and the quality of the audit. Imitation has long been known as a learning mechanism to achieve a certain goal (e.g. Bandura 1971; Man & Sims 1981). Naturally, when an individual already possesses some prior knowledge required to solve a problem, the likelihood of imitating is lessened. To provide evidence on this claim, we use junior auditor's familiarity with the methods used in our post-experimental questionnaire by taking the average of *Fam_DCF* and *Fam_fairvalue* measurements. We use a median split of the average of the two items to classify junior auditors as a junior auditor who possess *high method familiarity* or *low method familiarity*.

The ANOVA result (Table 4) of imitation as a dependent variable and both superior's style and method familiarity as independent variables shows a significant main effect of *MethodFamiliarity* (F=3.55, p=0.0626), in addition to a main effect of supervisory style (F=49.21, p < 0.01). In line with the above expectation, the means (Table 4 – Panel A) show that the difference in junior auditors' imitation between the high and low method familiarity is more apparent when they are paired with a more diligent superior (6.20 vs. 6.95) compared to when they are paired with a less diligent superior (4.98 vs. 5.16). Junior auditors' familiarity and prior knowledge of the method are thus weakening the tendency to imitate. The simple effect of *MethodFamiliarity* gives a strong corroboration (F=4.51, p 0.0356) that the effect is significant when paired with a high diligent superior. Method familiarity, however, does not have an effect when auditors are paired with low diligent superior (F=0.31, p=0.5788). It means that the highest likelihood of imitative behavior of junior auditors occurs when they have less knowledge on solving the audit tasks and are paired with a high diligent superior. Additionally, consistent with our prediction, the F-values suggest that the effect-size of *Superior* is significantly higher when method familiarity is low (F=36.05, p<0.01) versus high (F=16.12,

p<0.01). A contrast analysis[13] test reveals that the effect of superior's style, which mainly presents under low method familiarity, is also significant (F=53.28, p<0.01).

<Insert Table 4 about here>

We further explore to what extent junior auditors' prior knowledge of the methodology used to solve the case study is pertinent to their audit performance. Auditor knowledge and expertise are critical for proper performance of many steps in the process of auditing estimates (Ahn et al. 2020; Griffith et al. 2015b). This implies that imitation may not result in better audit quality unless the auditor is sufficiently knowledgeable and familiar with the task.

<Insert Figure 2 about here>

The result of three-way ANOVA with *Superior*, *Imitation_FS*, and *MethodFamiliarity* as independent variables and *AuditQuality* as a dependent variable suggests that the effect of *Imitation_FS* * *MethodFamiliarity* is significantly different for high versus low diligent superior group (F=7.19, p=0.0083). Subsequent inspection of *Imitation_FS* and *MethodFamiliarity* of the high and low diligent superior group separately (Table 5 – Panel C) provides the evidence that interaction effects of *Imitation_FS* * *MethodFamiliarity* are significant in both groups (F=3.88, p=0.0532 and F=3.09, p=0.0835). Figure 2 illustrates this further by showing that as imitation increases, the audit quality for high diligent high method familiarity sub-group also increases, while the other sub-groups still display negative slopes. Further, the means of *AuditQuality* (Table 5 – Panel A) shows that the quality is higher under high diligent superior when auditors are already more familiar versus when they are less familiar (6.47 vs. 5.74).

In other words, when a junior auditor possesses higher prior knowledge regarding the methods used in a particular audit task, the increasing imitative behavior towards a high diligent

[13] The contrast analysis is coded as {1, 3, -2, -2}.

superior will result in better audit quality. In this case, the superior's working paper serves as a "template" for more knowledgeable junior auditors to work on a similar complex task. In contrast, when a less knowledgeable junior auditor receives the working paper of a diligent superior, their imitation behavior is higher than that of more knowledgeable junior auditors (6.95 vs. 6.20), but their audit quality is deteriorating. A contrast analysis[14] test shows that audit quality is significantly higher in the cell where junior auditors face a high diligent superior and have high method familiarity compared to the three other cells (F=14.21, p=0.0002).

<Insert Table 5 about here>

This evidence suggests indeed that prior knowledge and expertise is an important factor to be considered and provides us with two insights. First, junior auditors have a lower tendency to imitate their superior when they already have sufficient level of knowledge in performing an audit task. Second, imitation of the superior may be more complicated than initially assumed. The negative effect of imitation on audit quality seems to be largely driven by auditors who have limited knowledge about the valuation method and may lack the expertise acquired through experience and training to adequately perform their work. Hence, even when there is the opportunity to learn from a "good" example, sufficient prior knowledge is required for an auditor to provide a high-quality audit of a complex estimate.

Figure 2 also provides interesting results for junior auditors' imitation towards the low diligent superior. As imitation increases, one may intuitively expect audit quality to deteriorate for less knowledgable auditors. Yet for more knowledgable auditors, surprisingly, it looks like the quality becomes even worse.

Further analysis on trait skepticism provides additional insight on the susceptibility of knowledgable auditors to imitate a low diligent superior resulting in poor judgment. Table 6 – Panel A indicates that the means of imitating the low diligent superior is specifically higher for

[14] The contrast analysis is coded as {3, -1, -1, -1}.

auditors with a lower questioning mind[15] (lower trait skepticism). The results of regression analysis (Table 6 – Panel B) also denote the significance of *Imitation_FS * High Method Familiarity * Low Questioning Mind* (coeff=-1.66, p=0.0496), while the other interactions remain insignificant. Hence, despite high method familiarity, audit quality suffers when individuals have a low questioning mind under a low diligent superior's guidance.[16]

<Insert Table 6 about here>

Mediation Analysis

We complete our analysis with a path analysis. We run a path model estimating the total effect of the independent variable *Superior* on the dependent variable *AuditQuality*. As reported earlier in Table 2, we show a weak effect of the high diligent auditor on audit quality. The results of the path model offer some interesting additional insights. Figure 3 displays a statistically significant direct effect, which means that controlling for junior auditors' imitative behavior, the junior auditors being paired with high diligent superior, on average, tend to have a much higher audit quality opinion (c'=1.1737, p=0.0010). Similar to the evidence presented earlier, Figure 3 further shows a significant positive effect of the style of the *Superior* on *Imitation_FS* (a=1.4380***). Interestingly, the effect of *Imitation_FS* on subsequent *AuditQuality* is significantly negative (b = -0.4081***)[17]. The indirect effect of ab is also found to be significant (i.e. Sobel SE=0.171, p=0.0013, see Appendix for more detail). The weak total effect of *Superior* on *AuditQuality* we observe in Table 2 is due to inconsistent mediation (Davis 1985; MacKinnon et al. 2007). That is, even though junior auditors tend to imitate the working

[15] A median value is used to split the observations to higher and lower questioning mind. That is, observations with questioning mind value lower than five are included in low questioning mind, and high questioning mind otherwise.

[16] For completeness, we also perform a similar analysis for high diligent group to check whether questioning mind has a significant effect on the interaction between imitation and method familiarity. The regression results indicate no significance for all conditions.

[17] The test of our model fit of Figure 3 using lavaan package in R with bootstrap estimator at 10 degrees of freedom display the p-value of Chi-square = 0.311, RSMEA = 0.037 at 95% confidence interval, SRMR = 0.023, CFI = 0.997, and TLI = 0.993.

style of a high diligent superior, imitation of such a diligent auditor apparently does not increase the audit quality, whereas imitating a low diligent superior is strongly affecting audit quality negatively (thus, coefficient a is positive, while coefficient b is negative).[18] Controlling for the imitation effect (indirect path), we find that the effect of the style of the superior on audit quality is even stronger (direct path c' is stronger than c).

<Insert Figure 3 and Figure 4 about here>

For completeness, we also show the results of the full moderated mediation model, using Hayes' PROCESS macro[19]. This model confirms the results we presented earlier. Specifically, the superior's style combined with the promotion system impacts the mediator imitation. However, as reported earlier (Table 3), imitation mainly affects audit quality negatively, in particular, when one faces a low diligent auditor. Considering the insights from the above post-hoc analysis, we reason that the impact of the more diligent auditor could potentially have been higher when junior auditors have sufficient knowledge about the audit tasks when they imitate. We thus have inconsistent mediation (MacKinnon et al. 2007), suggesting that superior's style increases audit quality directly, but decreases audit quality indirectly through imitation. The latter is due to the fact that imitation of low diligent superiors leads to significantly lower levels of audit quality, whereas imitation of high diligent superiors fails to result in higher levels of audit quality, unless the auditor is sufficiently knowledgeable and familiar with the task to perform well.

[18] Another guideline set by Baron and Kenny to claim causal mediation is that the direct effect of *Superior* on *AuditQuality* (controlling for *Imitation_FS*) must be smaller than the total effect of Superior on *AuditQuality* (i.e. c' < c). Baron and Kenny argue that it is necessary to show that there is an effect that can be mediated (either full or partial mediation). In a single mediation model with effects a and b in the same direction, it makes sense to expect the direct effect to be at least smaller than the total effect. However, in models with inconsistent mediator, the effects can occur in different directions as have been explained above. In our case, this cannot be fulfilled because of inconsistent mediation. Total effect (c) = direct effect (c') + indirect effect (a*b). Since the indirect effect is negative and direct effect is positive, total effect cannot be larger than direct effect.

[19] We proceed to test the model fit of the moderating mediation model (Figure 4) which gives us the following results at 10 degrees of freedom: p-value of Chi-square = 0.4831, RSMEA = 0.00 at 95% confidence interval, SRMR = 0.041, CFI = 1.000, and TLI = 1.003.

V. CONCLUSION

This study investigates the joint effect of the superior's working style and the firm's promotion system on junior auditor imitative behavior and the subsequent consequences for audit quality. Our results suggest that junior auditors do not blindly copy any role model. We find that they imitate the high diligent auditor more strongly compared to a low diligent auditor, and that such imitation behavior is more likely when their superior has a decisive voice in the promotion. The question of whether such imitation is beneficial is less straightforward. In general, our results show that imitation does not always improve audit quality. In fact, imitation seems to deteriorate audit quality, particularly when junior auditors face the working style of a low diligent auditor. Likewise, for the high diligent auditor, improvements in audit quality via imitation do not materialize. Only when junior auditors have prior knowledge about the method used to solve an audit task, the audit quality can be improved via imitation.

These results contribute to prior research on the difficulties in auditing complex estimates and suggest that providing a superior's working paper to junior auditors may lead the juniors to view the task as verification rather than comprehensive evaluation. Specifically, our analyses support the notion that junior auditors' lack of knowledge or experience makes them unlikely to be able to achieve a high-quality audit of a complex estimate (Griffith et al. 2015b). Thus, even when they are provided with the "right" example, they must be able to imitate appropriately and evaluate the reasonableness of the estimate in their specific task. As a result, junior auditors with more experience in working with particular methods have the advantage of improving the audit quality by utilizing the exemplified procedures effectively. An interesting caveat, however, is that in the case of a low diligent superior, imitation results in even worse audit quality for more knowledgeable auditors, especially for those with a lower questioning mind. As such, we also contribute to prior studies highlighting the role of professional

skepticism (Nelson and Kadous 2018), indicating that junior auditors with lower trait skepticism are more susceptible to inappropriate imitation that impairs audit quality.

The findings of this study also offer relevant insights for practice. First, the practice of sharing working papers and the opportunity of junior auditors to consult working documents of senior papers might be helpful to audit quality. If these working papers show a diligent working approach, junior auditors are more likely to follow such approach in their own working style. Thus, our results confirm that junior auditors are selective in whom they imitate. They also get to imitate the diligent auditor to a greater extent when the promotion system is superior-based. However, we need to apply some caution in that imitation does not always turn out to be beneficial. In the few cases where auditors follow the example of a less diligent superior, we find that imitation does more harm than good to audit quality. Moreover, the imitation of a high diligent superior also fails to improve audit quality, unless the junior has sufficient knowledge. This means that the practice of sharing working papers might need to be supplemented with direct on the job coaching to stimulate learning, in order for imitation to be effective.

Second, designing an effective promotion system is also of interest to audit practice. We demonstrate that the superior's reward power, especially in providing career incentives, has different effects on junior auditor's level of imitation. That is, a high diligent superior holding a decisive voice on giving promotion motivates the junior auditors to imitate the approach of the superior more, compared to when the superior does not hold such influence. Hence, this shows the potential benefit of implementing superior-based system promotion over consensus-based promotion in audit practice. On the other hand, superior's reward power does not seem to stimulate junior auditors in imitating the working style of a less diligent auditor. This finding suggests that junior auditors are not sacrificing their moral legitimacy in providing professional judgment, even when pressured by career concerns.

In concluding, we acknowledge a number of limitations of the study which can provide suggestions for future research. First, imitation is a self-reported measure and would only fully capture the imitation construct to the extent that it is indeed a conscious process. Future research might be able to more directly assess and observe imitation behavior in practice, for example by comparing the working style of juniors to their seniors based on archival evidence of audit working papers. Second, we study the imitation behavior of junior auditors. While one could reasonably expect senior auditors to act more independently, the extent to which they are prone to imitation and follow their senior managers or direct audit partners remains to be examined. Another interesting avenue for further research is to further explore the dark side of imitation. If people face high pressure and have significant workloads, resorting to imitation and applying less skepticism might be tempting. Future research can examine when auditors are likely to resist such pressures and avoid imitating practices that can hamper audit quality.

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Figure 1. Interaction between Superior's Working Style and Junior Auditor' Imitative Behavior

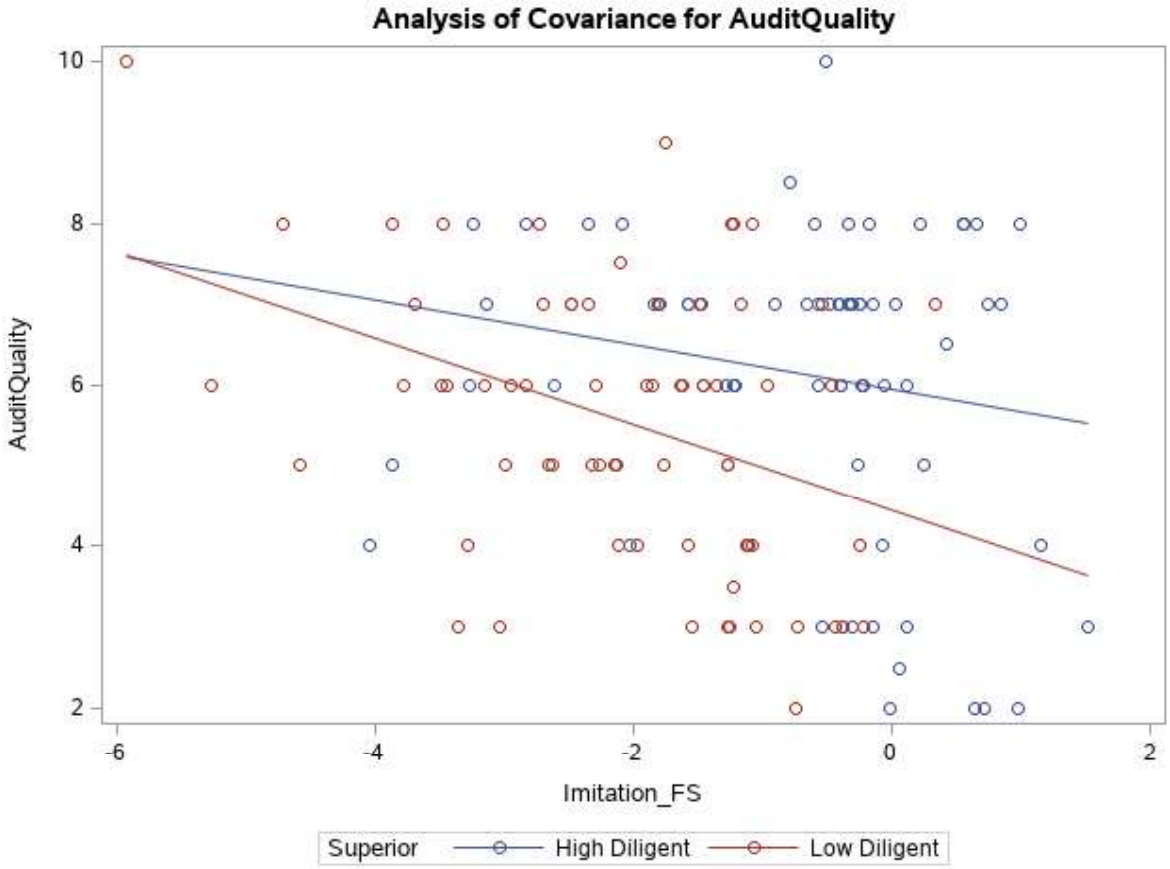


Figure 2. Interaction between Superior's Working Style, Junior Auditor' Imitative Behavior, and Method Familiarity

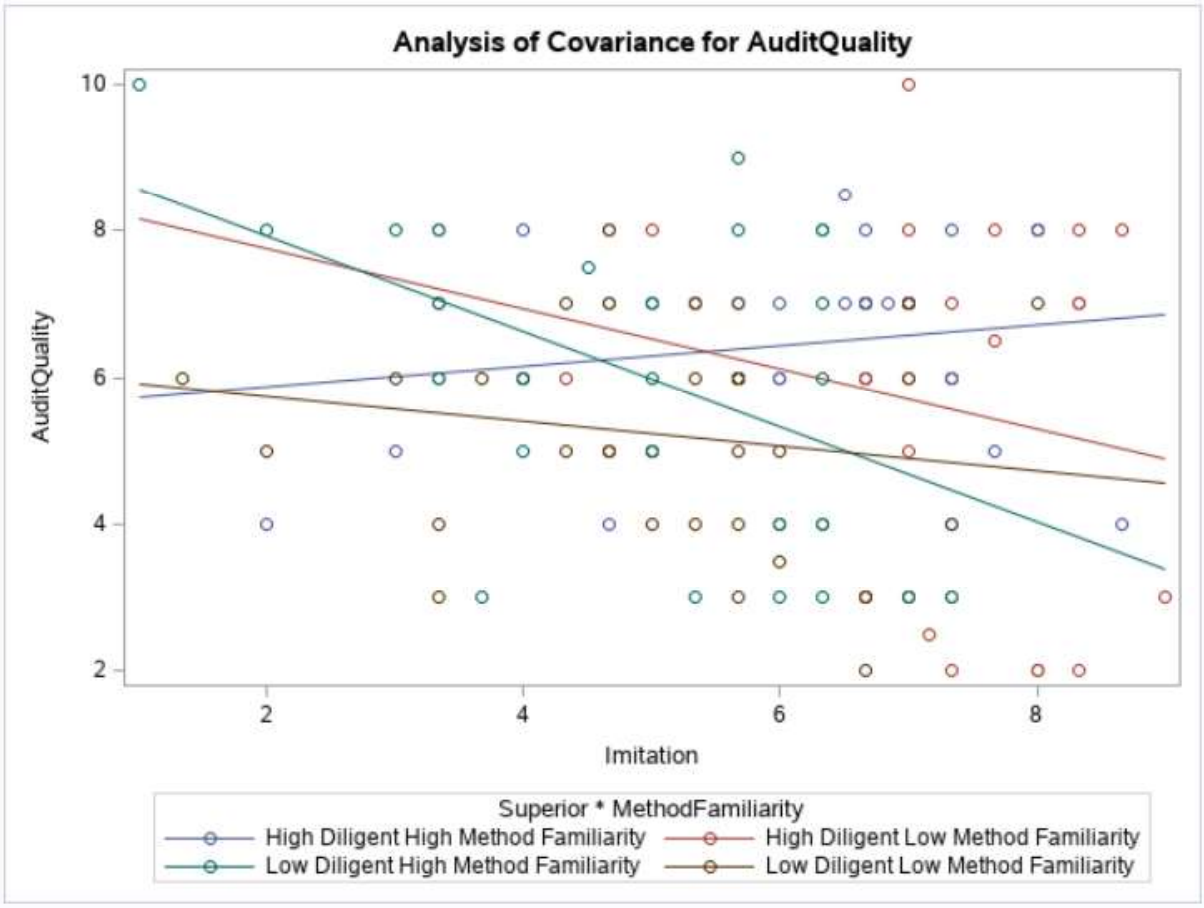


Figure 3. Mediation Model

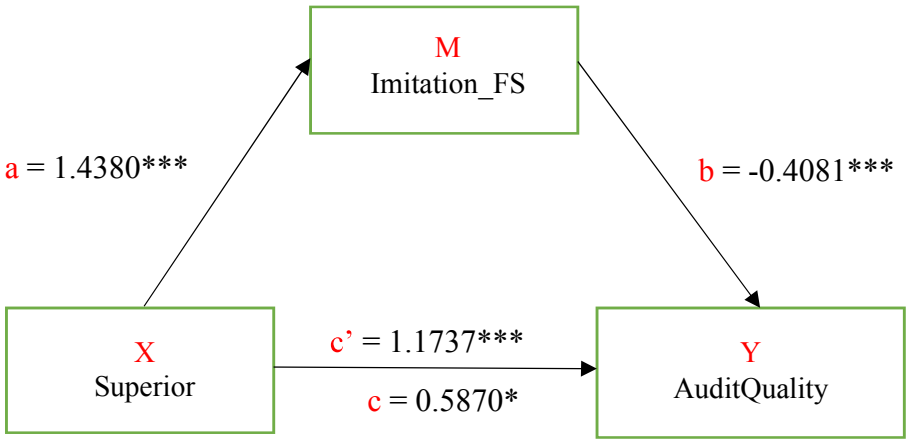


Figure 4. Moderated Mediation Model

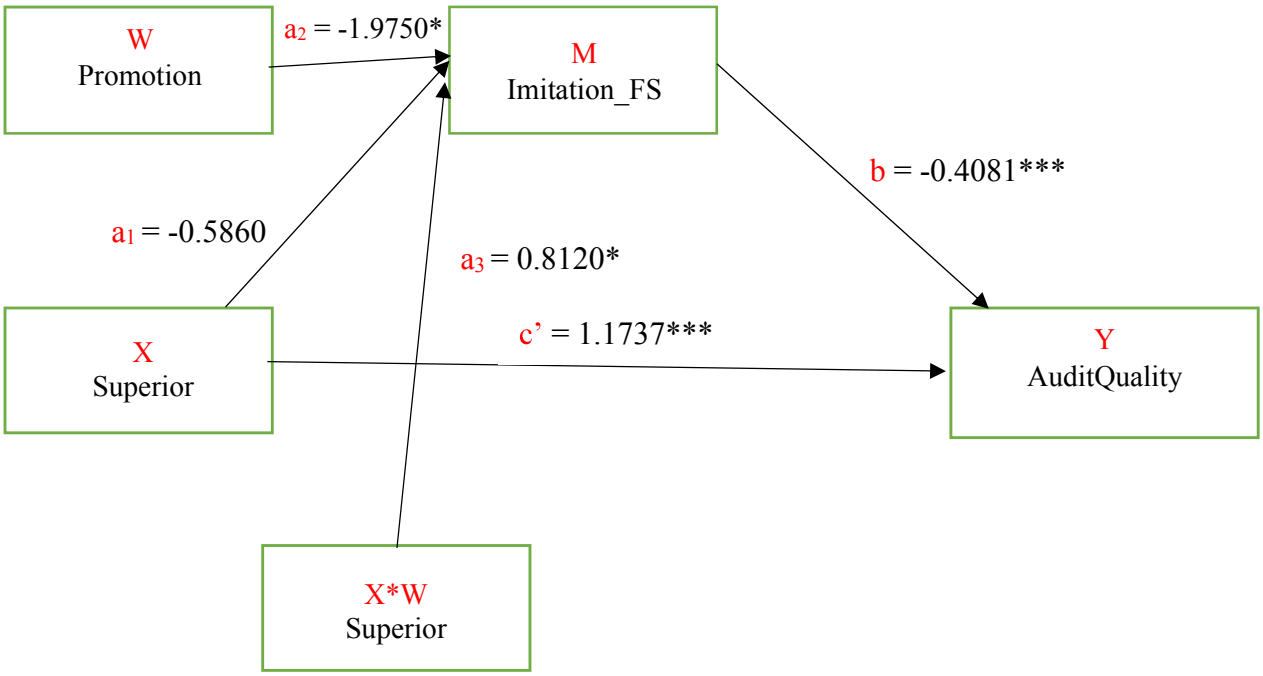


Table 1: How Superior's Working Style and the Nature of Promotion System Affect Junior Auditors' Imitative Behavior

Panel A: Summary statistics of Imitation Mean, (St. dev), N based on Superior's Working Style and The Nature of Promotion System (N=138)

			High Diligent	**Low Diligent**
Superior-based Promotion	*Imitation*	Mean	6.8382	4.9314
		(St. dev)	(1.1724)	(1.3945)
		N	N=34	N=34
	Imitation_FS	Mean factor scores	-0.3755	-2.2254
		(St. dev factor scores)	(0.9678)	(1.2111)
			{3}	{1}
Consensus-based Promotion	*Imitation*	Mean	6.3000	5.2429
		(St. dev)	(1.6700)	(1.5045)
		N	N=35	N=35
	Imitation_FS	Mean factor scores	-0.8364	-1.8743
		(St. dev factor scores)	(1.3746)	(1.2577)
			{-2}	{-2}

Panel B: ANOVA-Results

Source	DF	Mean Square	F-value	p-value
Superior	1	71.9092	48.83	< 0.0001***
Promotion	1	0.1038	0.07	0.7910
Superior * Promotion	1	5.6850	3.86	0.0515*
Error	134	1.4727		
Contrast {3, 1, -2, -2}	1	74.0498	50.28	< 0.0001***

Panel C: Simple Effects

Effect of Promotion	DF	Mean Square	F Value	Pr > F
High Diligent Superior	1	3.6627	2.49	0.1171
Low Diligent Superior	1	2.1262	1.44	0.2317

Effect of Superior	DF	Mean Square	F Value	Pr > F
Superior-based Promotion	1	58.1730	39.50	< 0.0001***
Consensus-based Promotion	1	18.8514	12.80	0.0005***

***, **, * denote significance at the 1, 5 and 10% level. All reported p-values are two-tailed.

Superior = 0 is Low Diligent; Superior = 1 is High Diligent.
Promotion = 0 is Consensus-based Promotion; Promotion = 1 is Superior-based Promotion.
Imitation_FS is the factor score on three items measuring imitation and serves as our dependent variable (see method section).

Table 2: How Superior's Working Style and the Nature of Promotion System Affect Junior Auditors' Audit Quality Opinion

Panel A: Summary statistics of Junior Auditors' Audit Quality Opinion Mean, (St. dev), N based on Superior's Working Style and level of the Nature of Promotion System (N=138)

		High Diligent	Low Diligent
Superior-based Promotion	Mean	6.3382	5.7647
	(St. dev)	(1.7526)	(1.9394)
	N	N=34	N=34
		{3}	{-1}
Consensus-based Promotion	Mean	5.8857	5.2857
	(St. dev)	(2.0367)	(1.5401)
	N	N=35	N=35
		{-1}	{-1}

Panel B: ANOVA-results

Source	DF	Mean Square	F-value	p-value
Superior	1	11.8859	3.56	0.0614*
Promotion	1	7.4825	2.24	0.1366
Superior*Promotion	1	0.0060	0.00	0.9661
Error	134	3.3370		
Contrast {3, -1, -1, -1}	1	12.2999	3.69	0.0570*

Panel C: Simple effects

Effect Promotion	DF	Mean Square	F Value	Pr > F
High Diligent Superior	1	3.5316	1.06	0.3055
Low Diligent Superior	1	3.9569	1.19	0.2781

Effect Superior	DF	Mean Square	F Value	Pr > F
Superior-based Promotion	1	5.5919	1.68	0.1977
Consensus-based Promotion	1	6.3000	1.89	0.1717

***, **, * denote significance at the 1, 5 and 10% level. All reported p-values are two-tailed.

Superior = 0 is Low Diligent; Superior = 1 is High Diligent.
Promotion = 0 is Consensus-based Promotion; Promotion = 1 is Superior-based Promotion.
The dependent variable here is audit quality, measured as participant's reversed coded answers on how likely the Hybrid's current FVE is fairly stated.

Table 3a: How Superior's Working Style and Junior Auditors' Imitative Behavior Affect Junior Auditors' Audit Quality Opinion

Panel A: Summary statistics of Imitation and Junior Auditors' Audit Quality Opinion Mean, (St. dev), N based on Superior's Working Style (N=138)

		High Diligent	**Low Diligent**
AuditQuality	Mean	6.1087	5.5217
	(St. dev)	(1.9018)	(1.7520)
	N	N=69	N=69
Imitation	Mean	6.5652	5.0894
	(St. dev)	(1.4612)	(1.4492)
	N	N=69	N=69
Imitation_FS	Mean factor scores	-0.6093	-2.0473
	(St. dev of factor scores)	(1.2055)	(1.2386)

Panel B: ANOVA-results

Source	DF	Mean Square	F-value	p-value
Imitation_FS	1	33.2254	10.66	0.0014***
Superior	1	31.2214	10.02	0.0019***
Superior * Imitation_FS	1	3.3276	1.07	0.3033
Error	134	3.3430	-	-

***, **, * denote significance at the 1, 5 and 10% level. All reported p-values are two-tailed.

Superior = 0 is Low Diligent; Superior = 1 is High Diligent.
The value of Imitation_FS on Low Diligent Superior is simply the intercept.

Table 3b: How Junior Auditors' Imitative Behavior Affect Junior Auditors' Audit Quality Opinion, Split by Superior's Working Style

Panel A1: ANOVA-results of High Diligent Superior Group

Source	DF	Mean Square	F-value	p-value
Imitation_FS	1	7.5571	2.12	0.1497
Error	67	3.5579	-	-

Panel A2: ANOVA-results of Low Diligent Superior Group

Source	DF	Mean Square	F-value	p-value
Imitation_FS	1	29.5926	11.07	0.0014***
Error	67	2.6736	-	-

***, **, * denote significance at the 1, 5 and 10% level. All reported p-values are two-tailed.

Table 4: How Superior's Working Style and Junior Auditors' Method Familiarity Affect Junior Auditors' Imitative Behavior

Panel A: Summary statistics of Imitation Mean, (St. dev), N based on Superior's Working Style and Method Familiarity (N=138)

			High Diligent	**Low Diligent**
High Method Familiarity	*Imitation*	Mean (St. dev) N	6.1952 (1.4772) N=35	4.9821 (1.5558) N=28
	Imitation_FS	Mean factor scores (St. dev of factor scores)	-0.9140 (1.2060) {1}	-2.1454 (1.3549) {-2}
Low Method Familiarity	*Imitation*	Mean (St. dev) N	6.9461 (1.3625) N=34	5.1626 (1.3867) N=41
	Imitation_FS	Mean factor scores (St. dev of factor scores)	-0.2956 (1.1384) {3}	-1.9803 (1.1651) {-2}

Panel B: ANOVA-results

Source	DF	Mean Square	F-value	p-value
Superior	1	72.0080	49.21	< 0.0001***
MethodFamiliarity	1	5.1988	3.55	0.0616*
Superior * MethodFamiliarity	1	1.7410	1.19	0.2773
Error	134	1.4633		
Contrast {1, 3, -2, -2}	1	77.9649	53.28	< 0.0001***

Panel C: Simple Effects

Effect of MethodFamiliarity	DF	Mean Square	F-Value	Pr > F
High Diligent Superior	1	6.5968	4.51	0.0356**
Low Diligent Superior	1	0.4533	0.31	0.5788

Effect of Superior	DF	Mean Square	F-Value	Pr > F
High Method Familiarity	1	23.5841	16.12	< 0.0001***
Low Method Familiarity	1	52.7546	36.05	< 0.0001***

***, **, * denote significance at the 1, 5 and 10% level. All reported p-values are two-tailed.

Superior = 0 is Low Diligent; Superior = 1 is High Diligent.
MethodFamiliarity = 0 is Low Method Familiarity; MethodFamiliarity = 1 is High Method Familiarity

Table 5: How Superior's Working Style, Junior Auditors' Imitative Behavior, and Method Familiarity Affect Junior Auditors' Audit Quality Opinion

Panel A: Summary statistics Junior Auditors' Audit Quality Opinion Mean, (St. dev), N based on Superior's Working Style and Method Familiarity (N=138)

		High Diligent	Low Diligent
High Method Familiarity	Mean	6.4714	5.9821
	(St. dev)	(1.3770)	(2.0927)
	N	N=35	N=28
		{3}	{-1}
Low Method Familiarity	Mean	5.7353	5.2073
	(St. dev)	(2.2838)	(1.4185)
	N	N=34	N=41
		{-1}	{-1}

Panel B: ANOVA-results

Source	DF	Mean Square	F-value	p-value
Imitation_FS	1	28.5430	9.70	0.0023***
Superior	1	33.5604	11.41	0.0010***
Superior * Imitation_FS	1	4.0560	1.38	0.2424
MethodFamiliarity	1	1.0822	0.37	0.5452
Superior * MethodFamiliarity	1	7.6403	2.60	0.1095
Imitation_FS * MethodFamiliarity	1	0.4506	0.15	0.6961
Imitation_FS * Superior * MethodFamiliarity	1	21.1534	7.19	0.0083***
Error	134	3.3430	-	-
Contrast {3, -1, -1, -1}		41.7943	14.21	0.0002***

Panel C1: ANOVA-results of High Diligent Superior Group

Source	DF	Mean Square	F-value	p-value
Imitation_FS	1	5.2215	1.55	0.2180
MethodFamiliarity	1	14.2114	4.21	0.0442**
Imitation_FS * MethodFamiliarity	1	13.0912	3.88	0.0532*
Error	65	3.3752	-	-

Panel C2: ANOVA-results of Low Diligent Superior Group

Source	DF	Mean Square	F-value	p-value
Imitation_FS	1	27.8505	11.53	0.0012***
MethodFamiliarity	1	0.1444	0.06	0.8076
Imitation_FS * MethodFamiliarity	1	7.4602	3.09	0.0835*
Error	65	2.4148	-	-

***, **, * denote significance at the 1, 5 and 10% level. All reported p-values are two-tailed.

Superior = 0 is Low Diligent; Superior = 1 is High Diligent.
MethodFamiliarity = 0 is Low Method Familiarity; MethodFamiliarity = 1 is High Method Familiarity

Table 6: How Junior Auditors' Imitative Behavior, Method Familiarity, and Trait Questioning Mind Affect Junior Auditors' Audit Quality Opinion in the Low Diligent Superior Group

Panel A: Summary statistics of Imitation and Junior Auditors' Audit Quality Opinion Mean, (St. dev), N based on Method Familiarity and Trait Questioning Mind (N=69)

			High Questioning Mind	Low Questioning Mind
High Method Familiarity	*AuditQuality*	Mean (St. dev) N	6.0000 (2.0642) N=24	5.8636 (1.8720) N=11
	Imitation	Mean (St. dev) N	4.8750 (1.6559) N=24	5.7727 (0.8572) N=11
	Imitation_FS	Mean factor scores (St. dev of factor scores)	-2.2590 (1.4446)	-1.4698 (0.6489)
Low Method Familiarity	*AuditQuality*	Mean (St. dev) N	5.1333 (1.3558) N=15	5.0263 (1.4189) N=19
	Imitation	Mean (St. dev) N	5.0667 (1.5996) N=15	4.9825 (1.2933) N=19
	Imitation_FS	Mean factor scores (St. dev of factor scores)	-2.1030 (1.3343)	-2.0701 (1.1151)

Panel B: Regression-results

Parameter	Estimate	t-value	p-value
Intercept	4.2936	5.58	<0.0001***
Imitation_FS	-0.3540	-1.07	0.2869
High Method Familiarity & High QM	0.0335	0.03	0.9728
High Method Familiarity & Low QM	-1.3885	-0.97	0.3372
Low Method Familiarity & High QM	0.5108	0.47-	0.6408
Low Method Familiarity & Low QM	0.0000	-	-
Imitation_FS * High Method Familiarity & High QM	-0.3866	-0.97	0.3364
Imitation_FS * High Method Familiarity & Low QM	-1.6589	-2.00	0.0496**
Imitation_FS * Low Method Familiarity & High QM	0.1975	0.44	0.6650
Imitation_FS * Low Method Familiarity & Low QM	0.0000	-	-

***, **, * denote significance at the 1, 5 and 10% level. All reported p-values are two-tailed.

APPENDIX

Mediation Effect Using Sobel SE

Sobel SE of the mediation effect for a single mediator can be expressed as

$se_m = m\sqrt{\frac{t_a^2 + t_b^2}{t_a t_b}} = -0.420\sqrt{\frac{(5.957)^2+(-2.70)^2}{(5.957)(-2.70)}} = 0.171$ with p-value 0.0139**

Where m is the mediation effect (a*b), a is the effect of exposure on the mediator, b is the effect of the mediator on outcome adjusting for exposure, and $t_a = \frac{a}{se_a} = \frac{1.476}{0.248}$ and $t_b = \frac{b}{se_b} = \frac{-0.284}{0.105}$ respectively.

Case Materials

The following documents are the case materials that we are using for this experiment. The first two pages denote the case instruction and background where we do manipulations of superior's working style and the nature of promotion system. In order to save spaces, we use colored fonts to differentiate the case for each of our manipulation: high diligent superior's working style, low diligent superior's working style, superior-based promotion, and consensus-based promotion.

Case instructions and Background

As an auditor, you were recently assigned to a new project. Together with the other auditors in the engagement team, you are responsible for auditing the financial statements of Probe-IT, a Dutch company that is specialized in the assembly and production of electric cars. Probe-IT is already well-known to the audit firm as it won the audit tenure for the next 3 years, after already being its auditor for the past two years.

In line with the different products it develops, the company is subdivided into two strategic business units (SBUs), the 'Pure Electric' cars and the 'Hybrid' cars SBU. Both SBUs operate and have offices in three core regions, being China, Europe and North America. Yet, they obviously specialize in a different products. In particular, the pure electric division is responsible for the production and the assembly of cars that are entirely battery operated, whereas the hybrid division focuses on hybrid electric cars, cars that rely on both a combustion engine and an electric motor for power. In their financial statements, the company considers every SBU to be a separate reporting segment, which is reported on in the segment information.

Your audit task:

As part of Probe-IT's audit, your superior John Van Wijck has given you the responsibility over auditing the annual goodwill impairment test of the "Hybrid" reporting segment under Dutch GAAP. To arrive at the SBU's fair value of equity (FVE, Dutch: "realiseerbare waarde"), management relied on a discounted free cash flow analysis based on a number of assumptions: the projections of future revenue, the operating expenses, the capital expenditures, the discount rate, the taxation rate, the long-term growth rate and the financing costs. For a detailed overview and the computation, see p. 10. Since FVE exceeds book value of equity, management ultimately concluded there is no goodwill impairment (or negative value correction) to be made.

As an auditor, your task is to evaluate the underlying assumptions and hence, the appropriateness of the FVE for 2018 and the related goodwill impairment of the 'Hybrid' SBU. A series of documents (an overview of the key financials, a discounted free cashflow analysis and a management memo clarifying the underlying assumptions) related to the valuation of the 'Hybrid' SBU and prepared by the company's management will serve as input for your assignment. In addition, your superior John Van Wijck has done some steps in assessing the FVE of the other division, labelled 'Pure Electric'. To improve audit effectiveness, you have access to John's working paper (see later) for your task of auditing of auditing the FVE of the 'Hybrid' SBU.

Audit setting – please review carefully:

- Your superior John Van Wijck, who has assigned you this engagement, is well-known for [his due diligent work ethic; he performs his tasks very carefully, critically examines available evidence, and strives to gather sufficient support before reaching conclusions.][his capability to keep engagements within budget; he works very efficiently, with quick, decisive action in completing his tasks.]
- Overall, he believes that this engagement constitutes a real opportunity to demonstrate your working style. This is particularly the case provided that the biannual review committee is approaching and you have been made aware of your eligibility for a promotion. In this regard, leaving a good impression is important. As part of your review process, you know that a promotion is determined on the basis of [an assessment of a performance review. Given that you have been repeatedly matched with your superior John, his voice will have a decisive impact on the eventual decision.][a consensus on your performance in the review committee. Note that the review committee consists of multiple superiors, of which the superior in the current engagement is only one.]
- As mentioned before, Management of Probe IT has provided you with documents that provide a detailed overview of the SBU's financial situation for 2018. In addition, you have access to the working papers of your direct superior John Van Wijck on his audit of the FVE for the 'Pure Electric' business unit.

Please carefully review these documents on the following pages provided by the management and John, which will help you in auditing the FVE of 'Hybrid' in 2018.

Probe-IT, inc.

Overview of Key Financials

December 31, 2018

Probe-IT, 'Pure Electric' SBU

31/12/2018

Fair value of equity	€ 1.2 billion
Book value of equity	€ 1.15 billion
Goodwill	€ 615 million
Total assets	€ 3.9 billion

Probe-IT, 'Hybrid' SBU

31/12/2018

Fair value of equity	€ 3.2 billion
Book value of equity	€ 3.05 billion
Goodwill	€ 1.5 billion
Total assets	€ 10 billion

Remarks:

1. The company's business units are highly different in terms of their profitability and FVE. Overall, the SBU labelled 'Hybrid' accounts for the majority of the company's net income, 80%, while 'Pure Electric' SBU brings in the remaining 20%.

2. In the last year, both SBUs acquired several competitors to increase their presence in the international market. Goodwill was paid at the moment of acquisition.

3. Materiality is set at € 39 million for 'Pure Electric' and € 100 million for 'Hybrid' (1% of their total assets). Goodwill is a material account balance owing to its quantitative and qualitative significance because of its high susceptibility to misstatement arising primarily from recent market declines.

Purpose

The purpose of this working paper is to assess the FVE of Probe-IT's 'Pure Electric' SBU in accordance with ISA 540. This document summarizes the audit procedures performed.

Procedures

In order to evaluate the accuracy of the business unit's FVE, a number of procedures had to be undertaken that each shed light on a particular aspect of the FVE computation.

- Evaluation of the correctness of the reported revenue.

For the Discounted Free Cash Flow (DFCF) analysis, management argues that actual revenues in the past have been very close to budgeted revenues (using standard list prices with average discounting). For the five major customers that I checked, the presumed list price was always realized, so the assumption for the DFCF seems valued.

- Assessment of the assumptions underlying the DFCF analysis on which the FVE is based.

A DFCF analysis is based on management assumptions, which should always be checked for their alignment with the reality. It is highly important that estimates are always updated with the latest available numbers. In view of the DCF model, I checked a couple of key assumptions underlying Pure Electric's fair value estimate:

Procedure	Done by and Date
1. Evaluate management's projections for future revenue for the years ended 31/12/2018 through 31/12/2023.	J. Van Wijck, 03/01/2019

Results:

For the first time, management forecasted a consistent, yearly increase in the expected revenues.

- Inquiry

According to the CFO, the current revenue projections are appropriate given the high potential of the industry and the company's established position in the market.

- Market study

The audit team obtained an internal market research report on Pure Electric's performance in the market, which verifies the company's established position and bright market outlook.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.25% decrease in the projected revenue for each of the following five years. As it turns out, no considerable decreases in the equity value can be documented.

- General conclusion

Based on the procedures performed, the projected revenue for the years ended 31/12/2019 through 31/12/2023 is reasonable.

2. Evaluate management's projections for capital expenditures for the years ended 31/12/2018 through 31/12/2023	J. Van Wijck, 03/01/2019

Results:

The audit team compared the historical capital expenditures as a percentage of revenue with future projections and noted an increase in the capital expenditures.

- Inquiry

The audit team inquired with the CFO to unravel the underlying cause of the increase. In his opinion, the increase is related to scheduled renovations in an effort to further optimize the production process.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a € 1 million increase in the projected capital expenditures for each of the following five years. As it turns out, no considerable decreases in the equity value can be documented.

- General conclusion

Based on the procedures performed, the projected capital expenditures for the years ended 31/12/2019 through 31/12/2023 appear reasonable.

3. Evaluate management's projections for operating expenses for the years ended 31/12/2018 through 31/12/2023 — J. Van Wijck, 03/01/2019

Results:

The audit team compared the historical operating expenses as a percentage of revenue with future projections and noted a decrease in the operating expenses.

- Inquiry

The audit team inquired with the CFO to find an explanation for the sudden decrease in operating expenses. It was stated that the decrease can be directly attributed to investments in the organization's machinery, which allows for an optimization of the production process and a better inventory management.

- Market study

The audit team compared the expected trend in the operating expenses with this of comparable peer firms. As it turns out, lower operating margins are expected by others in the industry.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.5% increase in the projected operating expenses for each of the following five years. As it turns out, this would lead to a decrease in FVE of about 95 000.

- General conclusion

Based on the procedures performed, the projected operating expenses for the years ended 31/12/2019 through 31/12/2023 raise a minor concern.

4. Evaluate the long-term growth rate used to determine the terminal value in the management's valuation analysis. — J. Van Wijck 07/01/2019

Results:

- Inquiry

The audit team inquired with the CFO to motivate the choice of the long-term growth rate. According to him, the prosperous future outlook of the industry yields a huge potential for market share growth, which, in turn justifies the long-term growth rate that was set.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.5% decrease in the long-term growth rate for each of the following five years. As it turns out, this would have a considerable impact on the FVE.

- General conclusion

Based on the procedures performed, there are no significant matters to be reported related to the long-term growth rate adopted for the years ended 31/12/2019 through 31/12/2023.

Based on the audit procedures performed, it can be concluded that the violation of one or more assumptions would not lead to a goodwill impairment.

Goodwill Impairment Test | Management assumptions

December 31, 2018

(in billions)

	Fair Value	Book Value	Result
Total	€ 1.2 [(1)]	€ 1.15 [(2)]	Test passed: [(1) > (2)]

Goodwill Impairment Test – Sensitivity Analysis| Insights on the assumptions acquired by the audit team

December 31, 2018

(in billions)

	Fair Value	Book Value	Result
Total	€ 1.17 [(1)]	€ 1.15 [(2)]	Test passed: [(1) > (2)]

Sign-off

The 2018 audit of Probe-IT 'Pure Electric' business unit audit conducted by:

John Van Wijck

Signature

31/03/2019

Date

Purpose

The purpose of this working paper is to assess the FVE of Probe-IT's 'Pure Electric' SBU in accordance with ISA 540. This document summarizes the audit procedures performed.

Procedures

In order to evaluate the accuracy of the business unit's FVE, a number of procedures had to be undertaken that each shed light on a particular aspect of the FVE computation.

1. Evaluation of the correctness of the reported revenue.

   For the Discounted Free Cash Flow (DFCF) analysis, management argues that actual revenues in the past have been very close to budgeted revenues (using standard list prices with average discounting). I consulted the audit analytics team to assess all transactions that occurred during the past year and remarked the number of transactions that had a significant lower discount than the budgeted price. Based on this analysis, it appears that the actual revenues turn out to be lower than the budgeted revenues (see below). Consequently, in view of the DFCF analysis, using budgeted revenues might not be appropriate given the large actual discounting in comparison with expectation.

   Overview of the results

Total number of transactions:	317
Total number of verified transactions:	317 (100%)
Total number of transactions with a higher discount than 5%:	29 (9.15%)

Budgeted revenues at a 5 percent discount:	415 000 000
Actual revenues in the sample:	399 000 000

2. Assessment of the assumptions underlying the DFCF analysis on which the FVE is based.

   A DFCF analysis is based on management assumptions, which should always be checked for their alignment with the reality. It is highly important that estimates are always updated with the latest available numbers. In view of the DFCF model, six key assumptions underlying Pure Electric's FVE had to be verified:

Procedure	Done by and Date
1. Evaluate management's projections for future revenue for the years ended 31/12/2018 through 31/12/2023.	J. Van Wijck, 03/01/2019

Results:

For the first time, management forecasted a consistent, yearly increase in the expected revenues.

- Inquiry

According to the CFO, the current revenue projections are appropriate given the high potential of the industry and the company's established position in the market. The audit team review of the minutes from the board of directors' meetings, however, revealed concerns over the sustainability of the firm's growth rate.

- Market study

The audit team obtained an external market research report on Pure Electric's performance in the market. As it turns out, competition is increasing and the SBU's market share is under pressure.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.25%, 0.5% and 1% decrease in the projected revenue for each of the following five years. As it turns out, considerable decreases in the equity value can be documented.

- General conclusion

Based on the procedures performed, the projected revenue for the years ended 31/12/2019 through 31/12/2023 appears to be overly optimistic.

2. Evaluate management's projections for capital expenditures for the years ended 31/12/2018 through 31/12/2023 — J. Van Wijck, 03/01/2019

Results:

The audit team compared the historical capital expenditures as a percentage of revenue with future projections and noted an increase in the capital expenditures.

- Inquiry

The audit team inquired with the COO and CFO to unravel the underlying cause of the increase. In their opinion, the increase is related to scheduled renovations in an effort to further optimize the production capacities of the various plants. Upon reviewing the meeting notes of the Board of Directors, the audit team took notice of their intention to invest in new machinery, which corresponds to the COO and CFO's explanation.

- Market study

The audit team compared the projected capital expenditures with comparable peer firms, but failed to observe this trend among other firms. In addition, they verified whether the increase corresponds to the required investment, for which they found an indication.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a € 1 million increase in the projected capital expenditures for each of the following five years. As it turns out, no considerable decreases in the equity value can be documented.

- General conclusion

Based on the procedures performed, the projected capital expenditures for the years ended 31/12/2019 through 31/12/2023 appear reasonable.

3. Evaluate management's projections for operating expenses for the years ended 31/12/2018 through 31/12/2023 — J. Van Wijck, 03/01/2019

Results:

The audit team compared the historical operating expenses as a percentage of revenue with future projections and noted a decrease in the operating expenses.

- Inquiry

The audit team inquired with the CFO and CEO to find an explanation for the sudden decrease in operating expenses. They state that the decrease can be directly attributed to investments in the organization's machinery, which allows for an optimization of the production process and a better inventory management. Upon reviewing the meeting notes of the Board of Directors, this was confirmed but at the same time it was noted that the business will adopt an aggressive marketing strategy to defend its market share.

- Market study

The audit team evaluated the historical accuracy at forecasting future operating expenses and inconsistencies in the accuracy were observed over time. In addition, the audit team compared the expected trend in the operating expenses with this of comparable peer firms as forecasted by market analysts. As it turns out, lower net operating margins are expected by others in the industry.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.5% and 1% increase in the projected operating expenses for each of the following five years. As it turns out, this would lead to a decrease in FVE of about 95 000 and 145 000 respectively.

- General conclusion

Based on the procedures performed, the projected operating expenses for the years ended 31/12/2019 through 31/12/2023 raise a concern.

FOUNDATION FOR AUDITING RESEARCH

4. Evaluate the discount rate used in management's valuation analysis. J. Van Wijck 07/01/2019

Results:

- Inquiry

The audit team inquired with the CFO to motivate the adoption of the discount rate. According to him, the discount rate was computed in line with common practice in the industry.

- Market study

The audit team gathered information on the historical and present discount rates used by organizations in the same industry. As it turns out, the company has consistently adopted a discounted rate that is in line with the industry average.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.5% increase in the discount rate for the following five years. As it turns out, this would have a considerable negative impact on the FVE. In addition, an external report was consulted to assess the potential impact of any future market trends, but no significant matters were remarked.

- General conclusion

Based on the procedures performed, the discount rate adopted for the years ended 31/12/2019 through 31/12/2023 is reasonable.

5. **Evaluate the taxation rate used in management's valuation analysis**. J. Van Wijck 07/01/2019

Results:

- Inquiry

The audit team inquired with the CFO to motivate the choice of the taxation rate. According to him, the tax rate was chosen in line with the intention to arrive at the most representative figures for the company. No references were made to the effective tax rate of the past years.

- Market study

The audit team gathered information on the present-day taxation rate in the Netherlands and the one adopted by comparable peer firms, both of which were found to align with the tax rate adopted by the organization. In addition, the government gazette was consulted to verify whether there are any changes to the corporate tax regulation. As it turns out, tax reforms are about to take place from next year onwards and will be materially enacted before year-end.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.5% and 1% increase in the taxation rate for each of the following five years. As it turns out, this would have no considerable impact on the FVE.

- General conclusion

Based on the procedures performed, the taxation rate adopted for the years ended 31/12/2019 through 31/12/2023 poses a concern.

6. Evaluate the long-term growth rate used to determine the terminal value in the management's valuation analysis. J. Van Wijck 07/01/2019

Results:

- Inquiry

The audit team inquired with the CFO to motivate the choice of the long-term growth rate. According to him, the prosperous future outlook of the industry yields a huge potential for market share growth, which, in turn justifies the long-term growth rate that was set. Upon investigating the meeting notes of the board of directors, however, it is identified that new competitors entering the market may pose a significant threat in the future.

- Market study

The audit team gathered an external report on the evolution of the industry in the upcoming years and remarked that a compound annual growth rate (CAGR) of 22.3% is expected. In addition, the audit team gathered information on the long-

term growth rates used by comparable industry peers. As it turns out, the business unit's expected growth rate is well-above the industry average.

- Sensitivity analysis

A sensitivity analysis was performed to show the effect on FVE of a 0.5% and 1% decrease in the long-term growth rate. As it turns out, this would have a considerable impact on the FVE.

- General conclusion

Based on the procedures performed, the long-term growth rate adopted for the years ended 31/12/2019 through 31/12/2023 appears too aggressive. Hence, it does not represent the average projected inflation rate of the countries in which the SBU operates.

Based on the audit procedures performed, it can be concluded that the violation of one or more assumptions would lead to a goodwill impairment.

Goodwill Impairment Test | Management assumptions

December 31, 2018

(in billions)

	Value in Use	Carrying Amount	Result
Total	€ 1.2 (1)	€ 1.15 (2)	Test passed: [(1) > (2)]

Goodwill Impairment Test – Sensitivity Analysis| Insights on the assumptions acquired by the audit team

December 31, 2018

(in billions)

	Value in Use	Carrying Amount	Result
Total	€ 1.08 (1)	€ 1.15 (2)	Test fails: [(1) < (2)]

3. Evaluation of the information sources used by management to arrive at their conclusions.

   Apart from a purchased market study, management mainly relied on internal information to arrive at their estimate, which is a reason for concern: no third party specialists were hired by the business unit. In addition, the absence of the segregation of duties relating to the business plan preparation and budgeting processes also casts considerable doubt on the accuracy of the information. Overall, due care is advised related to the interpretation of the internal estimates.

Sign-off

The 2018 audit of Probe-IT 'Pure Electric' business unit audit prepared by:

John Van Wijck — Signature

31/03/2019 — Date

FOUNDATION FOR AUDITING RESEARCH

Probe-IT, inc. – Hybrid SBU

Goodwill Impairment Test

December 31, 2018

Management performed a goodwill impairment test for the FVE that was obtained by applying the Discounted Cashflow Method (DCF). The DCF is presented on the next page. As can be observed in the table below, the step one analysis provides an indication that the FVE of the business unit exceeds its book or carrying value, implying that there is no impairment.

Goodwill Impairment Test

December 31, 2018

(in billions)

	Fair Value	**Book Value**	**Result**
Total	€ 3.2 (1)	€ 3.05 (2)	Step 1 passed: [(1) > (2)]

Probe-IT, inc. – Hybrid SBU

Discounted Free Cash Flow Analysis for 2018

December 31, 2018

(in millions)

	Audited 31/12/2016	Audited 31/12/2017	Unaudited 31/12/2018	Projections 31/12/2019	31/12/2020	31/12/2021	31/12/2022	31/12/2023	Terminal Value
Revenue (operating & other)	1 227	1 371	1 653[20]	1 851	2 092	2 405	2 742	3 071	
Revenue growth		12%	21%	12%	13%	15%	14%	12%	
Operating expenses	1109	1249	1444	1636	1870	2177	2507	2829	
Operating income	118	122	209	215	222	228	235	242	
Operating income growth		2,5%	71,3%	2,9%	3,3%	2,7%	3,1%	3,0%	
Operating margin	9,6%	8,9%	12,6%	11,6%	10,6%	9,5%	8,6%	7,9%	
Less: depreciation	31	34	91	96	102	110	119	77	
EBIT	87	88	118	119	120	118	116	165	
Provision for income taxes	20	22	30	30	30	30	29	41	
Debt-free net income	67	66	88	89	90	88	87	124	
Cash flow (CF) adjustments:									
Depreciation	31	34	91	96	102	110	119	77	
Capital Expenditure	(32)	(35)	(142)	(141)	(139)	(145)	(142)	(33)	
Incremental working capital	(2)	(3)	(6)	-	-	-	-	-	
FCF (free cash flow)	64	62	31	44	53	53	64	168	168
Present value factor				0.9434	0.89	0.8396	0.7921	0.7473	
Present value of discrete CF				42	47	45	51	126	

Total present value of discrete CF	311
Present value of terminal value	4436
Business enterprise value	4747
Less: interest-bearing debt	1500
Fair value of equity	3247

Assumptions:

Corporate tax rate:	25%
Depreciation rate:	2.5%
Discount rate:	6%
Long-term growth rate:	3%

Capitalization	multiple	33.33
Terminal	value	5600

[20] In an effort to capture more market share, intensive marketing campaigns centered around discounts were rolled out. As a result, the actual results for 2018 were lower than expected and the revenues did not reach the forecasted € 1.9 billion. lower than the expected 1.9 billion. However, provided that it concerns a unique, one-time campaign, future projections are still based on the list prices.

Probe-IT, inc. – Hybrid SBU

Management Memo

December 31, 2018

Purpose

The purpose of this memo is to further clarify our SBU's financial performance for 2018 and to better frame the assumptions necessary to compute its FVE. This memo will first describe the SBU's competitive position and its financial performance before moving on to an in-depth assessment of any assumptions that were made.

Competitive environment and financial performance

Thanks to the purchase of a market research study made by specialists, we were able to acquire thorough insights on the future development of the electric vehicle market and the competitive landscape of the industry. In line with our own observations and predictions, the market will start to boom in the upcoming years as important technological advances in the industry will be realized and people's awareness and interest will increase. Overall, we expect the market to grow with a compound annual growth rate of approximately 22% from 2018 onwards, which, in turn, is assumed to translate in a revenue growth of 14% on average for our business unit. We believe this growth rate to be appropriate and reasonable given our excellent reputation in the market and the opportunity to utilize our newly acquired production capacity. As it turns out, we saw an increase of 21% in revenues compared to the previous year and hence, even exceeded our own expectations. Revenue projections are based on expected list prices using standard discounting. In the past, net revenues (including discounts) have been always very close to the predicted revenues.

At present, the electric vehicle market is still quite niche with only a handful of established competitors offering hybrid cars for sale. This is bound to change in the future, however, provided that a substantial number of companies offering classic, traditional cars has plans to enter the market as soon as ambient market conditions are achieved. The results of an internal study suggest that this trend is not expected to pose any concern for firm growth, and a benchmarking analysis reveals that this idea is shared by our main competitors, Tobe-IT and Loge-IT. The tables below give an overview of their estimates for revenue and revenue growth over the next five years and highlight that little to no impact is expected on the growth rate.

Revenue forecast for Loge-IT inc., Hybrid SBU

2019 – 2023

(in millions)

Revenue *(growth)*

December 31st, 2019	December 31st, 2020	December 31st, 2021	December 31st, 2022	December 31st, 2023
110 425	**120 363**	**134 806**	**148 288**	**164 600**
(10 %)	*(9 %)*	*(12 %)*	*(10 %)*	*(11 %)*

Revenue forecast for Tobe-IT inc., Hybrid SBU

2019 – 2023

(in millions)

Revenue *(growth)*

December 31st, 2019	December 31st, 2020	December 31st, 2021	December 31st, 2022	December 31st, 2023
80 306	**87 534**	**97 162**	**106 879**	**119 704**
(8 %)	*(9 %)*	*(11 %)*	*(10 %)*	*(12 %)*

The acquisition of the competitors was very fruitful as it led to an increase in sales and helped in reaching our strategic objective of establishing a global market presence in the long run. According to company policy and Dutch GAAP, this investment of € 250 million was put on the balance sheet and written off over a period of five years.

Assumptions

To arrive at an estimate for the FVE, we had to make a couple of important assumptions. In what follows, the most important ones will be briefly discussed on a one by one basis.

Corporate tax rate

The corporate tax rate is applied to an organization's total income and reflects a direct tax imposed by the State on the organization. In view of the discounted cash flow analysis, a tax rate of 25% was chosen as this aligns best with the company's situation. In spite of recent tax reforms, we expect the old, traditional tax rate of 25% to produce the most reliable and representative figures.

Discount rate

The discount rate reflects the company's weighted average cost of capital (WACC) and was set at 6% in view of the discounted cash flow analysis. To ascertain the reasonableness of the WACC, we made a comparison with the discount rates used by our industry peers, and concluded that the peer average is equal to the WACC we used. Hence, a discount rate of 6% is deemed reasonable.

Discount rate: Industry Benchmark

Loge - IT	Tobe-IT	Flose-IT	Glove-IT	Stole-IT	Peer Average	Probe-IT
6.5 %	**5.9 %**	**5.35%**	**6.40%**	**5.85%**	**6.0%**	**6.0%**

Long-term growth rate

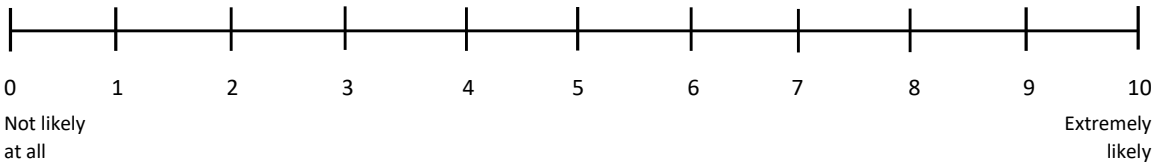
Normally, the long-term growth rate approximates the long-term inflation rate which generally ranges between 1.6 and 2.1%. For the purpose of the discounted cash flow analysis, however, a long-term growth rate of 3% was chosen. In particular, we chose to deviate from the common long-term growth rate because of industry specific factors. While the industry is still emerging, its potential is already high, competition is limited and barriers to entry are substantial.

FOUNDATION FOR AUDITING RESEARCH

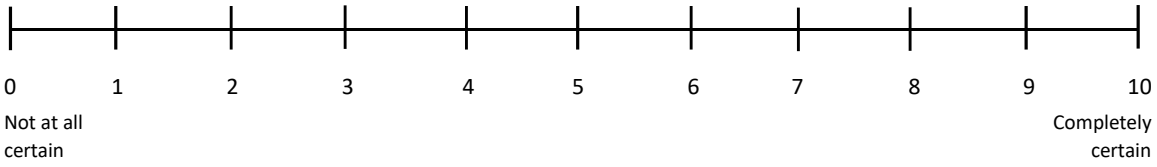
Case: Questions (Part 1)

On the basis of the information that was provided, please answer the following questions about the case.

1. How likely is it that Hybrid's current FVE of €3.2 billion is fairly stated?

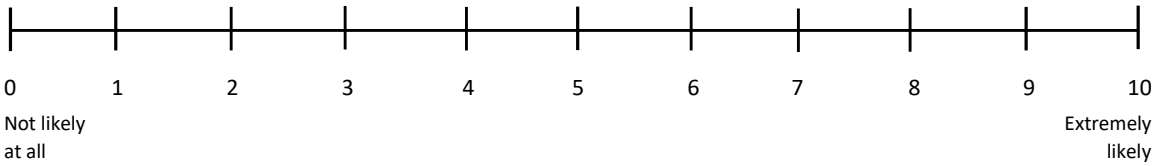


2. How certain are you about your answer to the question above?



3. Would you recommend to your superior that Probe-IT adjusts the FVE for its Hybrid SBU?
   - ☐ Yes, upwards
   - ☐ Yes, downwards
   - ☐ No

4. How likely would you request more information from the firm and perform additional procedures before drawing a conclusion on the reasonableness of Hybrid's FVE?

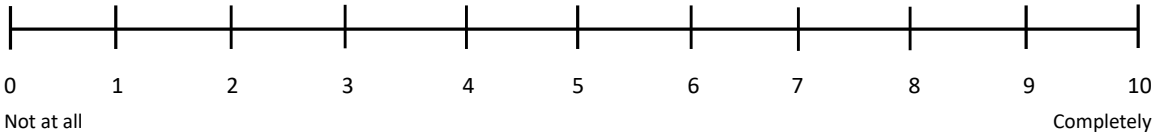


5. What kind of information was decisive in your decision about Probe-IT's Hybrid SBU FVE?

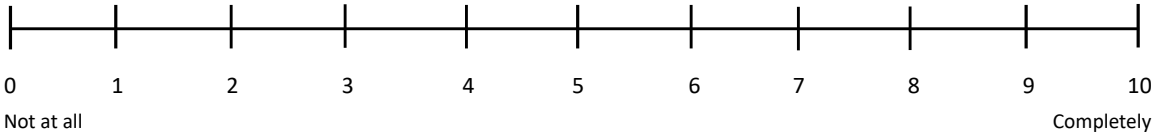
When you are finished answering the questions above, please put these papers back in the original envelope, raise your hand and wait for the instructor to hand you the final series of questions.

Case: Questions (Part 2)

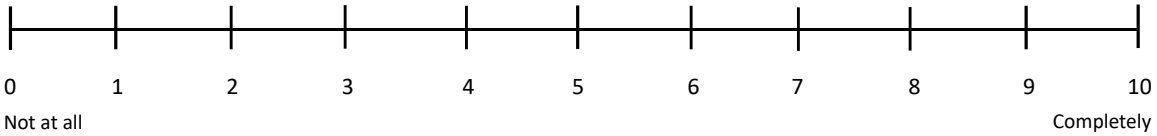
1. Consider the working paper of your superior John Van Wijck. To what extent did you adopt your superior's approach related to the audit of the 'Pure Electric' SBU for auditing the FVE of the 'Hybrid' SBU?



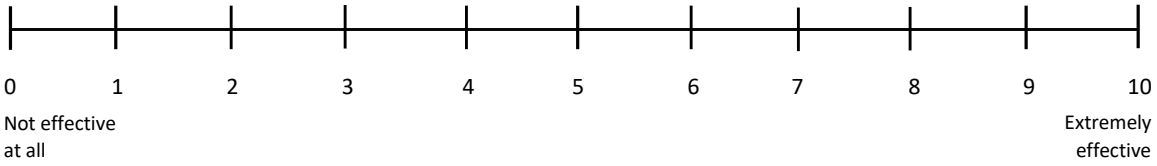
2. To what extent did you align with the working style of John Van Wijck to audit the FVE of the 'Hybrid' SBU?



3. To which extent would your audit opinion be based on similar procedures described in John's working paper?



4. How effective do you consider the audit procedures adopted by your superior John Van Wijck?



5. Please rate the importance of the following documents for your audit opinion.

	Not at all important — Highly important
The discounted free cash flow analysis for 'Hybrid'	1 2 3 4 5 6 7
The management memo for 'Hybrid'	1 2 3 4 5 6 7
John's working paper for 'Pure Electric'	1 2 3 4 5 6 7

6. Please indicate the extent to which you agree with the following statements.

	Completely disagree						Completely
'I believe the competitive environment to raise a concern in view of the SBU's FVE.'	1	2	3	4	5	6	7
'I believe the absence of a segregation of duties to raise a concern in view of the SBU's FVE.'	1	2	3	4	5	6	7
'I believe the revenue benchmarks to raise a concern in view of the SBU's FVE.'	1	2	3	4	5	6	7
'I believe the sensitivity analyses to raise a concern in view of the SBU's FVE.'	1	2	3	4	5	6	7
'I believe the management assumptions to raise a concern in view of the SBU's FVE.'	1	2	3	4	5	6	7

More precisely, related to which assumption(s), if any, in the discounted free cash flow model do you see a potential concern? Multiple boxes can be ticked.

- Corporate tax rate
- Depreciation rate
- Discount rate
- Long-term growth rate
- Revenue projections
- Operating expense projections
- Capital expenditure projections
- I do not see any concern related to the assumptions

7. Please indicate for the following items to what extent you would perform fewer or more procedures as your superior, John in your work paper.

	Fewer			As much			More
Sensitivity analyses in auditing the FVE of the business unit	1	2	3	4	5	6	7
Inquiries with management in auditing the FVE of the business unit	1	2	3	4	5	6	7
Benchmark analysis in auditing the FVE of the business unit	1	2	3	4	5	6	7

When you are finished answering the questions above, please put these papers back in the original envelope, raise your hand and wait for the instructor to hand you the final series of questions.