Essays on the Role and Impact of Accountants in Mittelstand Firms

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List of Abbreviations

ABDC	Australian Business Deans Council
CEO	Chief Executive Officer
CFO	Chief Financial Officer
e.g.	Exempli Gratia
i.e.	Id Est
IEB	Individual Entrepreneurial Behaviour
MCE	Management Control Effectiveness
MCS	Management Control Systems
OLS	Ordinary Least Squares
RBV	Resource-Based View
RQ	Research Question
SME	Small and Medium-Sized Enterprises
VHB	Verband der Hochschullehrer für Betriebswirtschaft
VIF	Variance Inflation Factor

A. Introduction

This thesis aims to analyse the role and impact of accountants in Mittelstand firms in three essays. German Mittelstand firms seem to have fascinated practitioners and researchers around the world for quite some time. In 2013, *Bloomberg* called the German Mittelstand "Europe's Locomotive" in terms of economic success. *The Wall Street Journal* described the German Mittelstand in 2011 as a "legion of smaller companies" that function as the "engines of growth" despite being much smaller than many publicly owned and well-known larger companies. In 2012, *The Economist* titled "Why doesn't France have a Mittelstand? Envy of Germany's medium-sized family firms sparks a desire to emulate them". It appears that internationally, Mittelstand firms are both credited and admired for their contribution to Germany's wealth and economic success (Elston & Audretsch, 2001; Pahnke & Welter, 2019; Simon, 1996). However, as pointed out by Simon (1996) in the article "You Don't Have to be German to be a *Hidden Champion*", Mittelstand firms are not a mere German phenomenon, but rather a group of firms who are mostly not large in size, but nevertheless often very successfully world market leaders in a niche market, mostly without being known to the general public. Despite their success, Mittelstand firms face several, often times interrelated resource constraints that are, in most cases, associated with smaller firm size (De Massis et al., 2018; Pissarides, 1999). Among other restraints, the literature names a lack of financial resources and a lack of managerial expertise as the most challenging obstacles for small and medium-sized enterprises (SMEs) in general (Pissarides, 1999) and, hence, for Mittelstand firms as a subset of SMEs in particular. Such constraints can have severe negative outcomes. A lack of managerial skills in the field of finance and accounting can lead to financing decisions often being based on "gut feeling (…) rather than (…) (being) a result of a formal planning process" (Ekanem & Smallbone, 2007, p. 117). Given the often-times scarce resources of these firms, this can be fatal as it appears logical that the more restricted a firm's resources are, the more vulnerable

the firm is to false financing decisions. Hence, SMEs are well-advised to manage their scarce resources particularly well. Apart from that, other negative outcomes resulting from a lack of financial and managerial skills can be expected. In particular in family-owned firms – a group to which many Mittelstand firms belong to (De Massis et al., 2018)– a lack of formalized planning can furthermore pose difficulties to the succession processes as it makes it difficult to transfer the often-times implicit knowledge of the firm founder or current owner to the next generation (Giovannoni et al., 2011). Additionally, literature has shown that a lack of financial and human resources – managerial skills being a subgroup of the latter – are among the biggest obstacles for Mittelstand firms who aim for innovation (De Massis et al., 2018). This dissertation intends, therefore, to analyse the role one particular managerial resource – accountants – play in Mittelstand firms, and the impact they can have, especially regarding the above-discussed challenges many Mittelstand firm face. The dissertation is clustered into three separate papers that each address one aspect of the topic (see Table A 1 for a summary of the papers' titles, authors, methods, contributions, and their history regarding submissions and presentations). The underlying assumption of all three papers is that it is overly simplified that accountant employment always has the same effect in all firms (e.g., employment of accountants always professionalizing the management control systems, improving access to financing, or fostering succession success), but a more granular view on accountant employment is necessary depending on, among other factors, the role the accountants play in the Mittelstand firm.

Title	Authors	Methodology and Sample	Contribution	Presentation and submissions
Accountants and Small and Medium-Sized Enterprises: Towards a Resource-Based View	Christine Weigel Martin R. W. Hiebl	Systematic Literature Review; Sample of 62 empirical articles on accountants in SMEs	(a) Providing the first systematic literature review on accountants in SMEs (b) Harmonizing findings from previous research by analysing the literature through the lens of the RBV (c) Developing a model on accountants in SMEs based on a coherent theoretical lens and identifying future research avenues based on this model	Presented at the 1st EIASM Conference on Management Accounting and Control in SMEs in Assisi, Italy, and the 42nd Annual Congress of the European Accounting Association (EAA) in Paphos, Cyprus Submitted and accepted for presentation at the 103rd Annual Meeting of the American Accounting Association (AAA) in San Francisco, USA
The Impact of Controller Involvement in Strategy Development on Management Control Effectiveness	Christine Weigel Martin R. W. Hiebl	Quantitative; Combination of 233 complete or partially complete questionnaires sent to the highest ranked-financial managers of firms and archival data on the same firms	(a) Providing evidence that for an efficient management control design, the involvement of the designer of such systems (that is, controllers) in strategy is a prerequisite (b) Showing that the firm's strategy type affects not only the design of management controls, but also the way in which controllers should be involved in strategy development to design efficient management controls	Presented at the 9th Empirical Research in Management Accounting & Control (ERMAC) Conference in Vienna, Austria

Table A 1: Overview of the papers included in this dissertation

Title	Authors	Methodology and Sample	Contribution	Presentation and submissions
Financial Managers and Organizational Ambidexterity in the German Mittelstand: The Moderating Role of Strategy Involvement	Christine Weigel Martin R. W. Hiebl Klaus Derfuss	Quantitative; Combination of 233 complete or partially complete questionnaires sent to the highest-ranked financial managers of firms and archival data of the same firms	(a) Providing empirical evidence that well-suited financial managers can foster high levels of organizational ambidexterity (b) Showing that Mittelstand firms can achieve high levels of organizational ambidexterity despite their resource restrictions (c) Linking financial managers with a non-finance and non-accounting related outcome, the level of organizational ambidexterity, that is not typically within the focus of research on financial managers	Submitted and accepted for presentation at the 27th Innovation and Product Development Management Conference (IPDMC) in Antwerp, Belgium

Table A 2: Overview of the paper included in this dissertation (continued)

Therefore, as a first step, this dissertation's first paper (*Accountants and small and medium-sized enterprises: towards a resource-based view,* Section B) provides a systematic literature review on the current body of knowledge on accountants in SMEs. Within this review paper, the current literature on accountants in SMEs is analysed through the lens of the resource-based view (RBV) theory. RBV-theorists argue that a resource in general and human resources, in particular, differ in their potential to create competitive advantages for firms (Wright et al., 2001). RBV-theory offers four criteria to evaluate such a potential: the rarity of a resource, the value creation of it, the potential to be imitated by another resource, and the likelihood to be substituted by another resource (Wright et al., 2001). The systematic review builds on those four criteria and analyses the current literature on accountants in SMEs by outlining what the antecedents for employing accountants in roles with a higher likelihood of achieving a competitive advantage are, how different accountant roles vary in their likelihood to achieve a competitive advantage, and what outcomes the literature currently associates with accountant employment. Thereby, the first systematic literature review on this topic is provided, which harmonizes the findings of the current literature by analysing the literature through a coherent theoretical lens. In addition, based on the RBV, a model for future research on accountants in SMEs is developed.

Building on the theory-driven systematic literature review, this dissertation empirically analyses two outcomes of accountant employment in two separate quantitative papers. The first quantitative paper, *The Impact of Controller*[1] *Involvement in Strategy Development on Management Control Effectiveness* (Section C), analyses the impacts accountants can have on designing efficient management control systems. Management control systems (MCS) are considered efficient when they help the firms achieving their priorities, such as improving firm-

[1] Within this dissertation, the terms *controllers* and *financial managers* are used as synonyms for *accountants* as they often fulfil tasks that are considered accounting tasks.

level efficiency, being innovative, or ensuring the firm is able to adapt to changes in business demands (Bedford et al., 2016). We argue that MCS differ in their efficiency depending on the degree to which controllers are involved in the firm's strategy development. Building on Merchant and van der Stede (2017), we assume that the actors who design MCS (i.e., accountants) are in a better position to design efficient – hence, priorities-supporting – MCS the more they understand the firm's strategy. Hence, the first research question (RQ) of the first paper is:

- *Section C, RQ 1: Is there a positive effect of controller involvement in strategy development on management control effectiveness?*

In addition, past research has shown that designing MCS is more challenging in prospector firms since they usually need to reflect much broader requirements than MCS in defender firms (e.g., Bedford et al., 2016; Simons, 1987). We, therefore, assume that controllers in prospector firms will be able to benefit more from involvement in strategy development than controllers in defender firms will. Hence, the second research question of the first paper is:

- *Section C, RQ 2: Is the positive effect of controller involvement in strategy development on management control effectiveness more pronounced in prospector firms than in defender firms?*

The last paper of this dissertation (*Financial Managers and Organizational Ambidexterity in the German Mittelstand: The Moderating Role of Strategy Involvement*, Section D) will analyse a non-finance-related and non-accounting-related outcome of accountant employment, namely organization ambidexterity. Whereas the literature has quite intensely analysed financial- and

accounting-related outcomes (see Plöckinger et al., 2016, for an overview), non-finance-related and non-accounting-related outcomes are still under-researched. Past research has indicated that achieving organizational ambidexterity – that it, the ability to "exploit existing assets (…) in a profit-producing way and simultaneously (…) explor(ing) new technologies and markets" (O'Reilly III & Tushman, 2011, p. 5) – is particularly difficult for firms of smaller size since they often times lack the financial resources to manage the demands of both – at times contradictory – orientations (e.g., Voss & Voss, 2013). Evolving Mittelstand theory has, in fact, argued that a lack of financial resources and a lack of human resources are among the greatest obstacle for Mittelstand firms aiming for innovation (De Massis et al., 2018). Qualitative empirical evidence by Sinha (2019) has indicated that managers of firms with limited resources can help the firms being ambidextrous by fostering both explorative and exploitative activities. Literature in this stream has quite intensely analysed the role of the top management and its characteristics (e.g., Li, 2013; Lubatkin et al., 2006; Mihalache et al., 2014). However, we assume that it is equally important to analyse the characteristics of the firms' financial managers since they are most likely to be responsible for providing resources to these activities. Therefore, the first five RQs of the third paper analyses the impact of several financial manager's characteristics (age, business education, gender, tenure, and individual entrepreneurial behaviour) on the level of organizational ambidexterity. More precisely, we aim to answer five RQs:

- *Section D, RQ 1: Are Mittelstand firms with younger financial managers more likely to achieve higher levels of* organizational *ambidexterity?*
- *Section D, RQ 2: Are Mittelstand firms with financial managers holding business degrees less likely to achieve higher levels of* organizational *ambidexterity?*

- *Section D, RQ 3: Are Mittelstand firms with male financial managers more likely to achieve higher levels of* organizational *ambidexterity?*
- *Section D, RQ 4: Are Mittelstand firms with managers with a shorter tenure more likely to achieve higher levels of* organizational *ambidexterity?*
- *Section D, RQ 5: Are Mittelstand firms with financial managers with higher levels of individual entrepreneurial behaviour (IEB) more likely to achieve higher levels of* organizational *ambidexterity?*

Research by Cao et al. (2009) has shown that one reason why an ambidexterity-fostering resource allocation is so difficult to achieve is that it requires an understanding of complex and paradoxical strategic requirements associated with both explorative and exploitative activities. We, therefore, assume that it is not sufficient to employ a financial manager with certain characteristics when aiming for high levels of organizational ambidexterity, but that the financial manager also has to be involved in strategy development to understand where resources are required to foster ambidexterity. Hence, the last RQ of the third paper is:

- *Section. D, RQ 6: Is the relationship described in Section D, RQ 1-RQ 5, more pronounced if financial managers are more involved in strategy development?*

To analyse the research questions proposed in Section C and Section D, two data sources are combined. Both papers rely on a combination of archival data (e.g., on the firm's size and industry), and data generated through a structured questionnaire sent to the highest-ranked financial manager of these firms. The survey data was collected in two waves taking place between March 2018 and July 2019. In total, 233 complete or partially complete questionnaires could be obtained during

both waves and are the sample upon which the data analyses in both empirical papers within this dissertation are based upon.

The remainder of this dissertation is structured as follows. Section B to D include the dissertation papers discussed above. Section E will conclude the dissertation with a summary of its main findings in particular in the light of the overall topic of the dissertation.

B. Accountants and Small and Medium-Sized enterprises: Towards a Resource-Based View

1. Introduction

Small and medium-sized enterprises (SMEs) are often highly important for economic development and growth (Beck and Demirguc-Kunt, 2006; Stone, 2015). In the European Union, 99% of all enterprises can be considered SMEs, and approximately two-thirds of all private sector employment is provided by SMEs (Blackburn and Jarvis, 2010). Despite their economic importance, SMEs are often characterized by several constraints, which are referred to as the liabilities of smallness (Lu and Beamish, 2006). Among these liabilities are problems in recruiting and keeping qualified employees (Aldrich & Auster, 1986), raising capital (Aldrich & Auster, 1986), handling costs associated with complying with governmental regulations (Aldrich & Cliff, 2003; Lu & Beamish, 2006) and a general lack of resources (Lu & Beamish, 2006). In addition to these constraints, family-owned SMEs often struggle from their tendency to restrict their pool of potential employees for key positions to members of the controlling families (Barbera and Hasso, 2013).

Such constraints may—at least partly—be overcome by the employment of internal or external accountants. Previous research has often named accountants as the most used or the most important source of advice for SME owners (exempli gratia (e.g.), Jay and Schaper, 2003; Kirby and King, 1997; Perry et al., 2010; Ramsden and Bennett, 2005). However, findings on the impact of accountants in SMEs vary considerably and are contradictory in parts. While there is some agreement in the literature that accountant employment in SMEs is positively linked to business-process-related outcomes such as professionalization, providing better access to capital and increasing the likelihood of firm survival, findings on the performance effects of accountants in SMEs are mixed. We argue that such inconsistencies in the literature can—at least partially—be

ascribed to the fact that existing research in this field is largely under-theorized. In this paper, we, therefore, aim to disentangle, integrate, and synthesize the existing body of knowledge on accountants in SMEs. To facilitate theory building in this domain, we draw on the resource-based view (RBV) as our theoretical lens. In short, RBV proponents argue that the more a resource is rare, valuable, inimitable, and non-substitutable, the more it can be a source of competitive advantage. As of our reading of the literature, the RBV is well suited not only as an overall lens for the study of accountants in SMEs, but also able to disentangle so far contradicting results in the literature. Based on our review results, we argue that accountants can be highly important human resources for SMEs since, in SMEs, the impact of individual human resources is usually higher than in larger firms (Lockett et al., 2009). Accountants can thus create competitive advantages for SMEs, which makes their examination highly relevant for future research.

At the same time, the RBV also helps to explain why positive SME performance effects of accountant employment—a relationship which several papers in this review sample tried to prove—are hard to find. Proponents of the RBV argue that performance is rather not suited to function as an outcome variable in resource-based studies (Lockett et al., 2009; Ray, Barney, & Muhanna, 2004). The reasoning behind this is that sources of competitive advantage—such as accountants—can drive business process outcomes. However, firm performance is usually driven by more than one factor (Lockett et al., 2009). This makes it difficult to link performance outcomes back to a single specific source of competitive advantage (Lockett et al., 2009; Ray et al., 2004). Hence, we argue that previous accounting research, which has tried to link SME performance to the employment of accountants, does not only suffer from methodological issues but also draws a too simple theoretical picture of SMEs. Such research directly linking accountants to performance outcomes is likely to have overestimated the impact of accountants in many SMEs and underestimated other performance-influencing factors. Following central tenets of the RBV, in this

paper, we propose that it is more fruitful to link accountants to process-related outcomes instead of performance-related ones.

In this paper, we, therefore, draw on the RBV to present a picture of accountants in SMEs that is based on more consistent theory and can, therefore, serve as a roadmap for future theory-consistent research. By doing so, this paper contributes to the literature in three ways. First, it provides the first synthesized review on accountants in SMEs. Second, it harmonizes previous research findings by viewing them through a coherent theoretical lens, and thereby facilitate theory building in this field. Third, based upon a theoretically framed model on accountants in SMEs, it identifies future, theory-driven research avenues.

The remainder of this paper is structured as follows. Section 2 briefly introduces the RBV and explains under which conditions human resources such as accountants can create competitive advantages. Section 3 outlines the methods of our systematic literature review employed in this paper and provides key characteristics of the review sample. Based on the RBV, Section 4 critically reviews this literature and is organized along three clusters: the roles of accountants in SMEs, issues in the SME-accountant-relationship, and the impact of accountants on SMEs. Section 5 uses both the review findings and key tenets of the RBV to develop a model on the current state of research on accountants in SMEs and proposes another model for future research. Section 6 sketches some important future research avenues. Section 7 closes the paper with a discussion and conclusion.

2. A Resource-Based View on Accountants in SMEs

In short, the RBV assumes that there are internal resources that a firm can use to gain competitive advantages over other firms (Wright et al., 1994). It can be seen as a complement of the industrial organization view, which argues that competitive advantages could be explained through factors outside of a firm (Kraaijenbrink et al., 2010). In its most basic form, early RBV theorists understood a resource as “anything which could be thought of as a strength or weakness

of a given firm" (Wernerfelt, 1984, p. 172). Such resources include "all assets, capabilities, organizational processes, firm attributes, information, (and) knowledge" (Barney, 1991, p. 101). However, not all of these resources automatically lead to a competitive advantage. Previous research has outlined four main criteria—also known as the VRIN criteria (Kraaijenbrink et al., 2010)—that a resource needs to feature for becoming a source of competitive advantage:

> "To have this potential, a firm resource must have four attributes: (a) it must be valuable, in the sense that it exploit(s) opportunities and/or neutralizes threats in a firm's environment, (b) it must be rare among a firm's current and potential competition, (c) it must be imperfectly imitable, and (d) there cannot be strategically equivalent substitutes for this resource that are valuable but neither rare nor imperfectly imitable" (Barney, 1991, p. 105-106).

Whether human resources—and thus, accountants—can function as a resource in the light of the RBV has been heavily discussed. Lado and Wilson (1994) argue that human resources do not have the potential to become resources in the sense of the RBV, and that it is rather a firm's human resources system that has this potential. In contrast, Barney (1991) explicitly names human capital resources (e.g., experience, training or intelligence of individual managers of the firm) as one of three major firm resources. It seems, however, that different human resources are not equally likely to function as a source of competitive advantage. Wright et al. (1994) provide a point-by-point-analysis under what circumstances human resources could lead to a competitive advantage based on the above-mentioned four criteria.

As human capital is typically not homogeneously distributed on labour markets, and within firms, employees differ in their skills. Consequently, it seems likely that human capital of high quality may create more value for the firm (Wright et al., 1994). It could, therefore, be argued that

the higher the qualification and skills of an accountant are, the more the accountant fulfils the first criterion of the RBV, which is value creation. In addition, due to SMEs' smaller pool of employees, key individual employees such as accountants may make a larger difference in SMEs than in large firms (Lockett et al., 2009). Hence, the value creation of an individual accountant in large firms might be comparably low, whereas the potential value creation of an individual accountant in smaller firms can be considered higher.

Wright et al. (1994) admit that human resources are not generally rare, arguing that whenever there is unemployment in a society, there is an excess and not a shortage of potential employees. However, some specific human resources are rare. Wright et al. (1994) submit that whenever job-relevant skills are not similar to commodities, which can be found in any potential employee, people providing these skills are a rarity. Especially jobs requiring a high level of cognitive abilities are characterized by a relatively low supply of qualified workers, making these workers rare resources. We, therefore, argue that the higher the cognitive abilities needed and used by an accountant in an SME are, the more the accountant can fulfil the second criterion of the RBV, which is rarity. In addition, SME-specific characteristics such as scarce financial resources or difficulties in employing highly qualified employees might make accountants even rarer in SMEs compared to larger firms, which usually have fewer resource restraints than SMEs. Therefore, accountants could be considered rare human capital in SMEs to a higher degree than they would be in large firms (cf. Caldeira & Ward, 2003).

When deciding whether resources in general and human resources, in particular, are imitable or not, Wright et al. (1994) claim that competitors must be both able to (i) identify the source of competitive advantage and (ii) be able to duplicate it. In the case of human resources, this would mean to identify the exact human capital resources responsible for a competitive advantage in a firm and then generate the same circumstances that made these human resources

successful in another firm (Wright et al., 1994). While it might be intuitively appealing to argue that if human resources could function as a source of competitive advantage, SMEs should simply hire key employees from their competitors, such an approach involves quite some challenges. Wright et al. (1994) argue that human resources are far from being perfectly or even highly mobile resources—for instance, due to high transaction costs associated with job transfers. Furthermore, Wright et al. (1994, p. 13) suppose that "it may be reasonable to speculate that the value of the focal relationship may be due to transaction-specific human capital, that is, the knowledge or the trust that are developed over time by the focal personnel and which have value only in that relationship." We, therefore, argue that an accountant in an SME is less likely to be imitable when the accountant is in a close, trusting relationship with the SME and provides firm-specific advice. SMEs typically have more problems in hiring and keeping highly skilled employees than larger firms (Way, 2002) and, as previously pointed out, are on average characterized by more severe financial restraints. In consequence, some SMEs tend to employ external accountants who provide only a rather standardized form of reporting, which usually comes with lower costs. Although such reporting is needed for statutory causes and is important for SMEs, it is less likely to function as an inimitable resource in the sense of the RBV. As Barney, Wright, & Ketchen (2001) have pointed out in the context of management information systems, having systems that provide information only is not a resource in itself and will therefore not lead to a competitive advantage, but the interface between skilled users and information systems might very well be a resource. We, therefore, argue that having an accountant who provides basic information on the firm in the form of standardized reporting is most likely not to be a source of competitive advantage for SMEs as such information and accountants providing it are easily imitable. However, having an internal or external accountant helping a small business to turn such information into appropriate actions might be less likely to be imitated and may thus function as a resource in the sense of the RBV.

The last RBV criterion is non-substitutability. Substitutability refers to the degree to which any "other firm resources, such as technology, have the potential for offsetting any competitive advantages attributable to human resources" (Wright et al., 1994, p. 15). When the risk of substitutability is high, an asset is less likely to function as a competitive advantage as it can be easily substituted by other assets. Within the specific case of accountants as human resources, some roles and functions are likely to be more easily substituted than others. In particular, the role of accountants as mere providers of information and reporting is at risk of being substituted by increasingly automated data technology systems (e.g., Liu & Vasarhelyi, 2014) and is, therefore, less likely to function as a source of competitive advantage. Furthermore, some of the outcomes of accountant employment mentioned below, such as legal support, may be performed equally well or even better by other types of advisors such as lawyers. Other accountant roles—for instance, supporting an SME in gaining access to finance or driving SME professionalization in accounting- and finance-related aspects—are less likely to be substituted either by technology or by other types of advisors.

To summarize, accountants may not generally serve as sources of competitive advantages, but when conforming with the VRIN criteria as discussed above, they may well do so. To assess this ability of accountants in contributing to SMEs' competitive advantage, RBV-based research needs to be able to draw on suitable dependent variables of resource-based research, or in other words: what are likely outcomes of resources scoring high on the VRIN criteria scale? And: how can competitive advantage be measured? Ray et al. (2004) suggest that the level of analysis should be business processes instead of performance, not because they deny any performance impact of a resource, but because specific impacts of one resource are complicated to be measured in complex organizational structures, even in SMEs. This notion can be explained by two factors:

i. Performance outcomes are dependent on various factors as "a firm's overall performance often depends on, among other things, how it implements numerous business processes" whose performance implications might cancel each other (Ray et al., 2004, p. 25; see also Lockett et al., 2009).

ii. Time lags between acquiring a resource and gaining a competitive advantage from this resource need to be considered when trying to measure outcomes of the RBV (Kraaijenbrink et al., 2010). If we assume that business processes are implemented or changed before a performance outcome arises from such sources of competitive advantage, considering time lags would be even more important.

Additionally, one reason why some firms might benefit more—both regarding performance-related outcomes, but also business-process-related outcomes—from a resource than others is that resource availability of one resource is far from being independent of the availability of other resources. That is, resources are often linked via path dependency with one another (Kraaijenbrink et al., 2010). Human resources can usually not be measured as binary variables—meaning that a firm either has the resource or not—but they differ highly in their embeddedness, their quality, and their degree to which a firm is capable of drawing a use out of the resource. Hence, some firms might be able to employ a higher quality resource or might be able to make more use of the resource depending on whether they possess other resources or not.

3. Review Methods and Sample Characteristics

Traditional literature reviews are often criticized for being highly subjective and for lacking protocol or description of how the review was conducted (Jesson et al., 2011). To avoid these disadvantages, a systematic literature approach was chosen for this paper. This review follows a method suggested by Tranfield, Denyer, and Smart (2003). They divide the literature review process into three stages:

(1) Planning the review

(2) Conducting a review

(3) Reporting and dissemination.

The first phase—planning the review—includes crafting a motivation for the review. The respective information for this review paper can be obtained from the introductory section above. In short, this paper aims to synthesize existing knowledge on accountants in SMEs, to arrive at an integrative theory of accountants in SMEs based on the RBV, and to chart theory-based future research needs in this domain. In the second phase of the review, conducting the literature review, relevant literature should be identified and analysed (Denyer & Tranfield, 2009). In line with prior systematic reviews in the accounting literature (e.g., Dai, Free, & Gendron, 2019; Franco-Santos, Lucianetti, & Bourne, 2012; Hiebl, 2018; Hoque, 2014), we will only consider empirical scientific literature that was published in English. To identify relevant literature, we relied on a keyword search in electronic databases. The search algorithm consisted of two keyword groups. The first group of keywords accounted for different kinds of financial managers that are either accountants or oftentimes fulfil tasks that typically are considered accountant tasks ("accountant*" OR "finance director*" OR "CFO*" OR "chief financial officer*" OR "controller*"). The second group of keywords addresses SMEs ("small business*" OR "SME*" OR "small and medium-sized"). Articles that were identified through the keyword search needed to contain a combination of both keyword groups, which was operationalized through an AND conjunction. The search strings were used in three academic databases (EBSCO Business Source Complete, Scopus, and Clarivate Web of Science), and small amendments to the search string were made when required by the databases. The first round of database search was conducted in 2014, and the database research was last repeated in 2019. In addition, similar to Hoque (2014), the Google scholar search engine was

utilized to find further relevant articles. After the initial database search, several articles were eliminated based on three criteria:

(1) Duplicates:

If articles were already part of the results of the previous database(s), they were excluded from the results of the following databases.

(2) Journal quality:

Tranfield et al. (2003) call for a quality assessment before articles are included in a review sample. Similar to other review papers in the accounting literature (e.g., Dai et al., 2018; Franco-Santos et al., 2012; Hoque, 2014), we draw on two journal rankings for our quality assessment. Articles were included in our review sample when they have been published in journals carrying a rating of C or better either in the Australian Business Deans Council (ABDC) journal quality list (2016) or the German Verband der Hochschullehrer für Betriebswirtschaft (VHB) JOURQUAL3 journal ranking (2015). While there are other journal rankings available, the two rankings from Australia and Germany are sufficiently broad to not artificially restrict our review universe to only a small set of journals, but at the same time provide some assurance that the findings in the journals ranked C or better show sufficient quality.

(3) Content fit:

If the title, abstract or full text gave reason to believe that the paper was not empirical and/or not concerned with this paper's research focus, the article was removed.

Due to the variety and inconsistency of SME definitions, we restrained from employing one specific SME definition (e.g., the SME definition of the European Union) and included articles that generally referred to themselves as articles on small- and/or medium-sized firms. Using these

procedures, a total of 62 articles could be identified, which form our review sample. Table B 1 provides an overview of the articles that were added to the review sample including the article's data collection type (qualitative vs. quantitative), the research's time frame (cross-sectional or longitudinal), the theoretical lenses explicitly used in the reviewed papers, and the status of the analysed accountants (id est (i.e.), internal or external). Interestingly, only 14 articles out of 62 were using quantitative longitudinal data. This is particularly troubling given the importance of time lags in assessing various outcome variables of accountant engagement in SMEs, such as firm performance.

Table B 2 provides an overview of key bibliographical information, including the research outlets they were published in and years of publication. Most papers included in our analyses were either published in outlets focusing on research on family businesses, SMEs, and entrepreneurship (27) or in accounting and auditing research journals (23). A small further portion of the articles was published in banking and finance journals (3). In addition to that, articles could also be found in other journals with their focus ranging from economics to innovation management, production planning, or even urban studies (in total nine articles).

Similar to the broad spectrum of utilized SME definitions, the reviewed papers do not follow one definition of an accountant. Within SMEs, accountants can be employed internally, but also external accountants can be consulted. In this review, both types of accountants were included. Furthermore, some of the included studies did not disclose whether they analysed internal or external accountants and simply referred to accountants in general.

Only 20 of the 62 papers included in our review sample explicitly mentioned a specific theoretical lens that was utilized. That is, we find that the current literature on accountants in SMEs is considerably under-theorized. This observation reinforces the need to develop a theoretical

framework that is able to capture the relationships identified in existing research and to serve as a roadmap for future, more theory-based research on accountants in SMEs.

Some of the reviewed papers do, however, explicitly draw on certain theoretical perspectives. Among these, six papers draw on agency theory. Whereas agency theory is suitable to research questions related to information asymmetries and problems arising from such asymmetries (e.g., Lambert, 2006), we argue that the RBV is suitable to analyze the role of accountants in SMEs beyond typical agency problems. Furthermore, recent research points towards the RBV and agency theory in fact not being based upon antagonistic assumptions, but rather that the RBV is well able to augment agency-theoretic assumptions (Carey & Tanewski, 2016; Gillis et al., 2014; Wood et al., 2018). For example, from an agency perspective, the ability of the SME owners to overcome information asymmetries with their accountants is likely to determine the degree of power that is given to an accountant. From an RBV perspective, this makes a powerful accountant in an SME rarer and less likely to be imitated, as it would likely require a long-established relationship between the SME owner and the accountant, or expensive agency mechanisms. Besides agency theory, some studies in our sample employ media richness theory. In short, this theory assumes in the context of accountants that it is—among other things—more valuable for some SME owners when the accountants provide them with information in a non-technical language that they can understand, or when the SME owners receive regular feedback from their accountants to assure understanding and avoid misinterpretations (Stone, 2011b). Such reasoning may, however, also be well theorized based on the RBV as such a setting would require a rather rare type of accountant who is willing and capable of adapting to the specific needs of SME owners. An accountant who is able to offer information that would score high in terms of media richness is likely to both be rare and valuable; hence the accountant is likely to be more of a resource than accountants who score low in terms of media richness.

Although we are aware that not all of the included papers follow all the assumptions made by proponents of the RBV, we are confident that the RBV is suited to function as a holistic theoretical framework for integrating our review's findings and does not contradict the theoretical lenses of the other employed base theories.

Author(s), Year	Article Type		Time Frame		Accountant Status			Theory explicitly used
	Empirical Quantitative	Empirical-Qualitative	Cross-Sectional	Longi-tudinal	Internal	External	n.d.	
Allee & Lombardie Yohn (2009)	X		X				X	No Theory
Barbera & Hasso (2013)	X			X		X		RBV
Bennett and Robson (1999)	X		X			X		No Theory
Bennett, Robson and Bratton (2001)	X		X			X		No Theory
Berman Brown et al. (2006)	X			X			X	No Theory
Berry et al. (2006)	X		X			X		No Theory
Berthelot & Morrill (2016)	X		X		X			No Theory
Birley (1985)	X		X				X	No Theory
Blackburn, Carey, and Tanewski (2018)		X	X			X		No Theory
Blair and Marcum (2013)	X		X			X		Social Judgement Theory
Butler and Durkin (1998)		X	X			X		No Theory
Carey and Tanewski (2016)	X		X			X		Agency Theory
Caselli and Di Giuli (2010)	X			X	X			Agency Theory/RBV
Cassar and Ittner (2009)	X		X			X		Agency Theory
Collis and Jarvis (2002)	X		X		X	X		Decision-Usefulness-Theory
Dang-Duc (2011)	X		X				X	Agency Theory
Davila and Foster (2005)	X	X	X		X			No Theory
De Jong and Hulsink (2012)	X		X			X		No Theory
Di Giuli, Caselli, and Gatti (2011)	X		X		X			No Theory
Dyer and Ross (2007)		X	X		X			No Theory
Everaert, Sarens and Rommel (2007)	X		X		X	X		No Theory
Everaert, Sarens and Rommel (2010)	X		X			X		Transaction Cost Theory
Total	**19**	**4**	**19**	**3**	**7**	**13**	**4**	

Table B 1: Review Sample

Author(s), Year	Article Type		Time Frame		Accountant Status			Theory explicitly used
	Empirical Quantitative	Empirical-Qualitative	Cross-Sectional	Longi-tudinal	Internal	External	n.d.	
Giovannoni, Maraghini and Riccaboni (2011)		X		X	X			No Theory
Gobeli and Seville (1989)	X		X			X		No Theory
Gooderham, Tobiassen, Døving and Nordhaug (2004)	X		X			X		No Theory
Gordini (2016)	X		X		X			Agency Theory
Greenhalgh (2000)		X		X	X			No Theory
Halabi, Barrett, and Dyt (2010)		X	X				X	No Theory
Hitchens (1997)	X		X			X		No Theory
Holmes and Nicholls (1989)	X		X			X		No Theory
Jarvis and Rigby (2012)		X	X			X		No Theory
Jay and Schaper (2003)	X		X			X		No Theory
Kirby and King (1997)	X		X			X		No Theory
Kishali, Sharma, and Mitchem (2015)	X		X			X		No Theory
Lewis and Walker (2013)		X		X			X	No Theory
Marriott and Marriott (2000)		X		X			X	No Theory
Mazzarol, Clark, Reboud, Gough and Olson (2014)	X		X			X		No Theory
Niemi, Kinnunen, Ojala, and Troberg (2012)	X			X		X		Agency Theory
Nooteboom, Zwart, and Mijmolt (1992)	X		X			X		Transaction Cost Economics Theory
Obeng, Robson, and Haugh (2014)	X		X			X		Learning Theory
Paananen, Renders, and Blomkvist (2016)	X			X		X		No Theory
Peel (2018)	X			X		X		Signaling Theory
Perry and Coetzer (2009)		X	X			X		No Theory
Perry, Badger, Lean, and Leybourne (2010)		X	X			X		No Theory
Total	**14**	**8**	**15**	**7**	**3**	**16**	**3**	

Table B 1 (continued): Review Sample

Author(s), Year	Article Type		Time Frame		Accountant Status			Theory explicitly used
	Empirical Quantitative	Empirical-Qualitative	Cross-Sectional	Longi-tudinal	Internal	External	n.d.	
Poutziouris, Chittenden, and Michaelas (1999)	X		X			X		No Theory
Ramsden and Bennett (2005)	X		X			X		No Theory
Rawlings (2011)		X	X			X		Social Network Theory
Rickards and Ritsert (2011)		X		X	X			No Theory
Robson and Bennett (2000a)	X		X			X		No Theory
Robson and Bennett (2000b)	X		X			X		No Theory
Samujh (2011)	X	X	X				X	No Theory
Sarens, Everaert, Verplancke and De Beelde (2015)	X		X			X		No Theory
Sian and Roberts (2009)	X		X			X		No Theory
Son, Marriott, and Marriott (2006)		X	X		X			No Theory
Stone (2011a)		X	X			X		No Theory
Stone (2011b)	X	X		X		X		Media Richness Theory
Stone (2012)		X	X			X		Media Richness Theory
Stone (2015)	X	X	X			X		Power Theory
Stone and Lightbody (2012)		X	X			X		Media Richness Theory
Tan, Braithwaite, and Reinhart (2016)	X		X			X		No Theory
Watson (2007)	X			X		X		Network Theory
Watson (2011)	X			X		X		Social Capital Theory
Total	**12**	**9**	**14**	**4**	**2**	**15**	**1**	

Table B 1 (continued): Review Sample

	Years																				
Fields, Journals	**<2000**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**
Accounting and Auditing	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**2**	**1**	**4**	**3**	**0**	**0**	**2**	**3**	**0**	**2**	**23**
Accounting and Business Research	1													1						1	3
Accounting Education														1							1
Accounting Forum								1					1								2
Accounting in Europe																		1			1
Accounting, Auditing and Accountability													1								1
Advances in Management Accounting																		1			1
Australian Accounting Review																	1				1
Corporate Governance													1								1
European Accounting Review											1										1
Journal of Applied Accounting Research													1								1
Management Accounting Research		2																			2
Managerial Auditing Journal																		1			1
Meditari Accounting Resarch																	1				1
Qualitative Research in Accounting and Management								1				1		1						1	4
The Accounting Review							1				1										2
Family Business, SME and Entrepreneurship	**5**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**2**	**0**	**2**	**2**	**2**	**2**	**3**	**1**	**0**	**2**	**0**	**0**	**27**
Entrepreneurship and Regional Development	1																				1
Family Business Review													1		1						2
International Journal of Entrepreneurship and Small Business												1						1			2
International Small Business Journal						1			1				1	2		1		1			7
Journal of Business Venturing	1								1												2
Journal of Small Business and Entreprise Development	1			1	1		1	1			2				1						8
Journal of Small Business Management	1														1						2
Small Business Economics	1	1										1									3

Table B 2: Review Sample's Research Outlets and Years of Publication

	Years																				
Fields, Journals	**<2000**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**
Banking and Finance	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
European Journal of Finance												1									1
International Journal of Bank Marketing	1																				1
Journal of Banking and Finance													1								1
Others	**2**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**9**
Applied Economics		1																			1
European Journal of Innovation															1						1
International Journal of Innovation Management																	1				1
International Journal of Retail and Distribution Management														1							1
Journal of International Business and Economics																		1			1
Product Planning and Control									1												1
Service Industries Journal	2																				2
Urban Studies			1																		1
Total	**9**	**4**	**1**	**1**	**1**	**1**	**2**	**3**	**3**	**0**	**4**	**4**	**6**	**7**	**4**	**1**	**3**	**6**	**0**	**2**	**62**

Table B 2 (continued): Review Sample's Research Outlets and Years of Publication

4. Findings and Analysis

4.1. Roles of Accountants in SMEs

4.1.1. Accountants as providers of reporting services

In the accounting literature, a shift can be seen from the role of accountants as providers of standardized reporting—ranging from tax reporting to statutory reporting—to the role of advisors or business partners for managers (e.g., Goretzki, Strauss, & Weber, 2013; Granlund & Lukka, 1998; Zorn, 2004). Our review results show that in SMEs, however, the provision of reporting is still a main task of—mostly external—accountants (Berry et al., 2006; Everaert et al., 2007; Gobeli and Seville, 1989; Halabi et al., 2010; Hitchens, 1997; Holmes and Nicholls, 1989; Poutziouris et al., 1999; Sian and Roberts, 2009; Son et al., 2006; Stone, 2012; Tan et al., 2015). Our findings further indicate that internal accountants only play a minor role in the preparation of these statements (Holmes & Nicholls, 1989). Some studies even equate accountants in SMEs with external accountants (Berry et al., 2006) or assume that when no external accountants are employed, the owner-manager is in charge of the SME's bookkeeping (Gobeli and Seville, 1989).

Accountants as a provider of statutory requirements or as an auditor of such statements are often linked to SME firm characteristics such as larger SME size (Collis and Jarvis, 2002), industry sector (Holmes and Nicholls, 1989) and higher SME age (Allee & Lombardie Yohn, 2009). Apart from such firm characteristics, several SME owner characteristics such as SME owner's financial skills (Berman Brown et al., 2006) or previous working experience (Cassar and Ittner, 2009) appear to have an impact on accountants serving as providers of reporting services.

From an RBV perspective, accountants as a provider of reporting can be compared to the information-providing systems described by Barney et al. (2001). Previous research has pointed towards the tendency that even in the smallest SMEs, accountants as providers of reporting are not rare and that basic accounting services are even available in rural areas (Hitchens, 1997; Sarens et al., 2015). Such services are likely to be substitutable as they can be interchangeably performed by

several external accountants or even by accounting software, which points to the notion that accountants as mere providers of financial reporting services do not qualify as a source of competitive advantage in light of the RBV. In addition, the value drawn from such reports is often limited to fulfilling legal reporting requirements. Consequently, accountants performing only this role are likely not to create a high value for the SMEs as such a role does typically not demand high cognitive abilities and cannot be linked to many valuable outcomes apart from SME professionalization (as will be further outlined in Section 4.3).

At the same time, the rather low value of financial reporting services by accountants in terms of creating competitive advantage could be affected by another source of competitive advantage: having a skilled SME owner. The literature mostly describes SME owners as struggling to understand the reporting created by their accountants and thereby as drawing little value from it (Halabi et al., 2010; Marriott and Marriott, 2000; Son et al., 2006). Flipping this finding may indicate that having a skilled SME owner might increase the likelihood of an SME to benefit from the financial reporting services by accountants. Consequently, the likelihood of an accountant as a provider of accounting services to be a competitive advantage would at least partially depend on the existence of skilled SME owners who can read and adequately interpret financial reports prepared by accountants.

4.1.2. Accountants as a source of self-validation and translation

Even in the absence of regulatory demands, some SME owners do consult accountants (Hitchens 1997; Sarens et al., 2015). Previous research has given some hints on the reasons for this decision by indicating that accountants can function as a source of self-validation and translation. The more general accounting literature has recently investigated the role of accountants as critical counterparts for CEOs quite intensively and has concluded that such a role may improve the quality of managerial decision-making (e.g., Byrne & Pierce, 2007; Goretzki et al., 2013; Granlund &

Lukka, 1998). Findings on accountants in SMEs do, however, indicate that there are some SMEs in which the mere task of an accountant is to give "credence to a decision that had already been made" (Lewis and Walker, 2013, p. 413) and that they thereby function as a source of self-validation for the SME owner. From an RBV perspective, such a role is not likely to be a source of competitive advantage or might even be a disadvantage when it gives SME owners a false sense of security for their decision-making.

In addition, research indicates that accountants can function as translators between the often rather broad and intuitive views of SME owners and the more formalized requirements of financial reporting and financial institutions. Qualitative-empirical findings by Dyer and Ross (2007) suggest that the mere presence of accountants can function as a signal for financial institutions that symbolizes an SME's trustworthiness and may thereby help the SME to gain access to finance. Consequently, such research has reported positive correlations between accountant employment and access to financing opportunities (e.g., Allee and Lombardie Yohn, 2009; Cassar and Ittner, 2009; Paananen et al., 2016; for more on this please see Section 4.3.2.). While research has yet to clarify the direction of the underlying causality, qualitative-empirical findings suggest that accountants can function as a translator or a signal of professionalization and thereby increasing an SME's likelihood to get access to finance (Butler and Durkin, 1998; Dyer and Ross, 2007). Butler and Durkin (1998) utilize Mintzberg's categorization of organizations to compare SMEs with the so-called *Simple Structure*, an organizational form characterized by a low level of formalization and little inherent planning and control systems. On the other hand, providers of capital are compared with what Mintzberg labels *Machine Bureaucracy*, an organization form prone to a high level of behaviour formalization and bureaucratic structures that are based on standardization (Butler and Durkin, 1998). Butler and Durkin (1998) argue that an accountant can function as a translator between both systems—but only if they are able to speak both systems' languages.

Theorizing those findings by employing the RBV, an accountant serving as a translator is likely to be a potential source of competitive advantage. Such an accountant may help the SME gain access to finance and is thus of high value as SMEs commonly struggle to get financing (e.g., Ayyagari et al., 2007, & Beck and Demirguc-Kunt, 2006). We do, however, still know little about the possible mechanisms behind such a potential outcome. If an SME manages to employ an accountant as a translator, this can be considered rare as it would require finding an accountant that is both familiar with the machine bureaucracy of the banks and also with the simple structure of many SMEs (e.g., by having previous working experience with SMEs). Such skills are likely not comparable to what Wright et al. (1994) called commodity skills, which are commonly distributed among labour markets and not rare. Furthermore, as it will be pointed out later, being able to find and hire such a highly qualified accountant who is willing and able to provide individualized services, is likely to be dependent on sufficient financial resources due to the relatively high costs associated with the employment of such an accountant. This dynamic can be described as a vicious circle of SME financing as it suggests that SMEs which need financing the most are least likely to be able to get an adequate accountant's help in securing access to finance. This is probably one reason why—as suggested by Dyer and Ross (2007)—financial institutions consider accountants as a signal for SME trustworthiness that help SMEs getting access to finance, as SMEs employing an accountant are likely to be in a better financial situation than SMEs that do not.

4.1.3. Accountants as a source of advice

Previous research has—as summarized in Table B 3—extensively analysed the role of accountants as advisors in SMEs. As a general tendency, research has identified accountants as either the most important or most used source of advice in SMEs (e.g., Berman Brown et al., 2006; Berry et al., 2006; Carey, 2016; Gooderham et al., 2004; Jay and Schaper, 2003; Kirby and King, 1997; Perry et al., 2010). In this role, they provide business-related advice (e.g., advice during

mergers and acquisitions, succession, tax-related advice or the provision of rare finance- or accounting-related skills) or non-business advice (e.g., advice in the context of divorces or private wealth matters such as the creation of a will). At the same time, there is some empirical evidence that points towards the notion that there are still many SMEs that use their accountants for compliance work only or which might use accountants' advice often, but do not consider accountants to be important advisors that are included in managerial decision-making (e.g., Blackburn et al., 2018). As further outlined in Section 4.2, our review indicates that the degree of accountant advice used in SMEs depends on various factors such as individual SME owner characteristics, accountant characteristics, trust between owner and accountant, and the presence of other resources.

Viewed from the perspective of the RBV, the role of accountants as advisors appears to have high-value potential as this role can be linked to multiple positive and important business outcomes such as increasing an SME's professionalization (e.g., Carey & Tanewski, 2016; Davila & Foster, 2005; Gordini, 2016; see also Section 4.3). Such profssionalization can be considered an outcome in itself but is also linked to other valuable outcomes such as successful ownership transfers (e.g., Giovannoni, Maraghini, & Riccaboni, 2011) and SME financing (e.g., Butler & Durkin, 1998; Dyer & Ross, 2007). For many SMEs, such outcomes are possibly of high value given the struggles they face when raising capital (Aldrich & Cliff, 2003) or surviving (e.g., Giovannoni et al., 2011, for family-owned SMEs). However, the potential of such value creation is likely to be linked to the specific kind of advice provided by an accountant and to the degree to which SME owners actually follow the advice. Current evidence indicates that accountants as advisors are employed to support very specific business-related processes such as professionalizing finance and accounting systems (Berthelot & Morrill, 2016; Caselli & Di Giuli, 2010; Davila & Foster, 2005). However, the reviewed literature shows little evidence that SME accountants are

involved in advising an SME owner regarding the strategic direction of the firm. This finding is in contrast to the role of accountants as business partners that have allegedly become more and more common in larger firms (e.g., Goretzki et al., 2013; Granlund & Lukka, 1998).

Viewed from an RBV perspective, the non-involvement of accountants in strategic decision-making may be a rational choice for SME owners. Due to the substantial cost of hiring qualified accountants for business advice, there is a direct negative impact of accountant employment on an SME's profit. As argued in the literature, this effect is likely to be stronger for more embedded advisory roles such as strategic advisory (e.g., Greenhalgh, 2000; Hitchens, 1997; Marriott & Marriott, 2000; Nooteboom, Zwart, & Bijmolt, 1992). From an RBV perspective, one could argue that in order to achieve net benefits from hiring an accountant, this negative effect has to be compensated by value-enhancing outcomes to make the employment of an accountant a rational business case for SMEs. This notion is underpinned by Greenhalgh's (2000) findings that SMEs perform a cost-benefit calculation of accountant employment. Additionally, Niemi, Kinnunen, Ojala, & Yroberg (2012) suggest that wrongfully trusting an accountant as an advisor could cause severe negative consequences. Previous research has not yet much focused on such negative outcomes of accountant employment in SMEs. However, if such outcomes would occur, SMEs might be particularly vulnerable, given their often-times limited resource base (Carey & Tanewski, 2016). Plausible negative outcomes could, for example, range from negative performance effects to non-survival or effects on non-business-related matters (e.g., mergers and acquisitions that are not in the best interest of the SME; family feuds in the case of family-owned SMEs). Similar risks could apply to an accountant giving advice in fields beyond his or her narrow expertise, such as legal advice. Although research has not yet much analysed such risks, there is evidence that missing accountant qualification might be a source of such risks in SMEs (Dang-Duc, 2011; Kishali, Sharma, & Mitchem, 2013; Son et al., 2006). For instance, advice by

accountants on matters beyond their traditional tasks—such as legal advice—may very much differ from expert advice (Blair & Marcum, 2013). It, therefore, appears that the value drawn out of accountants' advice is not per se positive and does not always outweigh the costs of accountant employment.

Moving from the value criterion of the advisor role of accountants to the other three VRIN criteria, the rarity criterion is driven by various factors. Not all SMEs employ accountants as advisors; hence advisory service can be considered a rare resource in SMEs (e.g., Blackburn et al., 2018). The demand for accountants in advisory functions is driven by an SME's specific needs but also depends on other factors. Scarce financial resources makes it often-times difficult for SMEs to hire highly qualified employees (Caldeira & Ward, 2003), which can also be observed in this review's findings. Accountants are far from being per se highly qualified resources. Some accountants in SMEs even struggle with the implementation of basic accounting standards (Dang-Duc, 2011; Kishali et al., 2013). It is likely that the rarity of highly qualified accountants is bigger than the rarity of accountants with rather low qualifications, and that some SME-inherent factors might not only determine whether an SME employs an accountant or not, but also the quality of accountant services. As it will be further pointed out in section 4.2, costs are an important factor in deciding whether to hire voluntary accountant services or not. Furthermore, SME owner characteristics such as an advisory-friendly mindset (e.g., Lewis & Walker, 2013; Stone & Lightbody, 2012). In addition, SMEs typically do not employ an accountant as an advisor when they do not trust the accountant's skills and or character (e.g., Blackburn et al., 2018; Carey & Tanewski, 2016). Although values appear to play an important role in SMEs as research by Rawlings (2011) indicates that SME owners are reluctant to follow their accountants' advice even when it is economically reasonable and legal as soon as the advice contradicts with the SME owner's personal value or ethics. It appears, therefore, that SMEs have rather high demands

towards their accountants, but rather low financial resources for accountant employment (which is mirrored in the findings discussed in Section 4.2.2). To sum up, a highly qualified and powerful accountant that is employed in an SME in an advisory function is likely to be rare, although accountants are often considered the most important advisors of SMEs.

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
Accountants are the most important or most used source of advice for SME owners	10	Berry et al. (2006); Berman Brown et al. (2006); Carey (2016); Gooderham et al. (2014); Jay & Schaper (2003); Kirby & King (1997); Ramsden & Bennett (2005); Watson (2011)	Perry et al. (2010); Perry and Coetzer (2009)
Accountants provide business-related advice to SME owners	10	Birley (1985); Blair & Marcum, (2013); Carey & Tanewski (2016); Jay & Schaper (2003); Ramsden & Bennett (2005); Sarens et al. (2015)	Blackburn et al. (2018); Jarvis & Rigby (2012); Perry et al. (2010); Stone (2011a)
Accountants provide non-business-related advice to SME owners	2		Blackburn et al. (2018); Samujh (2011)
The role of accountants as SME advisors is overrated or overly generalized	3	Kirby & King (1997)	Blackburn et al. (2018); Marriott & Marriott (2000)

Table B 3: Research on Accountants as Advisors

In addition, the question arises whether accountants in an advisory role are substitutable or imitable. Depending on the specific category of advice, other professional or non-professional advisors might be able to provide equally good or even better support than accountants. Especially some aspects of non-business-related advice (e.g., advice during divorces) might be better provided by non-professional networks such as family and friends. In turn, it is plausible that business aspects of such private events could be discussed with other advisors such as lawyers who could thus be viewed as potential substitutes to accountants. However, advice related to finance and accounting is often a core competence of accountants and is, therefore, less likely to be substituted by other advisors. Such advisory is—as opposed to more standardized accounting reporting—less

likely to be substituted by accounting software in the near future as it regularly requires unique, company-specific solutions to individual problems.

Therefore, based on the so-far presented review findings, it can be theorized that an SME accountant who serves as an advisor—at least for finance and accounting matters—is more likely to serve as a source of competitive advantage than an SME accountant who acts as a mere provider of financial statements. Empirically, this proposition is supported by the variety of positive outcomes linked to the employment of accountants as advisors, as will be presented in more detail in Section 4.3. Accountants as providers of reporting services can be mainly linked to the professionalization of reporting, which, of course, is an important outcome, too, but none that is as likely to contribute to an SME's competitive advantage as the other roles.

4.2. Issues in the SME-Accountant-Relationship

4.2.1. Individual characteristics

As summarized in Table B 4 and Table B 5, various individual characteristics of both the SME owner and the SME accountant are of relevance for explaining the employment and outcomes of accountants in SMEs. Previous evidence points towards the notion that SME owners significantly impact both the likelihood to employ an accountant and also the scope of accountant employment. In particular, the SME owner's education, his or her previous work experience, and also his or her general preference for formal planning create a favourable climate for voluntary accountant employment (Cassar & Ittner, 2009; Holmes & Nicholls, 1989) and accountants in more powerful roles (Davila & Foster, 2005).[2] As Cassar and Ittner (2009, p. 333-334) have pointed out, one explanation for these effects could be that entrepreneurs "with greater accounting experience and knowledge would be more likely to realize the decision-making benefits of retaining external accountants".

[2] It might however be possible that these three antecedents just mentioned may depend on each other. For instance, CEOs with previous work experience in accounting are likely to have a general preference for formal planning or to have completed a university program.

Whereas the previous argumentation would assume a direct impact of SME owner's education on accountant employment, another explanation could be that this relation is mediated by the type of firms founded by the SME owners depending on the SME owner's education. For instance, high growth companies might be more likely to be founded by well-educated owners but may also require more formal planning, and hence an accountant. If this relationship is the case—and findings by Davila and Foster (2005) indicate that business growth results in increased formal planning requirements— the SME owner's education would not directly cause the employment of accountants in more powerful roles. Much rather, the SME owner's education would lead to a company being founded that is characterized by different planning demands. If, in fact, the second argumentation holds, it might be rational for some SME owners—namely the ones who found more complex ventures—to invest in formal planning and, consequently, in accountants, whereas this might not be a rational choice for SME owners who found less complex companies. Still, it would likely require a skilled owner to evaluate the complexity and planning needs of the SME correctly.

From an RBV perspective, an accountant's likelihood to be employed in a potential value-enhancing role in this context depends not only on the accountant's qualification but also on the CEO's qualification. This means that the value of accountants seems to be higher in SMEs that possess both resources. This aspect addresses the rarity and imitability of accountants for SMEs as it is apparently not enough for an SME to hire an accountant, but the SME also needs a skilled owner who is capable of evaluating the SME's planning needs correctly.

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
More years of work experience or a background in accounting makes accountant employment more likely	2	Cassar and Ittner (2009); Davila and Foster (2005)	
A preference for formal planning makes accountant employment more likely	1	Davila and Foster (2005)	
A higher level of education makes requesting voluntary services from an accountant more likely	1	Holmes and Nicholls (1989)	
A lower level of education makes outsourcing of accountant tasks more likely	1	Everaert, Sarens, & Rommel (2010)	
SME owners need to actively ask accountants for additional services	2		Halabi et al. (2010); Lewis & Walker (2013)

Table B 4: Research on the Relationship between SME Owner Characteristics and Accountants

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
Family status of financial managers in family-owned SMEs is negatively linked with performance or professionalization	3	Caselli & Di Giuli (2010); Di Giuli, Caselli, & Gatti (2011); Gordini (2016)	
Lack of accountant skills is among the biggest obstacles for SME compliance or implementation of SME accounting standards	3	Dang-Duc (2011); Kishali et al. (2013); Son et al. (2006)	
Perceived accounting skills/positive collaboration experiences are both antecedents for employment as an advisor	2	Kirby & King (1997)	Blackburn et al. (2018)
Accountant tenure and accounting working experience are no antecedents for employment as an advisor	1	Gooderham et al. (2014)	

Table B 5: Research on SME Accountants' Characteristics

In addition to SME owner characteristics, the reviewed literature suggests that accountant characteristics, especially (perceived) accountant skills, play an important role (Blackburn et al., 2018; Dang-Duc, 2011; Kirby & King, 1997; Kishali et al., 2013). Unqualified accountants are even considered one of the biggest obstacles regarding SME professionalization (Dang-Duc, 2011; Kishali et al., 2013). Some SME accountants appear to have problems supporting the SME regarding the implementation of and compliance with accounting standards—tasks typically associated with the role of accountants as providers of reporting—which gives an indication that some SMEs might have a competitive disadvantage arising from their accountants (Dang-Duc, 2011; Kishali et al., 2013).

Viewed from an RBV perspective, such negative consequences from accountant employment are likely to be the result of a path dependency which is typical for many resources (Kraaijenbrink et al., 2010): as indicated above, the degree to which an SME is able to hire a qualified accountant is likely to be dependent on other resources such as financial resources or other human resources. As Wright et al. (1994) have pointed out, the rarity criterion is linked to whether an organization is both able to recognize a beneficial resource and is capable of copying it. Previous research has shown that SME owners with a higher level of education and more work experience in accounting are generally more likely to employ an accountant and give an accountant more sophisticated roles (Cassar & Ittner, 2009; Davila & Foster, 2005; Holmes & Nicholls, 1989). Furthermore, research has indicated that SME owners often have to proactively ask for additional accountant services that go beyond standard reporting. This requires SME owners to be aware that such services exist in the first place (Halabi et al., 2010; Lewis & Walker, 2013).

To summarize, the degree to which accountants might function as a source of competitive advantage in SMEs might be not only dependent on the accountant's qualification, but also the SME owner's qualification. Recognizing a resource is, however, only one condition for achieving a rare competitive advantage. Although SMEs might realize the benefit of employing an accountant in more advanced roles, some of them hesitate to do so because it is unclear whether the benefits of accountant employment will outweigh the costs (Greenhalgh, 2000; Kirby & King, 1997). In such cases, they might be able to recognize the benefits of a resource, but not be able to leverage it. Given the difficulties to both recognize and make use of beneficial accountant employment, it seems likely that not all or even only a small number of SMEs will be able to do so. In consequence, it can be argued that highly qualified accountants are a rare resource in many SMEs, which further underpins their quality as a resource in an RBV sense.

4.2.2. Customization of Accountants' Services Towards SMEs' Demands

Previous research has outlined the importance of customizing accountant services towards SME needs. In this literature, such customization ranges from the utiliztation of an easier or non-technical language (Stone, 2012), an increased use of graphical presentations or ratios (Marriott and Marriott, 2000; Stone, 2011b), regular personal visits (Blackburn et al., 2018) and, most commonly named, a stronger focus on verbal communication including face-to-face-communication (Collis & Jarvis, 2002; Marriott & Marriott, 2000; Sian & Roberts, 2009; Stone, 2012). Such communication gives SME owners the opportunity to ask for clarification of accounting-related issues and for the provision of additional information on their financial reports. Especially SME owners with low financial awareness seem to think that the provision of graphical presentations or ratios would be helpful for them as these appear to be easier to read and the SME owners assume that it would help them understand the accounting numbers (Marriott & Marriott, 2000). Such customizations can help to increase the utility of reporting (Collis & Jarvis, 2002). There is also evidence that the degree to which services are customized to SME needs positively drives the benefits SME owners gain from the accountant services, in particular in the case of low-skilled SME owners who are not able to make sense of the accounting information themselves. However, when accountants provide additional services such as customization, they have an interest in being able to charge the customer—the SMEs—for it. Fear of high costs arising from accounting employment is, however,—as will be pointed out in Section 4.2.3—an important reason why SMEs would not employ an accountant. This effect seems to be even stronger for higher costs arising from more customized services. Since not all SMEs can bear such substantial costs, SMEs are often not a financially attractive target group for accountants. Findings by Halabi et al. (2010), Perry & Coetzer (2009), and Stone (2012) show that not all SME accountants are offering customized services, which regularly leaves SME owners overwhelmed by the provided reporting. Hence, the benefit that SMEs might be able to draw out of the accountant's services might depend

on the degree of service customization they are able to afford, which is especially important for financially illiterate SME owners. This further points to the notion that the likelihood of the resource "accountant" resulting in competitive advantage is contingent on the presence of other resources.

4.2.3. Costs Arising from Accountant Employment

There is evidence that SME owners fear high costs arising from accountant employment (Hitchens 1997; Lewis and Walker 2013; Marriott and Marriott 2000; Sian and Roberts 2009). It has also been shown that SMEs perform cost-value calculations in which they analyze the value of additional services by accountants against the costs arising from them (Greenhalgh, 2000; Kirby & King, 1997). Consequently, costs and value for money are often named as factors hindering SMEs' from employing accountants. High costs and unclear value for money are also named as preventing SMEs from requesting more advanced voluntary services such as advisory in particular.

The fear of high costs on the SMEs' side might also contribute to explaining why accountants do not consider SMEs an attractive target group for their services. There is, for instance, evidence that additional accountants' services—as expressed in Section 4.2.2.—are often not adequately compensated by SMEs in the form of higher fees for accountants (Hitchens, 1997). In particular, tasks with high asset specifity—meaning tasks that require a deep knowledge about a firm and individual solutions to specific problems—are perceived as especially expensive by both SME owners (Everaert et al., 2010) and accountants (Nooteboom et al., 1992). Consequently, Nooteboom et al. (1992) report that accountants consider their employment for such tasks as too expensive for many SMEs. It appears that SMEs are aware that they are missing potentially valuable accounting services, but it seems that they consider this a rational decision as the costs of the accountant services would not outweigh the benefits of such services (Greenhalgh 2000; Kirby and King, 1997).

From an RBV perspective, costs are—as pointed out before—important as they are associated with the rarity of accountants and their value. Regarding the rarity criterion, costs of accountant employment are directly related to the question whether an SME can duplicate the resource of an accountant with the effect being even stronger for more value-enhancing, highly qualified accountants as they are likely to be even more expensive and hence something not any SME can afford to copy. The higher the costs of employing highly qualified experts, the fewer SMEs will be able to afford such employment as Caldeira & Ward (2003) have pointed out for information technology experts. Similar observations can be expected for the rarity of accounting experts in SMEs. Therefore, the more accountant qualification appears to be linked to their value-enhancing potential (Son et al., 2006), meaning that the higher the qualification of an accountant is, the more expensive the accountant employment will likely be. The costs of employment appear to increase the rarity though, making, as a consequence, more qualified and more value-enhancing accountants likely rarer in SMEs.

4.2.4. Trust

As summarized in Table B 6, trust has been a widely analysed factor impacting the SME-accountant-relationship in previous research. An SME owner's trust in the accountant appears to be driven mostly by the SME owner's perception of the accountant's skills (Blackburn et al., 2018; Carey & Tanewski, 2016; Kirby & King, 1997) and the accountant's character (Blackburn et al., 2018; Tan et al., 2016) and not so much by the accountant's tenure (Gooderham et al., 2004). Such trust is also an antecedent for accountant employment in non-compliance tasks (Blackburn et al., 2018; Kirby & King, 1997). However, agency problems may arise since there is evidence that not all accountants are trustworthy, and not all SME owners are capable of monitoring or evaluating an accountant's trustworthiness (Niemi et al., 2012). Potential problems arising from such constellations range from shirking (a notion referring to unjustified, but not illegal wealth transfers from the SME or its owner towards the accountants; for instance, by overpricing the SME for

services) to stealing (referring to illegal wealth transfers in the form of appropriation or collusion) (Niemi et al., 2012).

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
Trust is positively linked to the scope of accountant tasks	3	Carey & Tanewski (2016); Kirby & King (1997)	Blackburn et al. (2018)
Tenure is not a driver of SME owner trust in accountants	1	Gooderham et al. (2014)	
Trust in the accountant is positively linked to perceived accountant competence	3	Carey & Tanewski (2016); Kirby & King (1997)	Blackburn et al. (2018)
Trust in the accountant is linked to the accountant's character	2	Tan et al. (2015)	Blackburn et al. (2018)
Agency problems impact the SME-owner-accountant relationship and its outcomes	1	Niemi et al. (2012)	

Table B 6: Research on Trust and Trust-Related Issues in the Relationship between SME Owners and Accountants

Previous findings point towards the notion that accountant employment might increase the need for voluntary audits as a means of monitoring the agent's—in this case: the accountant's—activities (Niemi et al., 2012). Being able to monitor the accountant's activities does, however, require both awareness for potential agency problems and the financial means for additional audits. It appears though that SME owners are not always aware of the potential risks in relationships with accountants as they sometimes blindly trust their accountants and give them a *guru*-like status as one accountant in Stone's (2015, p. 262) study has pointed out:

> "They are saying 'I trust you. I don't really need to know about it. You're the accountant. You deal with it and I'll accept what you have said and done'."

Viewing these issues from the perspective of the RBV, the rarity drawn out of an accountant-SME relationship is not only dependent on the trust of the SME owner in the accountant, but also on the SME owner's capability to evaluate the accountant's trustworthiness and to monitor the accountant's behaviour. Giving an accountant a powerful position can cause highly negative value outcomes—as pointed out above—but it also seems to be a condition for the accountant having a valuable impact on the SME. Although previous research has found accountant tenure not to be a driver of accountant trustworthiness, some of the drivers of trustworthiness do take a considerable amount of time to be achieved. Blackburn et al.'s (2018) and Kirby & King's (1997) findings link satisfaction with previous work undertaken by the accountant to giving the accountant additional, advisory-related tasks. Trust in the accountant's character (e.g., honesty, integrity) is likely to be achieved over a substantial period of time. Such trust appears to be usually achieved either via a direct working relationship or through word-of-mouth recommendations signalling the work quality of the accountant. The substantial amount of time that is necessary to find a trustworthy accountant, but also the above-mentioned prerequisites regarding the evaluation of trustworthiness, positively drive the rareness of adequate accountants in SMEs and negatively drive the likelihood for a suitable accountant to be quickly substituted or imitated.

4.2.5. Location and Infrastructure

As summarized in Table B 7, previous studies have found that geographical peculiarities are linked to access to highly specialized accounting services and the perceived impact of the accountant. Hitchens' (1997) findings indicate that a basic accountant infrastructure is available even in rural areas, but especially SMEs with an intention to grow and in need of specialist and more sophisticated advice would require and seek (additional) advice from urban accounting firms.

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
There is no general lack of access to accountants depending on the region of the SME	2	Sarens et al. (2015)	Hitchens (1997)
There is a lack of access to accountants offering specialized services (e.g., business advisory, merger and acquisition services) for SMEs in rural areas	2	Sarens et al. (2015)	Hitchens (1997)
An SME's geographical location is linked to the accountant impact and involvement in strategic decision-making	2	Bennett et al. (2001); Mazzarol et al. (2014)	

Table B 7: Research on the Location's Impact on Accountant Availability

These findings support previous assumptions that SMEs perform a value-for-money-analysis regarding accountant services and tend to seek additional accountant advice only if the benefit of such advice outweighs the costs. As a consequence, specialized services are likely not being much demanded in rural areas, as only a minority of SMEs would request such services.

4.2.6. Competitive pressures and environmental turbulences

It appears plausible that environmental turbulences—defined as changes of the market or its regulations (Blackburn et al., 2018)—and competitive pressures might be linked to SME owners demanding accountants advisory services—for instance, due to increased needs for professional organizational structures to cope with competitive pressures. However, there is only limited research on this relationship, and the existent findings are inconclusive (for a summary, see Table B 8). The limited findings either show no relationship between competition and the degree of

external accountant advice (Carey and Tanewski, 2016) or a positive association between competition and the likelihood for an accountant to be employed in an advisory function (Blackburn et al., 2018; Gooderham et al., 2004).

		Supporting Studies Author(s), Year	
Findings	**Number**	**Quantitative**	**Qualitative**
Perceived competitive pressure is not linked to external accountant advice	1	Carey and Tanewski (2016)	
Competitive pressure is positively linked to external accountant advice	2	Gooderham et al. (2014)	Blackburn *et al.* (2018

Table B 8: Research on the Impact of Competitive Pressure and Environmental Turbulences

Given the scarce and inconclusive findings, we can only assume what the relationships between accountant employment and competitive pressure are like. SMEs might be particularly vulnerable to competitive pressure, given their narrow resource bases (Carey & Tanewski, 2016). When this narrow resource base—in particular, the restricted financial resources—gets restricted even more due to competitive pressures, SMEs might not be able to consult external accountants; hence competitive pressure might prevent (further) accountant employment. Another explanation could be that SMEs experience high levels of competitive pressure due to a general lack of professionalization, which could be caused by a lack of accountant employment. Hence the lack of (further) accountant employment might contribute to competitive pressures arising. The third line of explanation would be that competitive pressure can be an antecedent of accountant advice due to firms seeking advice in light of such pressures. This notion can be theoretically explained through the lens of the RBV. Increased competition might make firms change their strategy. Research has shown that the chosen business strategy can in fact influence the requirements

towards a company's accounting and control systems (e.g., Chong & Chong, 1997; Sandino, 2007). Although firms can have accounting and control systems without having an accountant, the employment of a professional accountant in an SME that experiences competitive pressure is likely to result in sophistication of these systems by adapting them towards the strategy they have chosen to address the competitive pressures. Quantitative-empirical findings by Sandino (2007) link such a fit between the chosen strategy and the accounting system to higher perceived performance and higher sales growth. Hence, it might be that accountants could be linked to more professional, strategy-appropriate accounting and control systems and thereby help to cope with competitive pressure or even increase performance (but see Section 4.3.5. for difficulties regarding performance as an outcome variable).

4.3. Impact of Accountants on SMEs

4.3.1. Professionalization

As summarized in Table B 9, accountants have been extensively researched as an antecedent or consequence of SME professionalization. Professionalization is particularly valuable when it can be linked to other outcomes such as SME growth (Davila & Foster, 2005), improved access to finance (Butler & Durkin, 1998; Dyer & Ross, 2007) or successful ownership transfers (e.g., Blackburn et al., 2018; Giovannoni et al., 2011). The relationship between the employment of accountants and professionalization appears to be bilateral, with the employment itself being a step towards professionalization, followed by the accountant supporting further steps towards SME professionalization. It appears though that basic finance and accounting systems are often employed before the employment of a professional financial manager (Davila & Foster, 2005). However, further professionalization that increases the demand for more sophisticated instruments usually requires a professional manager that has both the skills and time to fully focus on the SME's professionalization (Davila and Foster, 2005).

From an RBV perspective, the value that is drawn out of the professionalization is likely to depend on the further outcomes that are achieved by professionalization. Especially in the case of accountants as mere providers of reporting it is likely that professionalization is the only goal for SME owners and that this goal is mostly driven by external requirements as pointed out by one participant in Marriott & Marriott's (2000, p. 483) study who referred to accountants as an "extension of the tax system." Although the accountant helps SMEs in such cases to fulfil legal requirements, the internal value drawn from the accountant, in this case, is likely to be low. If the professionalization can, however, be linked to other valuable outcomes—as mentioned above—the value is likely to be significantly higher. In many cases, such effects require accountants in more advanced roles such as in translator or advisory functions (e.g., Butler & Durkin, 1998) as such tasks are likely to require highly skilled accountants with a deep knowledge of the firm.

Consequently, accountants who are able to drive professionalization in a way that SMEs benefit from it beyond fulfilling regulatory demands are not likely to be available to all SMEs and hence constitute a rare resource. The reason for this can be found in a lack of financial resources for accountant employment (Greenhalgh, 2000; Stone, 2015) or in SME owner's assumption that the SME can be run better by "real world learning" than by listening to accountant advisory (Lewis & Walker, 2013, p. 415). It appears though that there is a transition point in which an informal management style is no longer sufficient, and SMEs require more formalized systems (Davila, 2005; Davila & Foster, 2005). Davila & Foster (2005) argue that firm size and geographic expansion are important factors that drive the need for the professionalization of accounting and control systems as informal controls become too expansive after SMEs have reached a certain level of growth or internationalization. However, this does not automatically mean that the need for financial managers increases proportionally. The question of whether accountants are necessary to cope with the increased professionalization needs leading to a need for more formal accounting

and control systems is closely linked to the question of accountant substitutability. Findings by Davila and Foster (2005) indicate that it could be the chief financial officer (CFO)'s task to formalize the system and make the SME more independent of the founder or owner-manager. We do, however, know only little about whether other persons could drive the SME professionalization equally. Although it might be plausible to argue that highly qualified SME owner-managers might be able to implement formal accounting and control systems themselves, the opposite appears to be the case. The more qualified SME owner-managers are, and the more experience in accounting they have, the more likely they are to employ accounting experts for these tasks (Cassar & Ittner, 2009; Davila & Foster, 2005; Holmes & Nicholls, 1989). This further supports the relations discussed in Section 4.2.1. stating that the employment of accountants is linked to SME owner education. So far, we do not know whether this is due to a direct effect between SME owner education and accountant employment, or an indirect effect caused by the SME type (e.g., very complex, high growth SMEs vs. simply structured SMEs with little intention to grow) and its respective accounting needs being dependent on the SME owner's skills, and hence in a follow-up step the accountant employment being dependent on the firm type's accounting needs. From an RBV perspective, these potential relationships are related to the question of whether accountants are valuable for all firm types equally or whether some firm types require accountants, whereas in other firm types, accountants would only negatively impact firm value due to their high costs. If a mediating effect of firm type is found, this would suggest that not all SME types are equally well advised to employ an accountant.

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
Accountants are employed to fill SMEs' resource gaps	4	Carey and Tanewski (2016), Everaert et al. (2007); Gordini (2016)	Stone (2015)
Accountants are linked to more professional finance and accounting systems	3	Berthelot and Morrill (2016); Davila and Foster (2005); Di Giuli et al. (2011)	
Accountants are linked to the formalization of knowledge and firm values	3	Davila and Foster (2005)	Giovannoni et al. (2011); Perry et al. (2010)
Accountants are or would like to be linked to an increase of rational decision-making	3	D Jong & Hulsink (2012); Rickards & Ritsert (2011); Williams & O'Donovan (2015)	
Professionalization in family-owned SMEs is linked to the employment of non-family financial managers	2	Di Giuli et al. (2011); Gordini (2016)	

Table B 9: Research on Professionalization as an Outcome of Accountant Employment

4.3.2. SME financing

Gaining access to external financing is often considered a significant hurdle for many SMEs. In consequence, funding, as well as finance-related issues are among the topics SMEs most often seek external advice for (Berman Brown et al., 2006; Birley, 1985; Sarens et al., 2015). As summarized in

Table B 10, findings on the role of accountants in SME financing can be clustered into the relationships (i) between accountant employment and credit access and (ii) between accountant employment and interest rates. Furthermore, qualitative studies (Butler & Durkin, 1998; Dyer &

Ross, 2007) and additional qualitative information that was collected during Davila and Foster's (2005) mostly quantitative study provide evidence on the direction of such effects and the mechanisms behind it. The general tendency is that either actual or intended access to equity- or debt-based finance is linked to accountant employment. This relationship can be explained through two possible dynamics:

- **SME financing is an antecedent for accountant employment** (Davila & Foster, 2005). When considering SME financing as an antecedent of accountant employment, the demand for accounting instruments, and consequently accountants, increases after gaining access to finance. This increase can be both owner-driven and institutionally driven. From the perspective of owners, there appears to be a fear that the raised capital might be used too quickly or even abused, and that therefore instruments should be implemented that could hinder such behaviour. Apart from this motivation, financial institutions—in particular high-risk institutions such as equity-based finance providers—can implement monitoring to reduce the risk of their investment to fail, and thereby increase the demand for accountants who are needed to collect and report necessary information for monitoring purposes.
- **SME financing is an outcome of accountant employment** (Butler & Durkin, 1998; Dyer & Ross, 2007).

  Following this argumentation, accountants can either function as a symbol signalizing SME professionalization and hence, signalling a lower likelihood that the SME fails on loan payments (Dyer & Ross, 2007), or as a translator between SMEs and financial institutions during financing negotiation processes and thereby decreasing the likelihood of credit proposal denial (Butler & Durkin, 1998).

SME financing per se does rather not present value in the RBV sense. However, access to finance is likely to be an important prerequisite for further growth, and a lack of finance access could cause serious negative outcomes ranging from not being able to make investments in the firm or not being able to employ highly qualified staff. As a consequence, SME bankruptcy might even be caused by a failure to get access to financing. It can, therefore, be argued that accountants who function as an antecedent of SME financing are highly valuable to SMEs from the perspective of the RBV. Especially when they function as a translator—as suggested by the findings of Butler and Durkin (1998)—they are not very likely to be substituted by other advisors, as this translator role requires very specific and rare knowledge in finance and accounting which is, as outlined above, far from being commonly available for all SMEs.

Accountants as an outcome of SME financing are likely to be valuable, too: they help providers of capital such as venture capital firms to reduce agency problems and thereby make investing less risky for them. If venture capitalists would not be able to monitor the SMEs they were invested in, it could be assumed that fewer investments would be made, which could cause serious financing problems, especially for high-risk start-ups. It appears that both streams of explanations—accountants as either antecedents or outcomes of accountant employment—do not differ too much as the accountants in both cases appear to be a symbol of professionalization, and a tool to overcome agency problems either by having an accountant to begin with or by employing an accountant to cope with the increased reporting requirements arising from the need to overcome agency problems in financing relationships.

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
There is no relationship between access to finance and accountant employment as an advisor	1	Carey and Tanewski (2016)	
There is a positive relationship between access to finance and actual/intended accountant employment	5	Allee and Yohn (2009); Cassar and Ittner (2009); Paananen et al. (2016)	Dyer and Ross (2007); Butler and Durkin (1998)
Voluntary audits of financial statements do not impact an SME's interest rate	2	Allee and Yohn (2009); Peel (2018)	
The switch from a qualified accountant to a chartered one is negatively linked to an SME's interest rate	1	Paananen et al. (2016)	
Access to finance is an antecedent of accountant employment	1	Davila and Foster (2005)	
Access to finance is an outcome of accountant employment	2		Dyer and Ross (2007); Butler and Durkin (1998)

Table B 10: Research on SME Financing as an Antecedent or Outcome of Accountant Employment

4.3.3. Legal support

Research has further identified legal advice from accountants as a potential outcome. In particular, accountants are regularly consulted for legal choices made during the start-up stage of a firm such as entity choices (Blair and Marcum, 2013), legal advice in relation to human resource decisions (Jarvis & Rigby, 2012; Sarens et al., 2015) or legal advice regarding succession in family-owned SMEs (Blackburn et al., 2018). Previous research indicates, however, that accountants have a different perspective when advising SMEs on legal matters than lawyers do, and their advice is

likely to differ from the advice of lawyers (Blair and Marcum, 2013).

From an RBV perspective, it could make sense that SMEs limit their use of advisors by asking accountants for legal advice, as the employment of a lawyer would be associated with additional costs and hence another negative impact on profits that would have to be compensated by positive outcomes. If accountants are able to advise SMEs adequately—which refers to the question of whether lawyers are a substitutable resource—it would be value-enhancing to consult the accountant for legal advice, too, as the SME would get a broader spectrum of advice for a lower "lump-sum" price. However, it is also possible that negative outcomes could arise from the attempt to substitute a lawyer by an accountant. If the legal advice from the accountant is not qualified, it may lead to high damage in all fields SMEs need legal advice for such as succession, mergers and acquisitions, and human resource decisions. Unqualified legal advice by accountants may also result in penalties or damages to the SME's reputation, which could have further negative consequences on SME performance but also on the SME's likelihood to survive.

4.3.4. Further non-monetary outcomes

In addition to the previously mentioned outcomes, there are further non-monetary outcomes: Successful ownership transfers—either through mergers and acquisitions or succession processes in family-owned SMEs –, supporting SME growth and an SME's likelihood to survive. The research findings—as summarized in Table B 11– point towards an accountant being a support during ownership transfers. This support is mostly due to the accountant helping the SME to formalize tacit knowledge and help to transfer it to new owners or new generations (Davila & Foster, 2005; Giovannoni et al., 2011; Perry et al., 2010). Hence, professionalization, in terms of making tacit knowledge available to more people within the SME, can be an antecedent for successful ownership transfers, and accountants can help the SMEs to achieve this knowledge transfer. Similar results can be found regarding SME growth. Findings by Davila and Foster (2005, p. 1057) suggest that financial managers could help start-ups by transferring knowledge that only

the founder has into accounting systems that are available for a broader group of employees, or as one owner-manager within their study puts it:

> "In the first few years, it was all me doing it in my head to scale the business. The CFO now has put systems in place that everyone can use. The business is not dependent upon one person".

Up to now, little is known, however, about the exact mechanisms through which SME survivability is linked to accountant employment apart from research showing or indicating that accountant employment is linked to a higher likelihood to survive (Barbera & Hasso, 2013; Stone & Lightbody, 2012). It could be plausible that this effect is a result of other outcomes, too, such as increased professionalization (e.g., rational decision making instead of decision making based on gut feelings) or better access to financing.

Although we currently do not fully understand the mechanisms leading to all of the non-monetary outcomes discussed in this section, the outcomes are highly valuable from an RBV perspective. Succession is an important goal in many family-owned SMEs associated with many challenges, which, if not properly managed, can lead to family-owned firms not surviving (Giovannoni et al., 2011). Given the importance that succession has for many family shareholders in family-owned SMEs, it would be highly valuable if accountants were able to support them through such ownership transfer processes.

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
Accountant employment is linked to successful ownership transfers	5	Sarens et al (2015)	Blackburn et al. (2018); Giovannoni et al. (2011); Jarvis & Rigby (2012); Perry et al. (2010)
Accountant employment is linked to a higher likelihood for the SME to survive	2	Barbera & Hasso (2013)	Stone & Lightbody (2012)
Accountant employment is linked to SMEs better coping with scaling	1	Davila and Foster (2005)	
Accountants are helpful when scaling an SME to formalize knowledge and make it accessible to people apart from the founder	1	Davila and Foster (2005)	
Accountants are helpful during ownership transfers because they formalize and/or transfer knowledge from one owner or generation to another	2		Giovannoni et al. (2011); Perry et al. (2010)

Table B 11: Research on Other, Non-Monetary Outcomes of Accountant Employment

Whether an accountant can be substituted or imitated by other advisors to achieve similar goals is not easy to be answered. It appears that in general, other advisors (e.g., counsellors) would be able to support SMEs during some of the above-mentioned processes equally or better, whereas in other business-related outcomes, accountants are probably the better choice. The formalization of knowledge in accounting systems is likely to be less affected by the risk of substitution, whereas other accountant services (e.g., advisory regarding the creation of an owner's will in succession preparations) are more likely to be affected. It can, however, be doubted that too many advisors

have a strong impact within the same SME. The value of an accountant is often drawn from a long-established relationship with the SME and the firm-specific knowledge about the firm that was gained by the accountant during that time. Such knowledge cannot be gained in a short period of time and is therefore not substitutable. Furthermore, previous research has shown that trust plays an enormous role in the scope of an accountant's task in general, and this role is likely to be even bigger in such sensitive issues as succession or M&A processes. Therefore, an accountant that is chosen as an advisor in such processes cannot be easily substituted, which increases the accountant's potential to function as a source of competitive advantage.

4.3.5. Performance

As can be observed from Table B 12, linking accountant employment and SME performance has been of particularly high interest for accounting researchers. Resource-based researchers argue, however, that performance is likely not the most suitable outcome to measure such benefits (see Section 2). The difficulties of using performance as a dependent variable are mirrored in the highly mixed findings reviewed here. This inconsistency in the findings is partly due to the nature of performance as an outcome variable, but also due to methodological issues in such previous research. Findings on performance range from positive relationships (Barbera & Hasso,2013; Cassar & Ittner, 2009; Watson, 2007) to mixed findings or even negative relationships (Berry et al., 2006; Obeng et al., 2014). Other studies found no significant relationship between accountant employment and performance (Carey & Tanewski, 2016; Robson & Bennett, 2000).

Findings	Number	Supporting Studies Author(s), Year Quantitative	Qualitative
There is a positive relationship between accountant employment and SME growth	3	Barbera & Hasso (2013); Cassar & Ittner (2009); Watson (2007)	
There is no significant relationship between accountant employment and SME growth	2	Carey & Tanewski (2016); Robson & Bennett (2000a)	
There is a positive relationship between the SME owner's assessment of the accountant's impact and performance	2	Bennett & Robson (1999); Robson & Bennett (2000b)	
There are mixed findings regarding the relationship between accountant employment and SME growth depending on a) the SME's sector b) the specific category of advice	2	a) Obeng et al. (2014) b) Berry et al. (2006)	
In family-owned SMEs, the family status of financial managers negatively effects the performance	2	Caselli & Di Giuli (2010); Di Giuli, Caselli, & Gatti (2011)	

Table B 12: Research on the Relationship Between Accountant Employment and Performance

From an RBV perspective, such findings are plausible as resource-based researchers argue that the utilization of firm performance as the (only) direct dependent variable draws an overly simplified picture of organizations as performance is likely to be influenced by various factors (Ray et al., 2004). This implies that other factors—apart from the factors that are under the control of accountants—could cancel out the performance-enhancing effect of accountants. As stated before, this does not mean that accountants do not have a positive, value-enhancing effect on firm performance, but rather that the exact incremental impact of accountants on performance is difficult to measure. Previous research on performance as an outcome variable has tried to establish direct

links between accountant employment and performance. However, even some of these studies analysing a direct relationship describe a more complex relationship as it is the case in Gordini's (2016, p. 5) study:

> "Thus, a family CFO negatively affects SMFF [small and medium-sized family firms] performance, while a nonfamily CFO is essential for providing the necessary financial skills, competencies and advices that help the firm to create a long-term relationship with the banks, have an easier access to credit and, consequently, improve its performance".

Although Gordini's (2016) empirics analyze a direct relationship between accountant employment and performance, it is suggested that accountants rather influence business outcomes—e.g., by providing necessary skills or advice—and thereby improve performance in the long run or in an indirect way. Analysing such impacts is very difficult and would require longitudinal data that would cover a substantial time frame. As Kraaijenbrink et al. (2010) have pointed out, it is important to include time lags in RBV research on resource outcomes. When we assume that improved performance is the outcome of other factors such as professionalization—which in itself may be an outcome of accountant employment that requires a substantial amount of time to be achieved—incorporating long time lags becomes even more important for research on performance as an outcome variable. However, only a minority of the quantitative studies that analyze performance as an outcome variable draw upon at least some longitudinal data elements (Barbera & Hasso, 2013; Caselli & Di Giuli, 2010b; Watson, 2007) and when they do, they only cover a very short time frame of five years or less. We assume that such a time frame is not sufficient to analyze very complex business process outcomes that would result in performance outcomes. We, therefore, encourage a more complex research design when analysing performance

outcomes as they are—as pointed out above—difficult to measure, depend on various contingency factors, and are likely to require longitudinal studies with a longer time frame than the ones being employed in existing research.

5. Models of Accountants in SMEs

Based on the previous findings, we develop a model that represents the current state of research on accountants in SMEs (see Figure B 1) and a second model which suggests—based on theorizing the findings through the lens of the RBV—a framework for future research on accountants in SMEs (see Figure B 2). We now describe the elements of these two models, which refer back to our results presented in Section 4.

i) Current State of Research on Accountants in SMEs (see Figure B 1)

SME owner characteristics—in particular, education and previous work experience—and SME firm characteristics such as the ability to cover costs associated with accountant employment appear to be antecedents of accountant employment (see Section 4.2.1. for SME owner characteristics and Section 4.2.3. for costs). As outlined above, the right SME owner characteristics could, therefore, be seen as firm resources. These findings underpin the notion that resources in the RBV are far from being completely independent of one another. Although this is commonly seen as a critique towards the RBV, we argue that this path dependency makes accountants as a resource in SMEs even more rare as the SMEs who have access to all of these resources are likely to have a competitive advantage that cannot easily be copied because—as pointed out in Section 1—the imitability of a resource very much depends on competitors being able to identify and duplicate a resource (Wright et al., 1994). Furthermore, other SME firm characteristics such as larger firm size are likely to be an antecedent for accountant employment due to increased demands regarding professionalization as a consequence of firm growth (see Section 4.3.1).

In our analysis of the existing literature, we identified three major roles of accountants in SMEs: (i) accountants as providers of statutory reporting, (ii) accountants as a source of self-validation and translation, and (iii) accountants as a source of advice. When accountants only serve as providers of statutory services, our analysis suggests only a low likelihood that competitive

advantages would arise from accountants serving in such a role. Accountants within this role mostly drive SME professionalization in its very basic form by providing reporting for external causes (see Section 4.1.1). Previous research has shown that SME firm characteristics—mostly firm size—drive the demand for such reporting services. This can partly be explained by firm size increasing regulatory demands, and partly by increased need for professionalization as a consequence of increased firm size. Accountants serving in this role as a provider of statutory services are likely to be influenced by both the SME owners' and the accountants' characteristics. That is, a skilled SME owner might be able to draw at least some internal implications from externally reported data, although reporting is mostly created for external purposes. If an SME owner is not skilled, an accountant's willingness and ability to customize his or her services towards SMEs' peculiarities are required to give the SME owner the opportunity to draw at least some internal conclusions from the reporting. However, the SME accountant's skills do not only impact whether a firm can make some internal use of external reporting, but also whether the reporting is created in a professional manner to begin with. Empirical findings have shown that some SME accountants have deficits regarding the implementation of basic accounting standards. However, even if the reporting is conducted professionally, it will have a low likelihood to function as a competitive advantage as long as it is not connected to achieving other important firm goals such as securing financing or successful ownership transfers (see Sections 4.3.2 and 4.3.4).

More value impact is likely to be drawn from accountants in the other two roles. Accountants as a source of translation have been explicitly linked by prior research to SME financing. The degree to which an SME accountant is capable of functioning as a translator is influenced by the accountant's capability to understand both the SME owner's language and the accounting language. Therefore, it is likely that certain accountant characteristics (e.g., previous SME experience) might positively influence the chance that accountants can serve as effective

translators. Given the problems that many SMEs have when trying to get access to finance, accountants in this role can be particularly value-enhancing in an RBV sense. Furthermore, accountants as an outcome of financing are likely to be value-enhancing, too, as they can help investors, especially high-risk investors, to monitor their investment and overcome agency problems. Given the plausible relationships between SME financing and other firm outcomes—for instance, being able to grow or survive as a firm—accountants within this function can be seen as a source of competitive advantage (see Sections 4.1.2 and 4.3.2).

The impact of accountants as advisors is difficult to assess. As summarized in Figure B 1, accountant advisory can be linked to outcomes such as SME professionalization, legal support, and further non-monetary outcomes such as successful ownership transfers, growth, or SME survival (see Sections 4.1.3, 4.3.1, 4.3.3 and 4.3.4). Given that some SME accountants appear to have problems to provide basic accountant tasks, SME accountants' characteristics, especially education, seem to be an important moderator of the relationship between accountants serving as advisors and the outcomes just mentioned. Put differently, skilful and suitable accountants are rare for many SMEs. In addition, the notion that a skilled SME owner is required to recognize the benefit from accountant services is even more true for advisory services, as advisory services are unlikely to be successful when the SME owner has an advice-rejecting mind-set. These notions are further supported by the high importance of trust, which shows that an SME owner's trust in both the SME accountant's skills and character are important prerequisites for accountants to be employed in advisory functions. The importance of trust further boosts the value of accountants as trustworthy accountants cannot be easily substituted by another accountant, given that SME owners must carefully evaluate the new accountant's trustworthiness again. Therefore, accounting advisory services can be linked to most valuable outcomes, especially when compared to

accountants as providers of reporting. These considerations underpin the potential of accountants as advisors to be a source of competitive advantage.

So, while the second and third roles identified in our review may be an important source of competitive advantage for SMEs, they also come with an important downside: the more advanced an accountant's role is, the more likely this role goes along with an increase in costs for accountant employment. Previous research has shown that many SMEs do, in fact, perform a value-for-money analysis before hiring an accountant, and it appears that due to costs, not all SMEs employ accountants in more advanced roles (see Section 4.2.3). From an RBV perspective, this can make sense whenever the benefits achieved through the employment of accountants do not make up for the costs. Furthermore, smaller SMEs or SMEs with no intention to grow might be able to successfully substitute services provided by accountants, for instance, by skilled owners performing simple accounting tasks themselves. In addition, recent research (e.g., Dang-Duc, 2011; Kishali et al., 2013; Son et al., 2006) gives first hints that the picture of accountant employment in SMEs might have been painted too optimistically and that danger of accountant employment— either because of unqualified or dishonest accountants— need to find further consideration in research (see Section 4.1.3.).

Regarding the impact of accountant employment on performance, the previous findings are mixed, ranging from no impact at all to studies showing positive or negative relationships. Following the RBV, such performance effects of key individuals would be difficult to be measured as performance is influenced by many factors, with accountants being only one of them (c.f. Lockett et al., 2009). In addition to general problems in measuring performance as an outcome variable of an individual's employment, present research mostly relies on cross-sectional data, which makes causal statements on the relationship between accountant employment and performance rarely possible. Although current research exclusively analyses direct performance

effects, we argue that if at all, such performance effects are rather likely to be seen in the long-term. In the shorter term, the impact of accountants is much rather likely to materialize in the form of improved business processes and not overall performance because the main task of many SME accountants is improving such processes. Hence, we argue that in future research on accountants in SMEs (see below), insights from the RBV should be considered, which implies that performance is not likely to be a suitable direct dependent variable.

ii) RBV-based framework for future research on accountants in SMEs (see Figure B 2)

Figure B 2 represents an RBV-based view on accountants in SMEs that may be used as a roadmap for future research on accountants in SMEs. This figure builds upon the existing empirical findings in the literature and is very similar to Figure B 1 in many regards, but most importantly, it does not view firm performance as a direct outcome of accountants in SMEs.

For future research, we rather suggest taking the insights from the RBV into account when analysing the processes through which competitive advantages are achieved and to develop the research design accordingly. According to proponents of the RBV, rather easily observable signs of competitive advantages are likely to be improved business processes. And our review has shown that the literature is mostly consistent in finding that accountants are able to improve business processes in SMEs—for instance, by professionalizing them. We, therefore, encourage a two-step (i.e., mediation) approach for future research on accountants in SMEs in which performance outcomes are—if measured at all—measured as a consequence of such advantageous business processes, and accountants are analysed as developers of such processes. Although accounting research has put considerable effort into showing direct performance outcomes of accountant employment in SMEs, the results are very much mixed, as discussed above. One reason why such

direct performance effects are so difficult to be measured is that not only the business processes influenced by accountants, but many other business processes, too, are likely to impact performance (Kraaijenbrink et al., 2010). Another reason why firm performance is not an ideal measure of the effect of accountants in SMEs is that firm-external factors drive performance, too, and that accountants, especially in positions without influence on an SME's strategy, have limited opportunities to react to or influence such external factors.[3] RBV theorists do not generally deny the performance impacts of a given resource, but they highlight the difficulties in measuring the impact of any specific resource (Ray et al., 2004) . These problems are also apparent in our above review on existing findings on performance as an outcome variable of accountant employment in SMEs.

In addition, if analysed at all, complex research questions about the performance effects of accountants in SMEs would rather require longitudinal data instead of cross-sectional data sets. Such longitudinal analyses would require datasets that encompass a considerable time frame before the employment of an accountant and a substantial period after this employment in order to be able to reflect any improvements in business processes. In addition, it can be assumed that the effect of business processes is likely to be time-lagged. Consequently, a further time lag would need to be covered in order to properly analyze the performance effects of improved business processes. However, also with such longitudinal analyses, the underlying problem persists that accountants are likely to be by far not the only ingredient of superior firm performance. This is why we suggest to rather focus on the outcomes of accountants on important business processes in SMEs, where accountants are known or are desired to have influence.

3 Such external circumstances are typically not found within the scope of the RBV – which has typically a firm-internal perspective -- but are rather described in approaches defining competitive advantages through a firm market position such as Porter's industrial organization view (Kraaijenbrink et al., 2010).

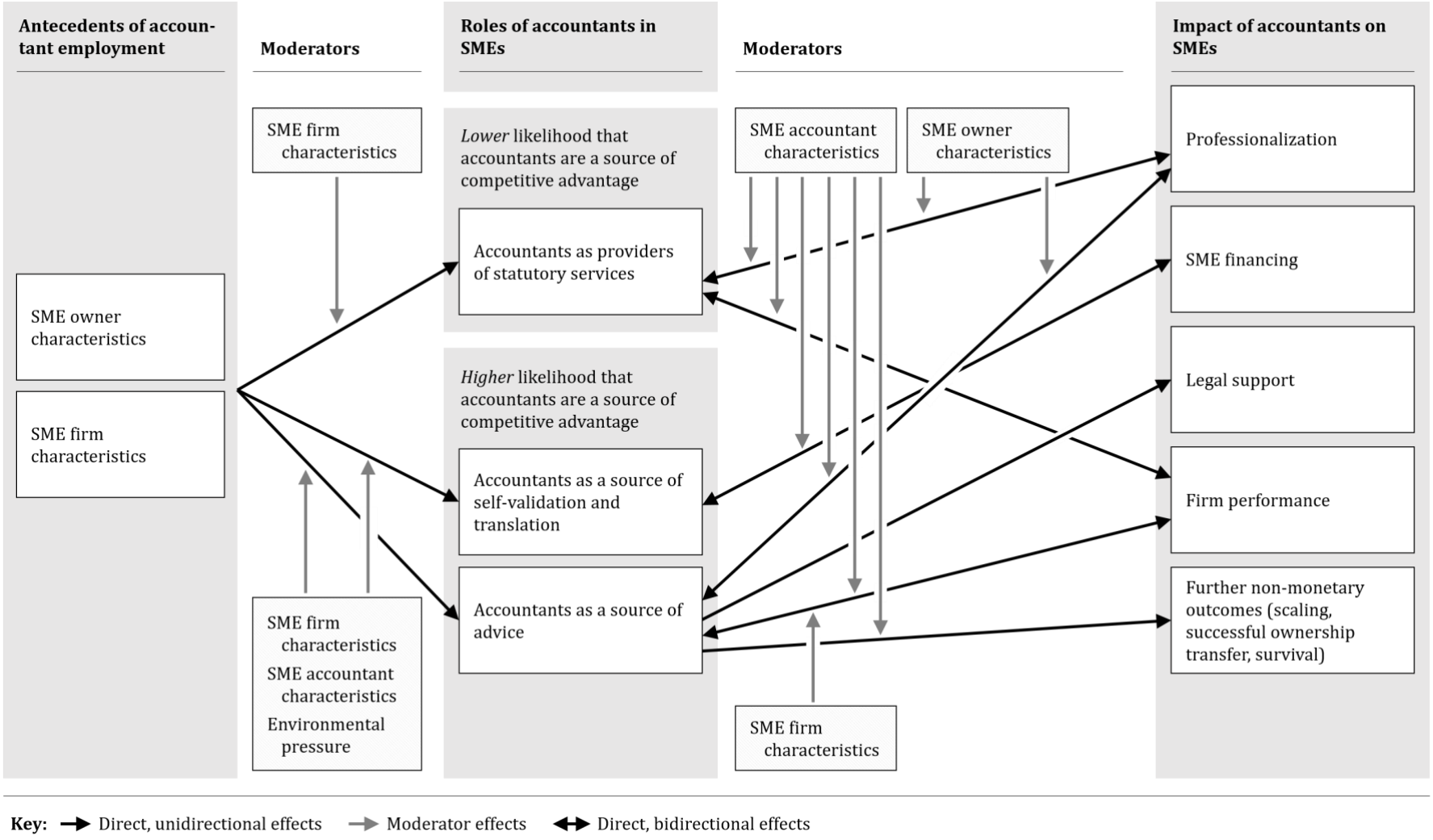

Figure B 1: Current State of Research on Accountants in SMEs

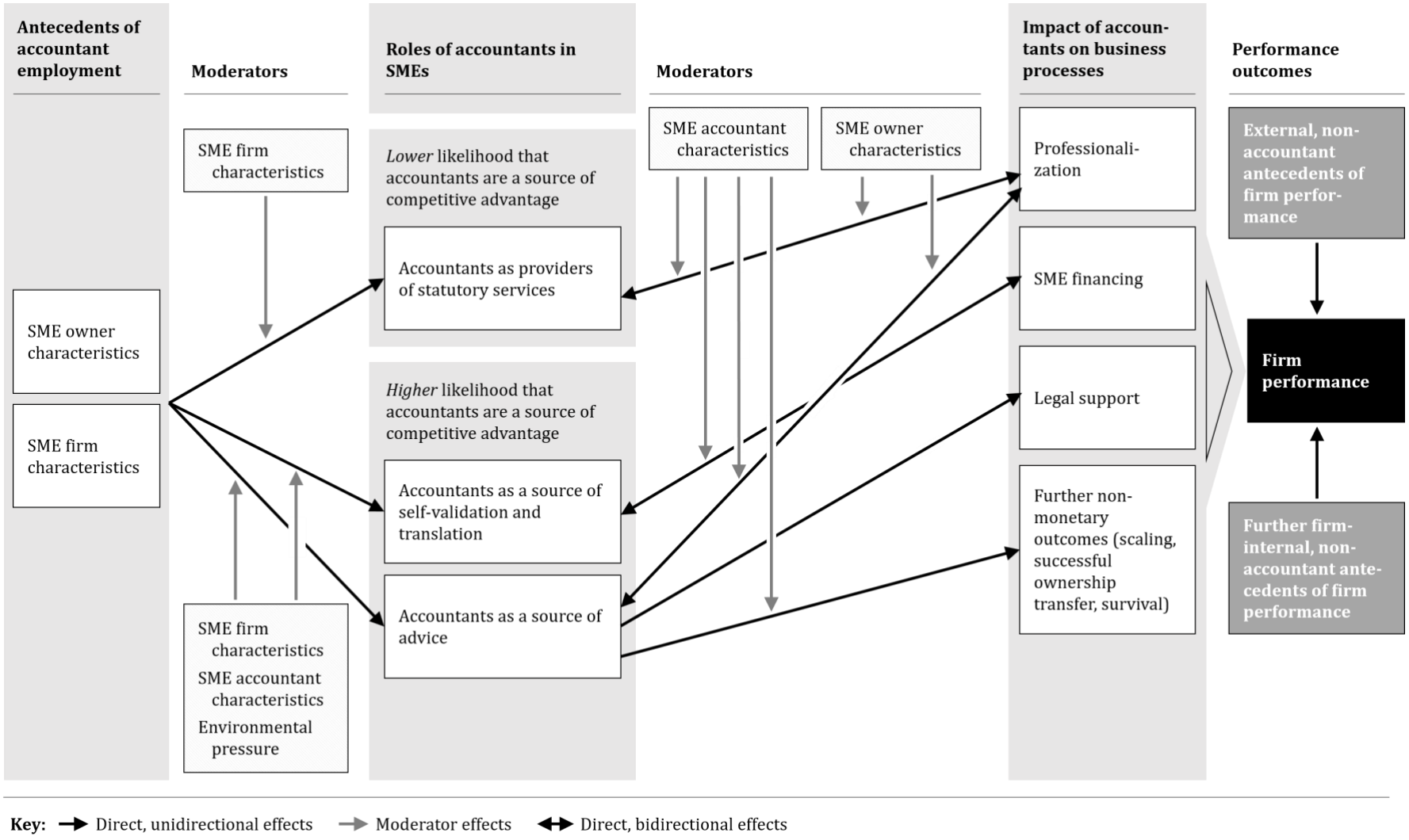

Figure B 2: RBV-Based Framework for Future Research on Accountants in SMEs

6. Future Research Avenues

Based on our RBV-based framework for future research on accountants in SMEs, we could develop a plethora of concrete questions for future research. Since such a multitude of research questions would be beyond the limits of a single paper, we would instead like to encourage researchers to take the discussed insights from the RBV—as outlined in Sections 2 and 5—into account and design both their research questions and research setup accordingly. As discussed above, RBV theorists doubt the suitability of firm performance as a dependent variable of any resource and hence also of accountants who function as resources (Lockett et al., 2009; Ray et al., 2004). We, therefore, encourage future research to look more into business-process-related outcomes of accountant employment that either have already been linked to performance or could be linked to it, instead of trying to directly link the roles of accountants in SMEs to performance outcomes as it was often done in the past (see Section 4.3.5). Before analysing future research on performance outcomes, we would like to address, however, several avenues for future research that we think deserve increased attention by researchers and highlight the usefulness of RBV-based theorizing.

Starting with the left part of the RBV-based framework for future research on accountants in SMEs (see Figure B 2), several opportunities for future research arise. As discussed before, firms do often not choose to employ accountants in more advanced roles because the employment of accountants is dependent on several other monetary and non-monetary resources (e.g., the SME owner is not skilled and hence does not understand the benefits resulting from accountant employment or the firm does not have sufficient financial means for employing accountants). Future accounting research should, therefore, look into means that could help SME owners see the value arising from accountant employment and also on methods to provide cost-efficient accountant services to SMEs. However, it appears that it might currently be rational for some SME

owners not to employ an account since the benefits arising from it would not be able to outweigh the costs. Future research could, therefore, analyse the research question:

- Where is the tipping point below which the costs arising from accountant employment do not outweigh the benefits of accountant employment?

This, however, suggests that the accountants provide positive value to the SMEs, which is, based on this review's findings, an overly simplified and optimistic picture of accountant employment. Past research has shown that in particular SME owners who are not able to evaluate the accountant's quality might show a blind level of trust in their accountants, which could lead to dangers arising from accountant employment if accountants prove to be not trustworthy or skilled. Although this problem is far from new in the general accounting literature, we assume the problem to be worse in SMEs since they appear to be financially particularly vulnerable due to their low resource base. We would, therefore, encourage research on potentially negative (and hence, value-decreasing) effects of accountant employment that have so far not been discussed in the literature. Future research questions could include the following questions:

- To what degree do SME owner characteristics (e.g., low level of education) impact SME owners' vulnerability to principle-agent-risks (e.g., accountants overpricing their services or committing fraud as the SME owners might not be able to evaluate the accountant's services)?
- Are there negative consequences arising from employing lower qualified accountants (e.g., the accountant not being able to professionalize the SME in a state-of-the-art manner)?

Regarding the centre part of the model displayed in Figure B 2, the need for more theory-driven research designs and theory-derived research questions becomes apparent. The relationship between the roles of accountants in SMEs and the impact of accountants on business processes has been researched quite intensely, but the findings often show methodological shortcomings. In particular, the mechanisms of the relationship between accountant employment and SME professionalization, SME financing, legal support, scaling, successful ownership transfers, and survival are of high relevance for SMEs, but research regarding those issues could improve methodologically. The findings in Section 4.2.1 have shown that accountants are often employed to professionalize the firm. However, low skilled accountants form a huge obstacle for SME professionalization as they are often not qualified for both simpler and even more so for advanced accountant roles. We, therefore, would like future research to analyse the risks arising from low skilled accountant employment—that is the employment of accountants who are rather unlikely to function as a source of competitive advantage—in greater detail on both the firm level. In addition to that, we think research should look into the impact that the currently changing accountant roles might have for accountants that are not highly skilled.

Since we have outlined that from an RBV, such accountants provide at best little, if not negative value to firms, and are likely to be replaced by software soon (e.g., Liu & Vasarhelyi, 2014), there are signs that the role of accountants as providers of statutory reports will generally decrease or even vanish in many firms. However, our analysis shows that SMEs still largely use their accountants for statutory reporting and less for more progressive roles, which suggests that SMEs are not keeping up with the development of accountant roles in larger firms. We, therefore, encourage more research on the investments SMEs need to make now so that they will not have a competitive *disadvantage* because they will have to continue to employ an accountant for tasks that can be substituted by software soon. Future research questions could include:

- Are SMEs technologically equipped to replace standardized accountant services such as reporting by software?
- If SMEs are not equipped, what are the main challenges SMEs face in replacing standardized accountant services (e.g., the skill level of the employees or costs arising from technology) by software and how can those challenges be overcome?

Additionally, we encourage research on training that is necessary for accountants who are currently not skilled to obtain more advanced accountant roles to make them able to keep up with changes in their job requirements and switch from rather little-value-creating accountant roles to more advanced roles. Although it has commonly been stated that accountants could develop from their former role as a bean counter into business partners, we know little about the requirements for such a development. Future research questions on this topic could include:

- Are SME accountants that are currently employed in bean counter roles able to transform into accountants with more progressive roles? Or putting it differently: What characteristics differentiates SME accountants that can change from bean counters to business partners from those who cannot?
- How does accounting education have to change to prepare future accountants better for their potential roles as business partners?
- Do SMEs have a systematic disadvantage as their accountants often-times show rather low level of qualifications and hence might not be able to develop into even business partners?

Financing is—as outlined in the introduction—a problem for many SMEs. However, we currently know very little about the relationship between accountant employment and SME financing. As outlined in Section 4.3.2, it is not clear whether SME financing is an antecedent for accountant employment. Given that employing an accountant is a significant financial investment for many SMEs, we encourage future research to analyze this matter by using longitudinal studies to clarify the direction of this effect since then, researchers will be more likely to make correct appropriate recommendations for practitioners.

Following up on the discussion regarding legal advice outcomes of accountant employment (see Section 4.3.3), future research should analyze in more depth where the actual value-creation potential of accountants lies. It appears that current accounting research has assumed that an accountant can replace several other resources and function as a rather broad *catch-it-all resource.* However, although past research has shown that accountants are asked to provide legal advice on a variety of matters, we know very little about the quality (or value-creation effects) of such advice. We, therefore, would like to encourage future research not only to analyse what non-accounting related services are offered by accountants (e.g., provision of legal advice), but also the quality of such advice to be taken into account. One danger of a too broad role of accountants in SMEs—or in any firm—could be that accountants are required to perform tasks they are not qualified for, which in the case of legal support but also regarding other tasks can have severe negative consequences. Therefore, future research could look into the research question:

- What are negative outcomes of accountant employment arising from employing accountants that are qualified in accounting, but consulted in matters that they are not qualified for (e.g., consulting the accountant in legal issues)?

Additionally, regarding further non-monetary outcomes, we encourage research to not analyse them in isolation from other outcomes. As outlined in Section 4.3.4, sometimes an overly simplified picture of the relationship between accountant employment and outcomes is drawn. One example would be the link between accountant employment and firm survival, which does not take into account other antecedents as potentially related variables (e.g., firm finance impacting both survival and accountant employment). We do not believe that overly simplified research designs do the complexity of the role of accountants in SMEs—or any firm—justice. Future research questions could include:

- Does accountant employment increase the likelihood to be granted access to external finance, or does better access to finance increase the likelihood of accountant employment?
- Do accountants directly impact the likelihood of firm survival and successful ownership transfers, or do they rather impact the firm's level of professionalization, which in turn increases the likelihood of firm survival and successful ownership transfers?

Regarding the right part of the model displayed in Figure B 2, the link between business-process-related outcomes and performance, we suggest being more careful when analysing such relationships. As outlined before, the RBV argues that the time lag between gaining a resource and having performance outcomes resulting from this resource must be sufficient as resources will take time to influence profits (Kraaijenbrink et al., 2010). Additionally, RBV researchers warn that several factors influence performance, and it is hard to pinpoint performance down to a single resource (Lockett et al., 2009; Ray et al., 2004). We encourage those who do analyse such links to

use appropriate longitudinal data and ensure a sufficiently large sample size to be able to include a variety of necessary controls in their analyses.

Lastly, we would like to use the model to point towards the need for a more granular measurement of accountant employment. Our findings suggest that the kind of accountant employment significantly impacts the outcomes accountants can achieve. Whereas accountants who are employed as a mere provider of statutory services can mostly be linked to professionalization outcomes (e.g., providing professionalized statements for stakeholders), accountants who are employed as advisors can be linked to additional valuable outcomes (e.g., supporting firm succession in family-owned SMEs, SME financing). In the currently available research, however, accountant employment is almost always measured rather simply (e.g., a firm has an accountant or not, or: a firm has a skilled accountant or not). We encourage research to take more into account the actual roles of the accountants in the firm and the level of their influence on firm processes. Future research could, therefore, focus on research questions such as:

- Does the involvement of the accountant in firm processes help the accountant to achieve goals that are typically not associated with accountant employment by giving the accountant a better insight into the firm's operational business?

7. Conclusions

This paper has sought to provide a systematic review of the literature on accountants in SMEs. Given that large parts of the existing empirical literature in this field are not based on any explicit theory and that many empirical findings are mixed or contradicting, we propose the RBV as a unifying theoretical lens for the past and future study of accountants in SMEs.

By doing so, we contribute to the literature in basically three ways. First, our RBV-based framework on the current state of research on accountants in SMEs provides the first synthesis of

this research field. Our framework not only summarizes previous research findings but provides a theory-consistent reconciliation of the so far heterogeneous literature on accountants in SMEs with the help of the RBV. Most importantly, we conclude that previous research has overstated the direct impact of accountants on performance as the RBV literature suggests that using performance as a dependent variable of key individuals is not very promising as such impacts are hard to measure or non-existent at all (Ray et al., 2004). Much rather, accountants can be resources for SMEs by improving business processes related to professionalization, SME financing, legal questions, and other processes (scaling, successful ownership transfers, survival). We assume that as a consequence of such improved business processes, firm performance could be increased in the long run. However, other factors apart from key individuals might drive performance as well.

Second, we also provide an RBV-based framework for future research on accountants in SMEs. Based on this overall framework, we have developed an array of research questions worthy of further study. The framework can, therefore, serve as a basis for a better future understanding of accountant employment in SMEs and its various outcomes.

Third, our paper shows that developments in the ongoing academic and practitioner discussions on the changing role of accountants (e.g., Baldvinsdottir et al., 2009; Goretzki et al., 2013; Parker and Warren, 2009) may not yet fully apply to the SME context. In this paper, we identify three basic roles of accountants in SMEs and only one role—that is, accountants as a source of advice—comes near to the more progressive roles discussed for accountants in the literature on the changing roles of accountants. Consequently, our paper shows that currently, these more progressive roles for accountants may be more a phenomenon for larger firms and less so for smaller ones. In turn, we need more research that accounts for the specific context of SMEs in researching, discussing, and proposing new role sets for accountants.

Just like any research paper, also this paper is not free from limitations. We employed the RBV as a theoretical lens for both analysing the review findings and developing an RBV-based framework. Although we consider the RBV the most appropriate framework for this cause, other theoretical lenses would have been possible, too, which is, of course, a limitation of any theory-driven review. However, we are not aware of any competing theoretical frameworks that could work comparatively well as a unifying framework for the literature on accountants in SMEs. In addition, we limited our review sample to English scientific journals only. Although we aimed to ensure a sufficiently broad quality threshold for the journal selection was used, the focus on English journals itself is a limitation that we acknowledge. Lastly, a third limitation is that the review is based on our interpretation of the journal literature. It is possible that other researchers would have a different interpretation of the literature.

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C. The Impact of Controller Involvement in Strategy Development on Management Control Effectiveness

1. Introduction

It has long been established in the accounting literature that a deep understanding of an organization's objectives and strategies is necessary for designing effective control systems — not at least due to the notion that the primary objective of control systems is fostering the implementation of strategy (exempli gratia (e.g.), Daft and Macintosh, 1984; Langfield-Smith, 1997; Malmi and Brown, 2008; Merchant and Van der Stede, 2017; Speklé, 2001). This is why in their widely-referenced textbook, Merchant and van der Stede (2017) suggest that a prerequisite of effective control systems is that the actor who is controlled (id est (i.e.), subordinates) and the actor who exercises control (i.e., superiors) both show a deep understanding of the strategy in order to be able to implement control systems that are able to support the realization of strategy.

While we do not argue against this proposition, it leaves out an important further actor—that is, the controller, who often participate in the design of control systems. Just as for superiors and subordinates, it can be assumed that when the actors who design management control systems (MCS)—who can usually be found in controller positions or similar posts—are involved in the strategic decision-making processes of the firms, they are more likely to design effective management controls in the sense that they are tailored to the organization's strategic goals. This notion receives some support from prior empirical qualitative evidence. For instance, Byrne and Pierce (2007) suggest that controllers who are more involved in the strategic decision-making processes understand better the information needs of the management and are therefore able to better support managers.

Building on such previous conceptual and empirical qualitative work, we assume that controller involvement in strategy development increases the effectiveness of MCSs. We

quantitatively test this basic assumption by using two new measurements for controller involvement in strategy work (Erhart et al., 2017) and management control effectiveness (MCE) (Bedford et al., 2016). In addition, we theorize that the strategic orientation of the organization moderates this basic relationship. Past research has shown that the difficulty of designing effective MCSs very much depends on an organization's strategy (Langfield-Smith, 1997). In particular, firms following a prospector strategy seem to face high challenges when designing their control systems properly as they typically need to design it in a way that is capable to serve a much broader set of purposes as compared to defender firms whose control systems only need to fulfil a more narrow set of demands. Consequently, empirical results show that firms following a prospector strategy utilize a wider variety of controls than defenders (e.g., Bedford et al., 2016; Simons, 1987). Given this higher challenge of designing effective control systems in prospector firms, we assume that controller involvement in strategy is more important in prospector firms than in defender firms for creating effective control systems.

Based on a survey of German firms, we largely find support for these propositions. Consequently, our paper contributes to the existing literature in two ways. First, our findings contribute to management control theory (exempli gratia (e.g.), Merchant and van der Stede, 2017) by showing that for an effective management control design, the controllers and their involvement in strategy development have been overlooked by past research although their role is – according to our findings – important. Second, we contribute to the literature on the relationship between strategy and MCS (e.g., Henri, 2006; Kober et al., 2007; Langfield-Smith, 1997). Whereas it is rather well researched that strategy types affect the type and diversity of MCS, our findings show that also the involvement of controllers in strategy development should differ depending on the firm's basic strategic orientation in order to reach effective management controls. The remainder of this paper is organized as follows. Section 2 provides a review of the relevant literature and develops two hypotheses. Section 3 discloses our research

methods and Section 4 presents our findings. Section 5 provides a discussion of these findings, our most important conclusions, and the main limitations.

2. Literature Review and Hypotheses Development

The accounting literature has proposed that controller involvement in strategy is an important part of modern controller roles such as the role of being a business partner to management which has been discussed quite frequently in the recent accounting literature (for an overview, see Fourné et al., 2018). Empirical evidence on controller involvement in strategy has however been rare for quite some time, despite the phenomenon being discussed theoretically for much longer (Rieg, 2018; Verstegen et al., 2007; Zoni & Merchant, 2007).

In general, the existing empirical research on controller involvement in strategy can be clustered into two streams, the first one discussing whether controller involvement in strategy is only a theoretical idea discussed in accounting research or a phenomenon that is actually taking place in practice, and the second one discussing potential outcomes of controller involvement in strategy, with the latter being the stream that we aim to contribute to with the present paper. Nevertheless, both streams shall be introduced shortly here:

(1) Recent accounting literature has suggested that controllers are developing away from their past role as "bean counters" (Granlund & Lukka, 1998, p. 202) into more progressive roles such as business partners. A main feature of the latter role is that it is more involved in strategy and managerial decision-making processes (Fourné et al., 2018; Zoni and Merchant, 2007). However, empirical findings regarding the question of whether such a role shift has actually taken place in practice are still mixed. Qualitative empirical findings by Graham et al. (2012) suggest that controller involvement in strategy should in fact not be seen as a shift from the more traditional roles to new roles, but strategic involvement could be considered much rather an additional task controllers take on, while

their main focus still lies on more traditional tasks. Verstegen et al. (2007), however, found that controllers in business-partner roles differ from controllers that are more suitable for bean-counter roles, which makes it questionable whether a controller can actually take on both roles at the same time. In contrast to the evidence presented by Graham et al. (2012), there is a stream of literature suggesting that a role transition of controllers has in fact taken place (e.g., Burns and Baldvinsdottir, 2005; Järvenpää, 2007; Zoni and Merchant, 2007). As pointed out by Rieg (2018, p. 187), these mixed empirics point towards a strong "tension" which "may reflect the great variety of what management accountants do and how they interact with management in practice". While overall, the available findings point towards controllers being increasingly involved in strategic issues, controllers that fully act as business partners might still be rare. In fact, past research has linked controllers' likelihood to function as business partners to improved firm infrastructure, such as high and time-consuming investments in ERP systems, that could automatize the tasks associated with the traditional bean-counting roles and give the controller more time for strategy issues (e.g., Granlund and Malmi, 2002). Therefore, evidence on attractive outcomes of controller involvement in strategy might be necessary to convince firms that high investments in controller-related IT infrastructure could pay off in the long run.

(2) Such research on the outcomes of controller involvement in strategy has so far suggested that both positive and negative outcomes of controller involvement are possible. However, research on this matter is still rare which is not surprising given that the discussion on controller involvement in strategy is a rather new one. Among the negative factors associated with controller involvement is a potential role confusion of the controller which would arise when a "high involvement in business operations (…) cause(s) deterioration in the controllers' traditional fiduciary role" (Zoni and Merchant, 2007, p. 30). However, past research has also given first insights on more positive

outcomes of controller involvement. For instance, qualitative empirical findings by Byrne and Pierce (2007) suggest that the quality of the information provided by controllers is in fact influenced by their involvement in strategic decision-making.

Building on these insights, the strategic involvement of controllers might not only increase the quality of the information provided by the controllers but the overall effectiveness of MCS. This notion can also be found in more general management accounting and control theory (cf. Malmi and Granlund, 2009) which links a deep understanding of a firm's strategy by the actor who is controlled (i.e., subordinates) and the actor who exercises control (i.e., superiors) to a higher quality of MCS in terms of the MCS' contribution to support the realization of the firm's goals (Merchant & Van der Stede, 2017). From our reading of the literature (e.g., Merchant and Van der Stede, 2017), an important actor is left out in this argument, namely controllers. We assume that not only superiors' and subordinates' understanding of strategic objectives has an impact on the quality of MCS, but also the controllers' understanding of these objectives. A primary way to reach such an understanding is the involvement of controllers in strategy development. In line with the above-mentioned qualitative evidence, we thus theorize that when controllers are more involved in strategy development, they are better equipped to design MCS that are really geared towards the set strategic objectives. Consequently, we assume that controller involvement in strategy development will have a significant influence on the likelihood that MCS are designed in a way that they can support a firm in the realization of its strategic objectives. Hence, controller involvement should be positively related to MCE which is defined as the level to which management controls can help a firm in the realization of its strategy. Thus:

H1: Controller involvement in strategy development positively influences MCE.

We furthermore expect another strategy-related factor to be of significant importance for the relationship expressed in H1; that is, the strategic orientation of the organization. The accounting literature has shown that the strategic orientation of firms affects their management controls (e.g., Bedford et al., 2016; Miles et al., 1978; Simons, 1987). For example, Simons (1987) has found that prospector firms use cost-related management controls to a much lower degree than defender firms. Prospector firms are found to not only use different controls than defenders, there is also evidence that they use a much broader set of controls (Bedford et al., 2016; Simons, 1987). It appears that defender firms can satisfy their control needs quite well with a rather narrow set of controls, whereas the control needs of prospector firms appear to be much higher and more complex. Since it seems likely that creating effective management controls for a much broader variety of control purposes requires an even deeper understanding of the firm's strategy, we assume that a highly involved controller is even more important for prospector firms. Controller involvement should, therefore, have a stronger influence on MCE in prospector firms than in defender firms. Thus:

H2: The positive effect of controller involvement in strategy development on MCE is more pronounced in prospector firms than in defender firms.

3. Methods

3.1. Sampling

To test our hypotheses, we combined two data sources. The first data set consists of archival data on German firms. This data set was obtained from a leading German credit bureau and includes firm data on non-publicly listed German firms that employ at least 10 employees and are not part of the financial sector. The size restriction was necessary since past research has shown that so-called micro-enterprises with fewer than 10 employees use hardly any or no formal management accounting and control systems (Lavia López & Hiebl, 2015). Furthermore, the sector restriction was necessary since it was shown in past research that firms

from the financial sector use management accounting and control systems very differently from firms in other sectors and hence cannot be compared (Gooneratne & Hoque, 2013). The obtained data includes the industry affilitation of each company and the number of employees. In addition, the contact information of the firms was obtained. The contact information was used to collect the second data set. The firms included in the first data set were invited by telephone and email to take part in a survey based on a structured questionnaire. The survey was addressed to the highest-ranked financial manager of each firm.

The majority of questions included in the survey were based on established constructs from the literature (see below). In most cases, the measurement of these constructs was published in English, hence we first needed to create a German version of the questionnaire. We then let the German questionnaire be back-translated to English by a research colleague who is not involved in this research project to ensure that the German translation correctly captured the meaning of the original English-language questions. After some subsequent amendments to the questionnaire, the German questionnaire has been pre-tested, and some additional adaptions have been made based on the feedback from the pre-tests. The survey was conducted between March 2018 and July 2019 in two waves. During the first wave, potential participants were invited by telephone and/or email to fill out the survey. During the second wave, managers that were not invited in the first wave were approached with an online survey tool and asked to participate in the survey. In total, 233 complete or partially complete questionnaires could be obtained. As we do not intend to generalize to a population– which would require a representative and random sample– but wish to test theory, response rates are not of primary importance for our research purposes (Hiebl and Richter, 2018; Speklé and Widener, 2018). A potential source of concern could be common method bias, in particular single source bias, resulting from obtaining our survey data from a single respondent only (Grabner & Speckbacher, 2016). Similar to Grabner and Speckbacher (2016), we chose the

single-respondent approach as the person we addressed was the person we considered the most knowledgeable regarding a firm's MCS. Literature provides several options to reduce the risk of common method bias (Podsakoff et al., 2003). Apart from obtaining data for the independent and dependent variables from different sources – an approach we did not choose for the above-mentioned reason – other approaches are possible once a single-source approach has been chosen (Podsakoff et al., 2003). Following up on Podsakoff et al.'s (2003) suggestions, we separated our measurements in the survey by implementing a lag between the questions on the dependent and independent variables. Furthermore, we ensured the respondents that their anonymity was protected. Third, we tried to eliminate common method bias resulting from the employed item scales (e.g, the items being too complex or too vague) by using pre-tested items from the literature and performing several pre-tests to ensure that there were no potential problems regarding item quality. We furthermore argue – following the argumentation by Grabner and Speckbacher (2016) – that common method bias resulting from social desirability might be a comparably low issue in our survey since the constructs that we use incorporate relatively neutral answer options instead of answer options which suggest that some answers might be more socially desirable than others.

In addition to common method bias, non-response bias can be a problem in survey research. Non-response bias occurs when those individuals who chose not to participate in a survey are significantly different from the ones who participate in it (Van der Stede et al., 2005). A common approach to test for such a bias is to compare the responses of late survey respondents with the ones of early respondents (e.g., Guilding et al., 2000; Sulaiman and Mitchell, 2005). Proponents of this approach argue that late respondents are more likely to act like non-respondents and hence can function as a proxy for non-respondents when testing whether characteristics of those participating in the survey differ from those who do not (Van der Stede et al., 2005). This approach is however criticized by Van der Stede et al. (2005) who

argue that a comparison between actual respondents to actual non-respondents would be superior to comparing late respondents with early ones. We, therefore, decided to test non-response bias issues by comparing the firm size and industry of the respondents of our survey with the same characteristics of a randomly chosen non-respondent sample of equal size (that is, 233 firms in each sample). Size and industry were chosen as Bedford et al. (2016) suggest that non-respondents differing in size and industry might be a reason for concern and hence should form characteristics of a non-respondent bias test. As a first step, we tested both the sample of respondents and non-respondents for normal distribution using a Kolmogorov-Smirnov-Test. Neither industry nor firm size was normally distributed. Consequently, we used a Mann-Whitney-U-test to check whether there were significant differences regarding the firm size of respondents and non-respondents. No such differences could be found. We further used a Chi-Square-test to check for significant industry differences between the actual sample and the sample of non-respondents. Again, no significant differences were found. Hence, we found no indications of non-response bias.

3.2. Measures

i) Independent variable: Controller Involvement in Strategy Development

Controller Involvement in Strategy Development forms the independent variable of the model and is metrically scaled. The measurement for controller involvement in strategy development is based on a pre-tested multi-item construct which was developed by Erhart et al. (2017) consisting of seven items (INVOLV 1 to INVOLV 7). The items included in the English version of this survey's questionnaire can be obtained from Appendix C 1. To analyze the construct's validity, a principal component factor analysis with varimax rotation was conducted (see Table C 1 for the findings of the factor analysis and the Cronbach's Alpha for the factors). As proposed by Field (2017), we suppressed all factor loadings smaller than 0.3.

	Factor 1	Factor 2
INVOLV 1	**0.772**	
INVOLV 2	**0.819**	
INVOLV 3	**0.739**	0.312
INVOLV 4	**0.808**	
INVOLV 5	0.411	**0.804**
INVOLV 6		**0.920**
INVOLV 7		**0.927**
Cronbach's Alpha	0.846	0.932

Table C 1: Factor Analysis Results Controller Involvement in Strategy Development[4]

Whereas Erhart et al.'s (2017) findings show that INVOLV 1 to INVOLV 7 form one factor, our findings show a more granular picture of controller involvement in strategy development. The results of the factor analysis show that controller involvement forms two factors with INVOLV 1 to INVOLV 4 loading on the first factor and INVOLV 5 to INVOLV 7 loading on the second factor. The factor loadings for the first factor range between 0.739 and 0.819 and the factor loadings for the second factor range from 0.804 to 0.927. The Cronbach's Alphas were 0.846 for the first factor and 0.932 for the second. We therefore split the construct of controller involvement in two separate constructs. A closer look at the original survey items of the construct reveals that this distinction is coherent with a rather prominent distinction in the strategy literature. Generally speaking, when it comes to strategy formation, strategy literature differentiates between strategy processes and strategy content (Chenhall, 2005). While strategy content is concerned with the "product of strategy processes" (Chenhall, 2005, p. 11), the strategy process refers to the processes influencing the content (Chenhall, 2005). The first factor consisting of INVOLV 1 to INVOLV 4 appears to address the process-related

[4] Minor differences in the factor analysis results on *Controller Involvement in Strategy Development* in Section D arise from Section D being corrected for outliers resulting in a different sample size in Section C and D.

involvement of controllers in strategy development (i.e., involvement in the administration/coordination of the strategy processes). In turn, the items loading on the second factor (Inv5 to Inv7) depict the content-related involvement of controllers in strategy development (e.g., involvement in the choice of the strategy). Therefore, we label the first construct *Process-Related Controller Involvement in Strategy Development* and the second one *Content-Related Controller Involvement in Strategy Development*. To make both constructs insertable for our later regression model, we calculate the mean value of INVOL 1 to INVOL 4 for each firm to compute a score for Process-Related Controller Involvement in Strategy Development, and the mean value of INVOL 5 to INVOL 7 to compute a score for Content-Related Controller Involvement in Strategy Development. If one of the items INVOL 1 to INVOL 4 was missing, process-related controller involvement in strategy development was considered a missing variable. Likewise, if one of the items INVOL 5 to INVOL 7 was missing, content-related controller involvement in strategy development was considered a missing variable.

ii) Dependent variable: MCE

MCE forms the dependent variable of our analyses and is metrically scaled. The measurement is based on the operationalization of MCE by Bedford et al. (2016). In short, MCE forms a ratio between a set of five priorities (PRIO 1 to PRIO 5) that firms can have and the contribution that their current MCS provides to support the firm in achieving those priorities (CONTRI 1 to CONTRI 5). The items included in the English version of this survey's questionnaire can be obtained Appendix C 2. To quantify MCE for the purposes of our regression model, a score was calculated for each firm as follows:

$$MCE = \sum_{i=1}^{5} \frac{(PRIO_i * CONTRI_i)}{5}$$

If any of the required components, PRIO 1 to PRIO 5 or CONTRI 1 to CONTRI 5, were missing, MCE was considered a missing variable.

iii) Moderator: Firm Strategy

As outlined in the hypotheses development, we assume that the relationship between controller involvement and MCE is moderated by the firm's strategy. The accounting literature has developed various concepts to capture a firm's strategy. The measurement utilized in this paper is based on the strategy types proposed by Miles et al. (1978). In its basic form, Miles et al. (1978) describe four strategy types: defenders, prospectors, analysers, and reactors. Similar to most other accounting research, we only differentiate between prospector and defender firms (e.g., Naranjo-Gil et al., 2009; Simons, 1987). Whereas "defenders operate in relatively stable product areas, offer more limited products than competitors, and compete through cost leadership, quality, and service", prospector firms "compete through new products and market development" (Simons, 1987, p. 359). To measure the firm's strategy type, respondents were given descriptions of two firms, one representing a defender firm (Type A) and one a prospector firm (Type B), and they were asked to indicate which description rather depicts their firm. The measurement is an adapted form of the strategy type measurement used by Bedford et al. (2016) and can be obtained from Appendix C 3. Accordingly, the firm's strategy types form a dichotomous variable (0 = defender firm strategy, 1 = prospector firm strategy).

iv) Control Variables

In addition to the main constructs of this model, several control variables were included in our below analyses. The control variables used in the model can be categorized into controller-related variables and firm-related variables. We control for controller age (a metrical variable measured in years) since past research has indicated that the accounting choices made by financial executives differ depending on their age (Naranjo-Gil et al., 2009; Pavlatos, 2012).

We control for controller gender (0=female, 1 = male) because past research has shown that financial managers' gender can impact the MCS implemented by him or her (Bobe & Taylor, 2010). We furthermore control for the business education (a dichotomous variable with a value of 0 indicating that the controller has no business degree and a value of 1 indicating that the controller holds a business degree) of the controller since Naranjo-Gil et al. (2009) and Pavlatos (2012) found that business-educated financial managers make different choices regarding MCSs than non-business educated ones. Additionally, we control for tenure (a metrical variable, measured as the number of years the controller has spent in his or her current position) since Morelli & Lecci (2014) argued that tenure might affect the controller's attitude towards changing an MCS. In addition, we control for the controller's working experience (a metrical variable measured in years) since Ghorbel (2016) showed that the number of years of working experience could influence the use of some management controls.

Furthermore, there is evidence that – in family firms –financial executives who are no family members drive the formalization of MCS better than non-family managers (e.g., Giovannoni et al., 2011). We, therefore, control for the family member status of the controller (dichotomous variable, 0=controller is not a family member, 1=controller is a family member). Lastly, we control whether or not the controller also holds the position of the Chief Executive Officer (CEO) (dichotomous variable; 0 = controller does not function as the CEO, 1 = Controller functions as the CEO). The reason behind it is that it can be assumed that a controller who also functions as the CEO might have a higher level of organizational power and hence be in a better position to make MCS changes in order to adopt the MCS to the organization's goals.

The firm-related controls include firm size (metrical variable; measured as the numbers of employees), the level of environmental uncertainty surrounding the firm (metrical variable; described further below), the main industry sector the firm operates in (dichotomous variable; 0 = non-Manufacturing industry, 1 = manufacturing industry), whether or not the respondents

consider the firm they work for as a family firm (dichotomous variable; 0 = firm is not considered a family firm, 1 = firm is considered a family firm). The family firm control is a self-assessment variable meaning that the financial managers state whether he or she considers the firm a family firm or not. Such an operationalization of family firm status is common in family firm related research (Steiger et al., 2015). The measurement for environmental uncertainty is based on three indicators of environmental uncertainty (customer-related, supplier-related, and market-related environmental uncertainty) that were proposed by Govindarajan (1984) and Gul & Chia (1994). The original item was recoded to ensure that higher scores would suggest higher levels of environmental uncertainty. To operationalize environmental uncertainty, a metrical average of scores of the three indicators was computed. Controlling for firm size, industry, and environmental uncertainty was necessary as Chenhall (2003) has pointed out that these factors can impact a firm's management controls. Controlling for family firm status was necessary since past research has indicated that family firms use management controls differently than non-family firms (Senftlechner & Hiebl, 2015).

4. Findings

4.1. Descriptive Statistics and Correlations

Descriptive statistics (see Table C 2) show that the average level of MCE of 24.78 is almost precisely between the lowest (i.e., a score of 1) and the highest (i.e., 49) possible values for MCE, while also showing some variance. Also, the values for two types of controller involvement in strategy development range from the lowest possible level of controller involvement (i.e., 1) to the highest possible score (i.e., 7). The mean scores for controller involvement further show that, on average, tend to be involved in strategy development, with the scores being higher for process-related controller involvement in development than content-related involvement.

Regarding the descriptive statistics on the respondents, the controllers, our sample is very diverse in terms of controller age. Not surprisingly, therefore, the sample is also very diverse in terms of the controllers' years of working experience and tenure. Most controllers in our sample were male (73 %) and quite a substantial share of controllers (27%) also held the function of the CEO. In terms of education, most controllers held a business degree (57%). Furthermore, only a minority of controllers stated that they were part of at least one family that controls the firm (23 %).

Variable	N	Minimum	Maximum	Mean	SD
MCE	126	3.20	49.00	24.78	8.74
Process-Related Controller Involvement in Strategy Development	189	1.00	7.00	5.25	1.31
Content- Related Controller Involvement in Strategy Development	190	1.00	7.00	4.88	1.60
Firm Strategy	132	0.00	1.00	0.31	0.47
Controller Age	230	23.00	79.00	48.46	10.33
Controller Gender	228	0.00	1.00	0.73	0.45
Controller Equals CEO	228	0.00	1.00	0.27	0.45
Controller Tenure Current Position	228	0.00	43.00	9.59	8.25
Controller Working Experience	224	0.00	48.00	12.96	10.36
Controller Family Member	226	0.00	1.00	0.23	0.42
Controller Business Degree	226	0.00	1.00	0.57	0.50
Environmental Uncertainty	135	1.00	6.33	3.19	1.04
Industry	233	0.00	1.00	0.26	0.44
Firm Size	233	26	4,568	285.30	507.66

Table C 2: Descriptive Statistics

Regarding the general firm characteristics, the firms in our sample score – on average – rather on a moderate level of environmental uncertainty with the mean being 3.19 (1 being the lowest possible score and 7 the highest). In terms of industry, most firms (74 %) firms identify themselves as non-manufacturing, whereas 26 % identify themselves as manufacturing. The size of the firm shows a substantial variety with the sample representing firms with 26 to 4,568 employees. Regarding the average though, the firm size in terms of headcount falls well into the definition of medium-sized firms according to the definition of the European Union.

To further analyze our sample before testing the actual hypotheses, a correlation matrix was computed which can be obtained from Table C 3. As a first step, we checked the results from the correlation matrix for multicollinearity issues. Significant correlations at the 0.05 level were indicated in bold.

Although several of the independent variables are significantly correlated, none of the correlation coefficients exceeds 0.7, a threshold identified by past literature which may indicate multicollinearity if surpassed (Dormann et al., 2013). Furthermore, the variance inflation factors (VIFs) – all of which being below 4.0 which is well below the threshold of 10 that Dormann et al. (2013) set as a marker for multicollinearity problems – can be obtained from the regression results in Section 4.2. We, therefore, did not find any signs pointing to multicollinearity issues in our analysis.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	1													
(2)	**0.348**	1												
(3)	**0.42**	**0.610**	1											
(4)	**0.280**	**0.198**	0.101	1										
(5)	0.16	0.037	0.083	0.034	1									
(6)	-0.085	0.043	-0.022	0.062	**0.140**	1								
(7)	0.054	**-0.218**	-0.141	-0.006	**0.239**	0.128	1							
(8)	0.153	-0.134	-0.017	0.166	**0.602**	0.046	**0.269**	1						
(9)	0.036	0.052	0.01	-0.092	**0.485**	0.075	0.05	-0.103	1					
(10)	**0.187**	**-0.156**	0.004	-0.062	0.102	-0.027	**0.543**	**0.340**	-0.018	1				
(11)	0.045	0.**151**	0.125	0.055	-0.078	0.064	-0.069	**-0.196**	-0.1	-0.073	1			
(12)	0.102	0	0.106	0.022	-0.084	-0.118	-0.022	0.07	0.035	**0.183**	-0.127	1		
(13)	0.03	-0.012	0.039	0.012	0.078	0.114	-0.007	0.057	0.087	0.04	0.003	-0.071	1	
(14)	-0.099	0.074	-0.014	-0.025	-0.011	0.101	-0.102	-0.116	-0.062	**-0.183**	**0.240**	**-0.204**	-0.08	1

Correlation significant at ≤ 0.05-level are indicated in bold; Pearson correlation coefficient are used for correlations between two metric variables; Point-biserial correlations are used for correlations between a metric and a dichotomous variable; Phi values are used for correlations between two dichotomous variables.

(1) MCE, (2) Process-Related Controller Involvement in Strategy Development, (3) Content-Related Controller Involvement in Strategy Development, (4) Firm Strategy, (5) Controller Age, (6) Controller Gender, (7) Controller Equals CEO, (8) Controller Tenure Current Position, (9) Controller Working Experience, (10) Controller Family Member, (11) Controller Business Degree, (12) Environmental Uncertainty, (13) Industry, (14) Firm Size.

Table C 3: Correlation Matrix

4.2. Regression Analyses

To test our hypotheses, we used an ordinary least squares (OLS) multiple linear regression model. Before testing the interaction effects that was proposed in H 2, we calculated the interaction terms between firm strategy and process-related controller involvement in strategy development and firm strategy and content-related controller involvement in strategy development. For this purpose, we mean-centered each of the interaction variables meaning that the mean value of each variable was subtracted from the actual variable's values (Cohen et al., 2014). For the computation of the interaction terms, the mean-centered variables were multiplied. The regression model results can be obtained from Table C 4. Model 1 comprises the control variables only. Model 2 shows the result findings for the model including the independent variables, the moderator and the control variables. Model 3 includes the control variables, the independent variables, the moderator and the interaction terms (see Hartmann & Moers, 2003, for a similar hierarchical setup). Model 2 will be the basis for the analysis of the proposed direct effects from H1. Model 3 will allow us to analyze the moderation effects proposed in H2.

Our first hypothesis (H1) predicted that controller involvement in strategy development was positively linked with MCE. Our findings show that this is not the case for content-related controller involvement in strategy development. However, our findings show a strong and positive significant relationship between process-related controller involvement in strategy development and MCE. So, we find partial support for H1. Generally speaking – without taking firm strategy into account yet – this shows that controllers benefit more from being involved in the processes of strategy development and that they appear to gain sufficient knowledge regarding the strategy through such an involvement to design efficient management controls. Involvement in the actual content creation does not seem to provide any benefit.

Findings on our second hypothesis (H2) show a more complex picture. The findings show that the effect of controller involvement in strategy development on MCE differs depending on the firm's strategy. Therefore, H2 can also be partly confirmed. Whereas we find that the relationship between both types of controller involvement in strategy development and MCE are moderated by firm strategy, the moderation effects differ between the two types of controller involvement. Content-related controller involvement in strategy development and MCE are positively moderated by firm strategy, whereas the relationship between process-related controller involvement in strategy development and MCE are negatively moderated by strategy. To analyze and illustrate this further, interaction plots for both interaction effects were created and will be discussed in section 4.3.

Dependent Variable: Level of MCE	Model 1			Model 2			Model 3		
	Standard Coefficients	P-Values	VIFs	Standard Coefficients	P-Values	VIFs	Standard Coefficients	P-Values	VIFs
Controls:									
Controller Age	0.217	0.189	3.259	0.275	0.076*	3.474	0.229	0.122	3.504
Controller Business Degree	0.173	0.092*	1.25	0.032	0.74	1.348	0.033	0.721	1.35
Controller Equals CEO	-0.077	0.486	1.459	0.073	0.497	1.689	0.068	0.511	1.745
Controller Family Member	0.235	0.043**	1.604	0.208	0.059*	1.747	0.188	0.078*	1.804
Controller Gender	-0.08	0.411	1.13	-0.15	0.099*	1.195	-0.167	0.056*	1.208
Controller Tenure Current Position	0.016	0.917	2.858	-0.104	0.464	2.929	-0.068	0.619	2.979
Controller Working Experience	-0.071	0.6	2.187	-0.135	0.298	2.428	-0.059	0.642	2.617
Environmental Uncertainty	0.093	0.335	1.111	0.139	0.126	1.185	0.132	0.126	1.189
Firm Size	-0.066	0.499	1.143	-0.036	0.684	1.172	-0.055	0.52	1.177
Industry	0.048	0.611	1.055	0.076	0.38	1.1	0.072	0.389	1.111
Direct Effects:									
Process-Related Controller Involvement in Strategy Development				0.272	0.013**	1.702	0.29	0.006***	1.717
Content-Related Controller Involvement in Strategy Development				0.148	0.166	1.659	0.17	0.103	1.719
Firm Strategy (Moderator)				0.227	0.011**	1.113	0.191	0.034**	1.283
Interaction Terms:									
Process-Related Controller Involvement in Strategy Development X Strategy							-0.22	0.032**	1.65
Content-Related Controller Involvement in Strategy Development X Strategy							0.322	0.001***	1.47
F-Value		1.351			3.772			4.420	
Adj. R Square		0.029			0.245			0.316	
Sig. F.		0.213			0.000			0.000	
N		119			112			112	

*p < 0.10, **p < 0.05, ***p < 0.01

Table C 4: Multiple Regression Analyses

4.3 Interaction Plots

To gain a better understanding of the nature of the moderation effects, interaction plots for both interaction effects were created. The first interaction plot depicts the relationship between process-related controller involvement in strategy development and MCE with firm strategy as the moderator (see Figure C 1).

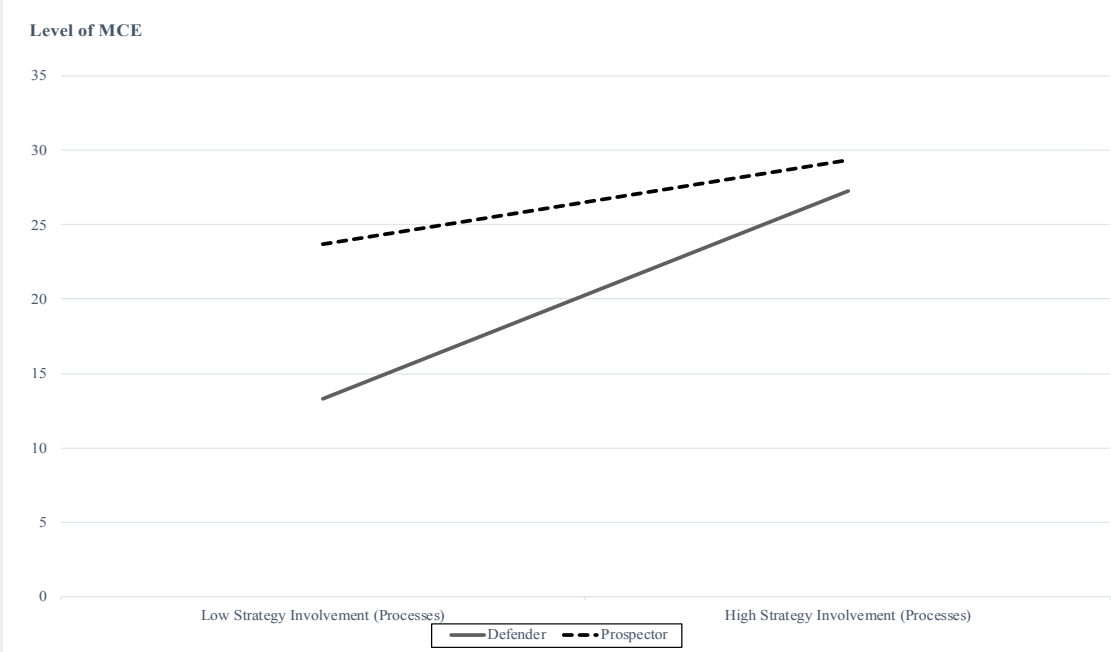

Figure C 1: Interaction Plot on the Moderating Role of Firm Strategy in the Relationship between Process-Related Controller Involvement and MCE

Although it appears that a higher process-related involvement of the controller in strategy development increases the MCE for firms of both strategies, the effect of process-related controller involvement in strategy development seems to be more important in defender firms. That is, as shown by the trend line in Figure C 1, the differences obtained by process-related controller involvement in strategy development are more pronounced in defender firms: whereas a high level of process-related controller involvement in strategy development leads to a comparable level of MCE in both prospector and defender firms, a low level of such involvement leads to much lower MCE only in defender firms. Consequently, it seems that prospector firms have less to gain in terms of MCE when process-related controller involvement

in strategy development is high. In contrast, low levels of controller involvement in process-related strategy development seem to be particularly harmful for defender firms.

In turn, Figure C 2 suggests that when it comes to content-related controller involvement in strategy development, prospector firms have more to gain in terms of MCE. That is, the differences in MCE contingent to the level of content-related controller involvement in strategy development are more pronounced in prospector firms than in defender firms. So, while both defender and prospector firms show higher levels of MCE when content-related controller involvement in strategy development is high, the effect is stronger for prospector firms, which is in line with our Hypothesis H2.

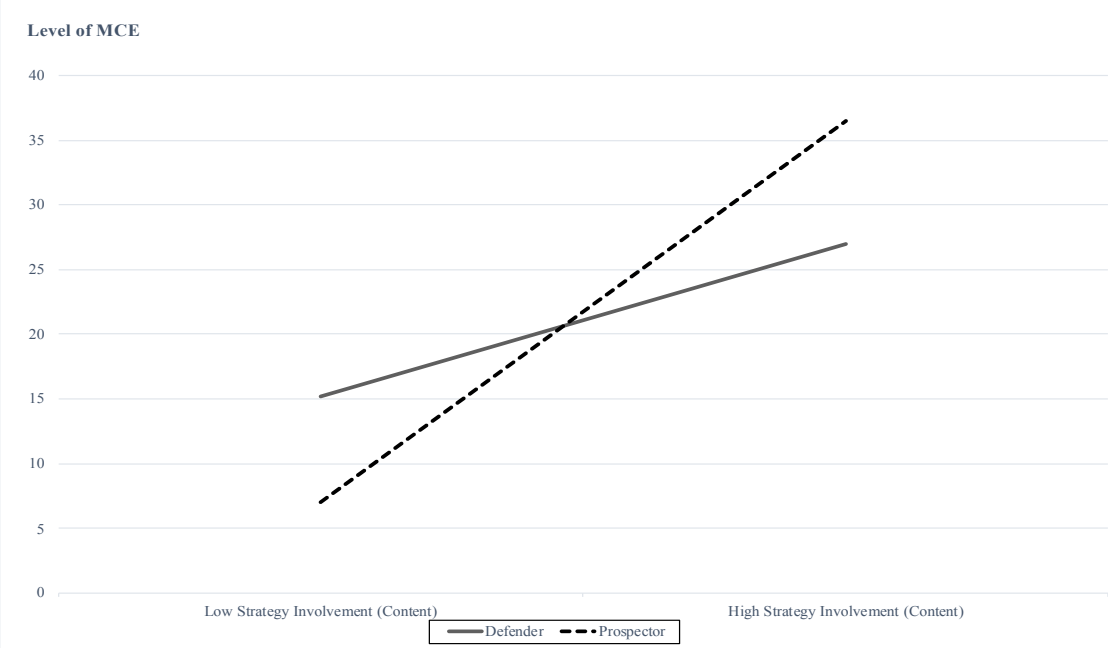

Figure C 2: Interaction Plot on the Moderating Role of Firm Strategy in the Relationship between Content-Related Controller Involvement and MCE

5. Discussion, Conclusion, and Limitations

The aim of this study was to provide evidence that a high level of controller involvement in strategy development impacts MCE positively. Building on past literature stating that

designing appropriate MCS for prospector firms is more demanding than designing appropriate MCS for defender firms, we assumed that the expected positive effect of controller involvement in strategy development on MCE would be more pronounced in prospector firms than in defender firms.

Our results generally provide support for our hypotheses, but our finding that we can distinguish between process-related controller involvement in strategy development and content-related controller involvement in strategy development makes the relationships more complex than suggested in our hypothesis. That is, for the entire sample, H1 which suggested a direct positive effect of controller involvement in strategy work on MCE, only holds for the process part of strategy work, but not for the content part. A more fine-grained explanation for this finding is offered by our findings on the interactions between the two types of controller involvement and the two basic strategy types. As shown in our interaction plots, our findings suggest that the process-related involvement of controllers in strategy development only makes a substantial difference for defender firms, but not for prospector firms. In turn, content-related controller involvement in strategy development makes a larger difference for prospector firms, but also has some effects in defender firms.

These split findings can be explained by prior empirical findings that have led to the inclusion of the moderation effect of a firm's strategy types in our theory in the first place (i.e., Bedford et al., 2016; Simons, 1987). Given the usually broader set of strategic objectives and controls employed by prospector firms, our findings indicate that it seems particularly relevant for controllers to understand and participate in the making of strategy content in these prospector firms to be able to reach very effective control systems. In contrast, as shown in Figure C 1 only involving controllers in strategy processes does not seem to make much of a difference in terms of prospector firms' MCE. While – without taking strategy into account – process-related involvement of controllers in strategy development appears to be beneficial for

designing efficient MCE, it seems that when considering the firm strategy, the content-related involvement development gives the controllers deep insights into the underlying strategy and enables them to design more effective control systems for prospector firms.

In turn, in defender firms, strategic objectives and control systems are usually less diverse and control systems are often geared towards effective cost control (i.e., Bedford et al., 2016; Simons, 1987). Given this narrower set of objectives, our findings suggest that content-related controller involvement in strategy development has a smaller effect on MCE in defender firms than in prospector firms.

These findings contribute to the literature in two primary ways. First, we contribute to management control theory (e.g., Merchant & Van der Stede, 2017) that for the design of effective control systems, also the involvement of the designers of such systems (i.e., controllers) in strategy development is an important, but so far overlooked factor. Second, we contribute to the literature on the relationship between strategy and MCSs (e.g., Henri, 2006; Kober et al., 2007; Langfield-Smith, 1997). In particular, we add to this literature that strategy types not only influence the types and diversity of MCS employed but also the way in which controllers should be involved in strategy work to reach effective control systems differs along a firm's basic strategic orientation.

Our findings also hold some implications for practice. Our findings suggest that firms should calibrate the involvement of controllers in strategy work according to their dominant strategic position. That is, for prospector firms, it seems particularly valuable to involve controllers in strategy content work to reach highly effective control systems. In turn, defender firms should benefit from both involving controllers in strategy processes and strategy content, but their gains from involving controllers in strategy content work are less pronounced than in prospector firms.

Our paper has from our point of view one main limitation linked to potential endogeneity issues as the firm strategy variable might not be entirely exogenous since controllers could influence the strategy. However, although we assume that controllers are influential in both strategic content and processes, we do not think that their influence is strong enough to choose the actual firm strategy.

References Section C

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Appendix Section C

C 1. Controller Involvement in Strategy Development (based on Erhart et al., 2017)

Respondents were asked to indicate how strongly the following statements apply to their organization	
i) During the analysis and design phase of the strategy process, the controlling department or the controlling responsible performs the following tasks:	
1 = Not at all	**7 = Entirely**
INVOLVE 1	Support of objective setting (e.g., by quantifying corporate goals)
INVOLV 2	Provision of strategically relevant information/analyses (e.g., on internal factors or through continuous monitoring of competition, market, customers)
INVOLV 3	Administration/coordination of the strategy process.
INVOLV 4	Challenging of management's proposals (e.g., regarding realism, objectives and assumptions)
ii) The controlling department or the controlling responsible …	
1 = Not at all	**7 = Entirely**
INVOLV 5	… consults management on own initiative with proposals regarding the strategic development of the firm.
INVOLV 6	… is influential with respect to strategic matters.
INVOLV 7	… takes part in decisions when choosing strategy.

C 2. MCE (based on Bedford et al., 2016)

Respondents were asked to indicate to what extent the following statements apply to their company today.	
i) How important are the following priorities for your firm?	
1 = Very low	**7 =Very high**
PRIO 1	Improving efficiency
PRIO 2	Being innovative
PRIO 3	Adapting to changing business demands
PRIO 4	Coordinating work between sub-units
PRIO 5	Aligning subordinate actions to firm goals
ii) To what extent does your management control system contribute to achieving each priority?	
1 = Very low	**7 =Very high**
CONTRI 1	Improving efficiency
CONTRI 2	Being innovative
CONTRI 3	Adapting to changing business demands
CONTRI 4	Coordinating work between sub-units
CONTRI 5	Aligning subordinate actions to firm goals

C 3. Firm Strategy (based on Bedford et al., 2016)[5]

Respondents were given descriptions of two types of firms. They were asked to evaluate, considering industry competitors as a frame of reference, and considering their firm as a whole, which type best describes their firm three years ago. They were informed that neither firm type was inherently good or bad.

Type A

- Firm A maintains a "niche" within its market by offering a relatively stable set of products/services.
- Generally Firm A is not at the forefront of new service/product market developments.
- It tends to ignore changes that have no direct impact on current areas of operation and concentrates instead on doing the best job possible in its existing arenas.

Type B

- Firm B makes relatively frequent changes (especially additions to) it's set of products/services.
- It consistently attempts to pioneer by being "first in" in new areas of market activity, even if not all of these efforts ultimately prove to be highly successful.
- Firm B responds rapidly to early signals of market needs or opportunities.

[5] We adapted the measurement by Bedford et al. (2016) by only including Type A and Type C of the original measurement. We labelled the description assigned to Type C by Bedford et al. (2016) as Type B since we only used two firm types.

D. Financial Managers and Organizational Ambidexterity in the German Mittelstand: The Moderating Role of Strategy Involvement

1 Introduction

Ambidexterity – defined as "exploit(ing) existing assets (…) in a profit-producing way and simultaneously (…) explor(ing) new technologies and markets" (O'Reilly III & Tushman, 2011, p. 5) – comes with both great opportunities and challenges for firms. One major difficulty when aiming for ambidexterity is to allocate resources properly in a way that both exploitation and exploration activities can be supported (exempli gratia (e.g.), He & Wong, 2004; Levinthal & March, 1993). Pursuing activities of both types is far from trivial as "exploration and exploitation are fundamentally different logics that create tensions" and "compete for firms' scarce resources" (He & Wong, 2004, p. 482). Consequently, the more resource-restricted a firm is, the more difficult it is to achieve high levels of organizational ambidexterity (Voss & Voss, 2013). However, there are firms that are highly innovative despite such resource constraints. German Mittelstand firms are a group of mostly small- and medium-sized firms who do just that as they form a set of firms that "out-'innovate' and outcompete" their larger competitors despite resource constraints (De Massis, Audretsch, Uhlaner, & Kammerlander, 2018, p. 126). It is this approach that enables many German Mittelstand firms to function as so-called *hidden champions* meaning that they are innovative worldwide market leaders in their market segments (Simon, 1996) but often not well known by the public. However, not all small- and medium-sized German firms have turned into innovative Mittelstand firms. Recent qualitative empirical research has suggested that managers of resource-constraint firms can play an important role in fostering exploration and exploitation simultaneously despite resource-constraints (Sinha, 2019). With most ambidexterity research related to the impact of either individual employees or teams of employees focussing on the top management of firms (e.g., Kortmann, 2015; Li, 2013; Lubatkin, Simsek, Ling, & Veiga, 2006; Mihalache, Jansen, Van

den Bosch, & Volberda, 2014)[6], our findings imply that for Mittelstand firms and, more generally, smaller firms with limited resources, financial managers can have a decisive impact on ambidexterity. Whereas traditionally, the firms' financial managers were often seen as an obstacle in achieving innovation (Tyler & Kevin Steensma, 1995), our findings indicate that the right financial manager can, in fact, foster innovation. To analyse the impact of financial managers on the level of organizational ambidexterity in Mittelstand firms, this paper aims to answer the following research question:

How do the financial manager's characteristics influence the level organizational ambidexterity in Mittelstand firms?

Thereby, our study contributes to the literature in three ways. First, our findings contribute to the organizational ambidexterity literature by showing that financial managers are so far under-estimated, but important actors in reaching ambidexterity. In addition, we contribute to the literature on Mittelstand firms. Mittelstand theory assumes that a lack of financial resources is one of the main obstacles that Mittelstand firms face when aiming for innovation (De Massis et al., 2018). Our findings indicate that the right financial managers can be vital players helping Mittelstand firms overcoming these obstacles despite their lack of financial resources. Furthermore, we contribute to the literature on financial managers. Whereas the effects of financial managers on financial accounting choices are quite well researched (see Plöckinger, Aschauer, Hiebl, & Rohatschek, 2016, for an overview), we still know very little about non-financial outcomes of financial manager employment.

[6] See Junni et al. (2015) for a review on the impact of top management characteristics on ambidexterity.

The remainder of his paper is organized as follows. Section 2 provides a literature review and the development of six hypotheses. In Section 3, our research methods are explained. Section 4 includes this paper's findings, which will be discussed in section 5. Additionally, Section 5 includes the main limitations of the paper.

2 Literature Review and Hypotheses Development

Organizational ambidexterity has been linked in the past with several issues around resources (e.g., Gedajlovic, Cao, & Zhang, 2012; March, 1991; Wei, Yi, & Guo, 2014). Whereas achieving exploration and exploitation simultaneously is challenging for all organizations, especially resource-restricted ones, we assume that pursuing explorative activities are more challenging for Mittelstand firms than pursuing exploitative ones. Although some scholars have argued that resource-restrictions might make organizations more creative out of necessity, the more general opinion is that resource constraints negatively impact an organization's capability to be innovative (Gibbert et al., 2014). We assume that whenever resources are strongly constrained, firms are more likely to, when in doubt, invest the rare resources rather in exploitative – hence less risky – activities than in riskier explorative ones. Hence, we assume that if financial manager provide money to explorative activities it is more likely to increase ambidexterity in resource constrained firms since we assume that funding exploitative activities is rather common in those firms anyway. This is further strengthened by the large proportion of family-owned Mittelstand firms who often show a strong desire to transfer the family firm to the next family generation and hence pursue a more risk-averse and conservative innovation strategy (Li & Daspit, 2016).

Past research has highlighted the importance of top managers' characteristics when aiming for ambidexterity (e.g., Li, 2013; Lubatkin et al., 2006; Mihalache et al., 2014). However, researchers have mostly equated top managers with CEOs and either analysed the role of CEOs individually or of teams, including the CEO. Such studies argue that managers can be a make-or-break factor when aiming for ambidexterity. Venugopal, Krishnan, Kumar,

& Upadhyayula (2019, p. 587) assume that the top management of firms "could facilitate a social climate conducive for ambidexterity in two ways – one as visible role models (…). Second, as strategic decision-makers". Such studies often build on Hambrick & Mason's (1984) *upper echelon theory* arguing that characteristics of top managers are reflected in their decision making and therefore affect organizational outcomes. We do, however, believe that a sole focus on top managers and their characteristics leaves out important players in firms, especially in resource-constrained firms: the financial managers.

As outlined by March (1991) and Rogan & Mors (2014), allocating resources in a way that both exploration and exploitation can be achieved can be tricky since it requires very complex resource-allocation decisions. Past research has shown that, especially in firms with limited resources, top managers, and their characteristics play a pivotal role in facilitating ambidexterity (Lubatkin et al., 2006). Hence, managers making resource-allocation decisions potentially have a high impact on achieving ambidexterity as their decision-making impacts what activities and investments firms can pursue. For example, past research has shown that managers tend to prioritize exploitation over exploration since the "returns from exploration are less certain and more remote in time than the returns of exploitation" (Rogan & Mors, 2014, p. 1860).

We assume that the role of financial managers is important in all firms that are aiming for ambidexterity. However, we believe it to be even more important in firms with limited resources such as Mittelstand firms as they might be tempted to avoid more innovative strategies as they appear too risky. Evolving Mittelstand theory assumes that a lack of financial resources poses a difficulty for achieving innovation in Mittelstand firms (De Massis et al., 2018). Consequently, when aiming for ambidexterity, managing scarce financial resources properly is decisive for Mittelstand firms. Since financial managers are responsible for resource allocation processes (Alao, 2014), we assume that their resource allocation decisions resemble

their characteristics. Hence, we assume that there are characteristics that foster ambidextrous resource allocation, whereas other characteristics limit such a resource allocation.

Building on past research on the influence of demographic and psychological characteristics, we will narrow the broad research question proposed in Section 1 down into six hypotheses. The first financial manager characteristic that we intend to analyse is age. Age appears to be an important driver of innovation. Past research has shown that as people grow older, they are less open to change and less likely to take risks (Wiersema & Bantel, 1992). This lower likelihood to take risks and encourage change appears to influence the manager's decision-making processes regarding innovation. Vaccaro, Jansen, Van Den Bosch and Volberda's (2012) and Qian, Cao and Takeuchi's (2013) results show that a CEO's age negatively correlates with the level of innovation in the CEO's firm. We, therefore, assume that this pattern will also occur in the resource allocation process of financial managers. We assume that younger financial managers are more likely to allocate resources in an ambidextrous manner, whereas older financial managers might be more risk-averse and rather focus on an exploitative resource allocation strategy, hence achieve lower levels of organizational ambidexterity. Therefore, H1 is as follows:

H1: Mittelstand firms with younger financial managers are more likely to achieve high levels of organizational ambidexterity.

In addition, past literature has extensively discussed the impact of a manager's level of (business) education (for an overview, see for example Barker III & Mueller, 2002, or Goll & Rasheed, 2005). There are two main streams within this literature. The first stream of literature argues that central actors' formal education, in general, is linked to receptivity to innovation (Hambrick & Mason, 1984). This argumentation builds on an assumed relationship between the educational level of a person and his or her ability to cope with ambiguity and complexity (Goll & Rasheed, 2005). The second stream argues that whereas a high level of education in

general increases an individual's openness to innovation, business-educated individuals might show inherently different mindsets from graduates from other fields (Barker III & Mueller, 2002). Individuals aiming for a degree in business-related fields might be more conservative and risk-averse and tend to avoid losses rather than risking a lot (Barker III & Mueller, 2002). We assume that the latter is also true for financial managers with business degrees. We conclude that business-educated managers are likely to prefer funding exploitative investments, whereas they might be reluctant to provide funding to explorative once. Since ambidexterity requires investments in both exploitative and explorative activities, our hypothesis 2 is:

H2: Mittelstand firms with financial managers holding business degrees are less likely to achieve high levels of organizational ambidexterity.

As a third characteristic of financial managers, we analyse gender. Past research has shown that female managers are less risk-seeking than their male counterparts (Huang & Kisgen, 2013). Generally speaking, the less incremental innovations are, the more they are associated with risks (Díaz-García et al., 2013). We, therefore, assume that male financial managers are more likely to provide resources to more risky, innovative ventures, whereas female financial managers might refrain from providing money for activities that have a higher likelihood of failing. Consequently, we assume that female financial managers are associated with lower levels of exploration. In addition to this notion, past research on organizational ambidexterity has hypothesized that female managers might face greater obstacles when aiming for ambidexterity as in some cases they still face problems to be accepted in a leadership role (Eagly & Carli, 2003; Jansen et al., 2008) and hence lack the power to push through innovation projects. Consequently, it appears that female financial managers are less likely to foster ambidextrous resource allocations. Following this reasoning, hypothesis 3 is:

H3: Mittelstand firms with male financial managers are more likely to achieve high levels of organizational ambidexterity.

The last demographic characteristic of the financial managers that we assume to be of relevance is tenure. Long-tenured managers may have higher organizational power due to their long presence in the firm and hence might be in a better position to pursue an ambidextrous strategy. However, past research has indicated that long-tenured executives are inclined to holding on to established routines, whereas managers with a shorter tenure are more open to changing the status quo (Heavey & Simsek, 2014). This is line with Hambrick & Fukutomi (1991, p. 723), who have argued that managers are "most open-minded about how the organization should be run at the outset of their tenures, and they become increasingly close-minded […] as their tenures continue". In line with this notion, we assume that financial managers are less likely to provide resources to explorative activities during the later stages of their tenures. Thus:

H4: Mittelstand firms with managers with a shorter tenure are more likely to achieve high levels of organizational ambidexterity.

In addition to these demographic characteristics, the management literature has discussed the importance of psychological characteristics such as having an "entrepreneurial mindset" (Gedajlovic, Cao, & Zhang, 2012, p. 654). Managers who have an entrepreneurial attitude have been assumed to supporting both explorative and exploitative activities (Gedajlovic et al., 2012). It could, therefore, be assumed that financial managers who are more entrepreneurial are more likely to provide resources to both riskier explorative activities and less risky exploitative ones, whereas managers who are not very entrepreneurial might refrain from funding explorative ones and focus on the *safe bet*, meaning mostly funding exploitative activities. It can be assumed that Mittelstand firms with financial managers with high levels of

individual entrepreneurial behaviour (IEB) achieve higher levels of ambidexterity. Hence, hypothesis 5 is as follows:

H5: Mittelstand firms with financial managers with higher levels of IEB are more likely to achieve high levels of organizational ambidexterity.

Whereas we assume these characteristics to be important on their own, we think that the effects proposed in H1 to H5 might be strengthened even more by involving the financial managers in the firm's strategy development. Allocating resources in a way that supports an ambidextrous strategy requires an understanding of the strategic contradictions of ambidexterity, which involve complex and paradoxical information and decision alternatives (Cao et al., 2009). We, therefore, assume that the more financial managers are involved in strategy development, the better they are able to understand such strategic contradictions, and hence allocate scarce resources more effectively. This notion would suggest that the effects outlined in H1 to H5 are stronger for financial managers that are highly involved in strategy development. Therefore, hypothesis 6 is as follows:

H6: The relationship described in H1 to H5 are more pronounced if financial managers are more involved in strategy development.

3 Methods

3.1 Sampling

To test our hypotheses, we first collected archival data from German firms. The original data set includes data on German firms that are not publicly listed and employ more than ten employees. Firms from the financial sector were excluded. The size restriction was necessary since past research has shown that micro firms do often not have the resources to simultaneously pursue explorative and exploitative activities (Voss & Voss, 2013). Furthermore, the sector restriction was necessary since past research has indicated that ambidexterity in the banking

context differs from ambidexterity in non-banking firms (Monferrer Tirado et al., 2019). The obtained data set includes information on each firm's industry and its number of employees. Furthermore, the contact information of each firm was collected. We then contacted the highest-ranked financial manager of the firms with the request to participate in a survey using a structured questionnaire. The survey was conducted in two waves. During the first wave, the highest-ranked financial managers were invited by email and/or telephone to participate in the survey. In the second wave of data collection, an online survey tool was used to encourage financial managers that had not yet participated in the first wave. The first wave of data collection took place between March and December 2018 and generated 167 responses. The second wave of data collection took place between June and July 2019 and generated an additional 66 responses. Hence, a total of 233 questionnaires was obtained. In a follow-up step, we removed some cases from further analysis. In the first step, 14 cases were removed after analysis had shown that they were extreme cases of statistical outliners regarding our paper's main constructs. In addition, we excluded one firm with 4,568 employees. The reason for this is that – in line with De Massis et al. (2018) – we draw on Becker, Staffel and Ulrich (2008) to define Mittelstand as firms with a maximum of 3,000 employees. After these measures, 218 firms remained in the sample and build the bases of the following analyses.

Survey research is commonly associated with several potential biases, such as non-response bias and common method bias. Regarding responses in general, it was not possible to compute a precise response rate for this paper. The reason for this is that most of the contact information we received were general email addresses and not personalized email addresses of the financial managers. Hence, it is impossible for us to estimate how many financial managers have received the invitation to participate in the survey as it is likely that not all invitations sent to general email addresses were forwarded to the financial managers. Non-response bias is an error resulting from the non-respondents significantly differing from the respondents (Roberts, 1999). This becomes a problem in survey research when the non-respondents differ

significantly in terms of key characteristics from the respondents (Van der Stede et al., 2005). A frequently chosen approach to cope with this problem is to compare characteristics of late respondents with the ones of actual respondents arguing that late respondents resemble the behaviour of non-respondents (e.g., Naranjo-Gil, Maas, & Hartmann, 2009). Van der Stede et al. (2005), however, criticise this approach and suggest that characteristics of actual non-respondents should be compared with the characteristics of respondents whenever possible. We followed up on this idea and compared a random sample of actual non-respondents to our respondents. Bedford, Malmi and Sandelin (2016) and Roberts (1999) propose that firm size and industry are well suited to function as characteristics for such a comparison, which is why we compared the firm size and industry affiliation of the firms in a random sample of 233 non-respondents with the ones' of firms in the actual sample. As a first step, we tested both industry and firm size for normal distribution using a Kolmogorov-Smirnov-Test. Since neither industry (as to be expected for a dichotomous variable) nor firm size were normally distributed, we performed a Mann-Whitney-U-test to check for significant differences between non-respondents and respondents regarding firm size and a chi-square-test to test for significant differences regarding the industry affiliation. No significant differences were found. Hence, we assume that non-response bias is not a major problem in our survey.

In addition, we tried to minimize common method bias by following several steps proposed by Podsakoff, MacKenzie, Lee and Podsakoff (2003). Among the different kinds of common method biases, single method bias – which refers to an error resulting from obtaining survey data from one respondent only (Grabner & Speckbacher, 2016)– was the error most likely to be associated with our method of data collection. We chose generating our survey data from the highest-ranked financial manager only since we assume that he or she is the person with the highest level of knowledge regarding our research objectives (similar to Grabner & Speckbacher, 2016) instead of obtaining data on the independent and dependent variables from different data sources (as proposed by Podsakoff et al., 2003). To ensure that common method

bias was as small as possible, we chose the following procedures suggested by Podsakoff et al. (2003):

(1) we ensured the respondents that their anonymity was guaranteed;

(2) we separated the items on the dependent and independent variables in the questionnaire by not putting the respective questions next to each other, but questions related to other issues in between them and

(3) we used pre-tested, established construct measurements and performed several pre-tests before sending the questionnaire to the actual respondents to avoid potential problems resulting from the items themselves (e.g., because they are perceived to be too complex).

Another source for common method bias, apart from the ones mentioned above, results from social desirability, which refers to an error occurring when respondents think that some answers might be more socially desirable than others. Following Grabner & Speckbacher (2016), we assume that the risk for such a bias is relatively low in our survey since the employed constructs offer rather neutral answer options and hence are not very likely to give the respondents a reason to believe that some answers are better or more desirable than others.

3.2 Measures

i) Independent Variables: Financial Manager Characteristics

The first examined characteristic of financial managers is their age when completing our survey. The variable is measured in years and hence is metrically scaled. Similarly, the tenure of the financial manager in his or her current position is measured in years and also metrically scaled. The financial managers gender forms a dichotomous variable (0 = female, 1 = male). Similarly, whether or not the financial manager holds a business degree is a dichotomous variable (0 = financial manager does not hold a business degree, 1 = financial manager holds a business degree).

In terms of psychological characteristics, the financial manager's IEB was measured. The measurement for IEB is metrically scaled and based on a multi-item-construct by Sieger, Zellweger and Aquino (2013) consisting of six items (IEB 1 to IEB 6). An English version of the items can be obtained from Appendix D 1. A principal component factor analysis with varimax rotation was conducted to test the construct's validity. Factor values below 0.3 were suppressed. The results from the factor analysis can be obtained from Table D 1.

	Factor 1
IEB 1	**0.796**
IEB 2	**0.749**
IEB 3	**0.815**
IEB 4	**0.747**
IEB 5	**0.693**
IEB 6	**0.597**
Cronbach's Alpha	0.826

Table D 1: Factor Analysis Results IEB

The results from the factor analysis show that all items load on one factor with the factor loadings ranging from 0.597 to 0.815. To make the construct applicable for the regression model, a mean score of all six items was computed. Respondents with no answer on any of these items were considered as missing cases.

ii) Dependent Variable: Level of Organizational Ambidexterity

The level of organizational ambidexterity forms the dependent variable of our analysis and is metrically scaled. The measurement for the level of organizational ambidexterity is based on a 12-items-construct by Lubatkin et al. (2006). An English version of the items can be obtained from Appendix D 2. The first six items (EXPLOR 1 to EXPLOR 6) describe an exploratory orientation, whereas the last six items (EXPLOI 1 to EXPLOI 6) describe an exploitative firm orientation. To test the construct's validity, exploratory factor analysis was conducted. As proposed by Bedford, Bisbe and Sweene (2019), maximum likelihood extraction with oblimin rotation was used for the factor analysis of the construct. Factor loadings below 0.3 were suppressed. After excluding items EXPLOR 4 and EXPLOI 3 due to low factor loadings, the items loaded on three factors. The results of the factor analysis can be obtained from Table D 2.

	Factor 1	Factor 2	Factor 3
EXPLOR 1	**0.601**		-0.313
EXPLOR 2	**0.773**		
EXPLOR 3	**0.613**		
EXPLOR 5	**0.704**		
EXPLOR 6	**0.612**		
EXPLOI 1		**0.792**	
EXPLOI 2		**0.742**	
EXPLOI 4			**-0.627**
EXPLOI 5	0.424	0.311	**-0.848**
EXPLOI 6			**-0.61**
Cronbach's Alpha	0.789	0.736	0.739

Table D 2: Factor Analysis Results Organizational Ambidexterity

Analysing the results of the factor analysis, it becomes apparent that the items EXPLOR 1, 2, 3, 5 and 6 form one factor representing an explorative orientation, whereas the exploitation orientation is split into two factors the first of which consisting of EXPLOI 1 and 2, and the second one consisting of EXPLOI 4 to 6. To make exploration applicable for the computation of organizational ambidexterity, the mean value of the items EXPLOR 1, 2, 3, 5 and 6 was computed. To make exploitation applicable, the mean value of both exploitation-related factors was computed, and, in a follow-up step, the average of both exploitation factor means was computed. The literature offers various options for computing a score for organizational ambidexterity ranging from multiplying exploitation and exploration to adding both scores – both often referred to as the combined organizational ambidexterity perspective – to subtracting them from one another usually referred to as the balanced organizational ambidexterity perspective (Junni et al., 2013). The combined organizational ambidexterity measures the joint magnitude of both perspectives, whereas the balanced perspective is interested in measuring the distance between a firm's level of exploration and exploitation (Cao et al., 2009). More recent literature has developed an approach using both the balanced and combined perspective on organizational ambidexterity (e.g., Bedford et al., 2019; Cao et al., 2009). We follow such

recent literature, in particular, the computation of ambidexterity as proposed by Bedford et al. (2019). Bedford et al. (2019) propose a computation of organizational ambidexterity by multiplying the reversed score of the absolute value of the difference between exploitation and exploration with the product of exploitation and exploration. Since a seven-point Likert scale was used in the survey, the absolute difference between exploration and exploitation cannot exceed six. Hence, the reversed score for the difference is computed by subtracting the absolute difference between exploitation and exploration from seven. Hence, the organizational ambidexterity score of any given firm *i* in this paper was computed as follows:

$$(1)\ Level\ of\ Organizational\ Ambidexterity_i = (7 - |Exploitation_i - Exploration_i|) * Exploration_i\ * Exploitation_i.$$

By combining both organizational ambidexterity perspectives in a multi-dimensional construct, it is ensured that high levels of organizational ambidexterity are achieved when exploitation and exploration do not only feature a balance on any given level but also that both explorative and exploitative activities are given a high level of importance (Bedford et al., 2019). If any of the items for either the computation of exploration or exploitation were missing, no score for ambidexterity was computed, and the variable was treated as a missing variable.

iii) Moderator: Financial Manager Involvement in Strategy Development

The financial manager's involvement in strategy development serves as the moderator in our model. The measurement is based on a multi-item construct by Erhart et al. (2017) and is metrically scaled. The multi-item construct encompasses seven items (INVOLV 1 to INVOLV 7). An English version of the items can be obtained from Appendix D 3. To check for item validity, a principle component analysis was performed. The results of the analysis can be obtained from Table D 3. The items load on two factors, with the first factor encompassing

the last three items, and the second factor including the first four items. Cross-loadings did not appear to be an issue, and the loadings on each factor are relatively high, with the first factor having loadings between 0.813 and 0.923, and the second factor having loadings between 0.7-0.816.[7]

	Factor 1	**Factor 2**
INVOLV 1		**0.758**
INVOLV 2		**0.816**
INVOLV 3	0.351	**0.700**
INVOLV 4		**0.803**
INVOLV 5	**0.813**	0.391
INVOLV 6	**0.923**	
INVOLV 7	**0.922**	
Cronbach's Alpha	0.936	0.831

Table D 3: Factor Analysis Results Financial Manager Involvement in Strategy Development

For the purpose of this paper, only the first factor was used. Whereas the first four items that form Factor 2 seem to be more process-related (id est (i.e.), administration/coordination of the strategy process), the last three items that form Factor 1 are more strongly related to strategic content.[8] We assume the involvement in content-related strategy development to be of greater importance for helping financial managers understanding strategic ambiguities. Hence, the variable "Financial Manager Involvement in Strategic Development" was computed as the mean value of the items Involvement 5 to 7. If any of the items Involvement 5 to 7 was missing,

7 Minor differences to the results of the factor analysis in Chapter C result from a different sample size in this Section as the sample in Chapter C was not corrected for outliers.

8 This is line with a long-standing distinction in strategic management theory that distinguishes between strategy "content (…) and the organizational processes by which such strategy content was determined" (Schendel, 1992, p. 2).

the variable "Financial Manager Involvement in Strategic Development" was considered a missing variable.

iv) Control Variables

In addition to the above-mentioned variables, several control variables are included in our analyses. We control for family ownership by including a dichotomous family firm control variable (0 = Firm is not considered a family firm by the financial manager, 1 = Firm is considered a family firm by the financial manager). The variable is a self-assessment measurement meaning that the financial managers make a statement whether he or she considers the firm a family firm or not. Such self-assessments are a common method of operationalizing family firms in research (Steiger et al., 2015). Controlling for family ownership was necessary since past research has shown that family influence is an important context factor for organizational ambidexterity (Goel & Jones III, 2016). Controlling for past performance and firm size was necessary since past research has linked the capability to be innovative and to achieve ambidexterity to an organization's performance (Jansen et al., 2005; Liu et al., 2011; Sherman et al., 2005; Zhang et al., 2017) and its size (Gedajlovic et al., 2012; He & Wong, 2004; Li, 2013; Voss & Voss, 2013; Zhang et al., 2017). Zhang et al. (2017) argue that both size and performance can function as a proxy for estimating the resources that are available within a firm for more explorative activities. For the measurement of firm size, archival employee numbers were used. Hence, firm size can be considered a metrical variable. The measurement for past performance is based on Eddleston & Kellermanns' (2007) measurement consisting of a self-assessment of four performance-related indicators (growth in sales, growth in market share, growth in number of employees, and the ability to fund growth from profits[9]), which were combined in one metrical score for past performance by computing

9 In addition to that, Eddleston & Kellermanns (2007) also recommend a self-evaluation of the growth in profitability, return on equity, return on total assets, and profit margin on sales. We also included those growth indicators in the survey. They did, however, not seem to have a significant impact on the dependent variable.

the average of the individual indicator's scores. Higher scores indicate that a firm has achieved a higher performance as compared to the performance of the firm's major competitors in the last three years. The utilization of self-reported performance evaluations is well established in the ambidexterity literature (e.g., Zhang et al., 2017, who used a similar measurement for performance). As suggested by He & Wong (2004), we also control for the industry affiliation by using archival industry data that were coded into a dichotomous industry variable (0 = Non-manufacturing firms, 1 = Manufacturing firms). Additionally, we control for environmental uncertainty since Liu, Luo and Huang's (2011) research links environmental uncertainty to both explorative and exploitative firm activities. The measurement for environmental uncertainty is a metrical weighted average score consisting of three dimensions of environmental uncertainty (customer-related, supplier-related and market-related uncertainty) based on Govindarajan (1984) and Gul & Chia (1994). We recoded the measurement to ensure that higher scores would indicate higher levels of uncertainty, whereas, in the original measurement, higher scores would have indicated lower levels of environmental uncertainty. Furthermore, we control whether the firm has ever received venture capital using a dichotomous variable (0 = No venture capital was ever received by the firm, 1 = The firm has received venture capital) since research has linked venture capital financing with higher levels of innovation in firms (Bottazzi & Da Rin, 2002) which could impact a firm's level of ambidexterity. The last control is a dichotomous variable addressing the firm's strategic orientation. The strategy measurement is based on Bedford et al.'s (2016) operationalization of Miles, Snow, Meyer and Colean's (1978) strategy types. The measurement offers the respondents descriptions of both a defender and a prospector firm and asks the respondents to choose which description represents their firm better.[10] The strategy was coded into a dichotomous variable (0 = defender firm strategy, 1 = prospector firm

[10] As opposed to Bedford (2016), we did not include firm type C and D in our measurement.

strategy). We include this control variable since the firm's strategy is linked to its level of innovativeness (Anwar & Hasnu, 2016) and organizational ambidexterity (Kortmann, 2015).

4 Findings

4.1 Descriptive Statistics and Correlations

Descriptive statistics on our variables can be obtained from Table D 4.

Variable	N	Minimum	Maximum	Mean	SD
Dependent Variable:					
Level of Organizational Ambidexterity	119	15.94	287.04	123.55	59.15
Independent Variables:					
Financial Manager Age	216	23	79	48.62	10.25
Financial Manager Business Degree	212	0	1	0.57	0.50
Financial Manager Gender	214	0	1	0.72	0.45
Financial Manager Tenure	213	0.3	43	9.64	8.09
Financial Manager IEB	173	1.33	7	4.88	1.13
Moderator:					
Financial Manager Involvement in Strategy Development	176	1	7	4.92	1.59
Controls:					
Environmental Uncertainty	121	1	6.33	3.20	1.03
Family Firm	192	0	1	0.56	0.50
Firm Size	217	26	2974	277.84	434.19
Past Performance	116	1	7	4.65	1.30
Industry	218	0	1	0.27	0.45
Strategic Orientation	119	0	1	0.33	0.47
Venture Capital Financing	191	0	1	0.05	0.21
Valid N (listwise)	105				

Table D 4: Descriptive Statistics

Table D 5 shows the correlations between all variables. As it has been pointed out above, the variables are not homogenously scaled. Standard Pearson coefficients were used for correlations of two metric variables. When correlating metric variables with dichotomous ones, point-biserial correlations were computed. When correlating two dichotomous variables with each other, Phi values were used. When the correlations were significant at $p \leq .05$, this is indicated in bold.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	1													
(2)	0.098	1												
(3)	-0.031	-0.07	1											
(4)	0.047	**0.149**	0.076	1										
(5)	0.134	**0.613**	**-0.168**	0.043	1									
(6)	0.165	0.117	-0.042	0.072	0.049	1								
(7)	0.163	0.084	0.117	0.001	-0.001	**0.179**	1							
(8)	0.034	-0.033	-0.168	-0.087	0.108	0.073	0.041	1						
(9)	-0.061	-0.012	-0.097	-0.014	0.138	0.134	0.097	**0.208**	1					
(10)	-0.021	-0.027	**0.262**	0.109	**-0.138**	0.010	0.068	**-0.182**	**0.151**	1				
(11)	**0.321**	0.024	-0.151	0.058	**0.217**	0.055	0.103	0.115	**0.204**	0.069	1			
(12)	0.118	0.073	0.004	**0.135**	0.057	0.056	0.027	-0.086	**0.221**	-0.087	0.05	1		
(13)	**0.288**	0.000	0.066	0.077	0.112	-0.035	0.090	0.003	0.012	0.003	**0.233**	-0.007	1	
(14)	0.159	-0.055	0.036	0.141	-0.089	-0.081	0.051	0.157	-0.003	-0.015	0.079	-0.025	-0.023	1

Correlation significant at ≤ 0.05-level are indicated in bold; Pearson correlation coefficients are used for correlations between two metric variables; Point-biserial correlations are used for correlations between a metric and a dichotomous variable; Phi values are used for correlations between two dichotomous variables.

1) Level of Organizational Ambidexterity, (2) Financial Manager Age, (3), Financial Manager Business Degree, (4) Financial Manager Gender, (5) Financial Manager Tenure, (6) Financial Manager IEB, (7) Financial Manager Involvement in Strategy Development, (8) Environmental Uncertainty, (9) Family Firm, (10) Firm Size, (11) Past Performance, (12) Industry, (13) Strategic Orientation, (14) Venture Capital Financing.

Table D 5: Correlation Matrix

Although some variables show significant correlations with one another, no absolute correlation value is larger than 0.7, which is a threshold that has been identified as a value to indicate multicollinearity issues (Dormann et al., 2013). To further test whether multicollinearity problems apply, we included the variance inflation factors (VIFs) in all of the ordinary least squares (OLS) regression models in section 4.2. All of the VIFs are below two, which is lower than the threshold of 10 that Dormann et al. (2013) set as a marker for multicollinearity problems. We, therefore, see no indication that multicollinearity would be a problem in our data.

4.2 Regression Analyses

To test our hypotheses, we used OLS multiple linear regression models. In total, we tested three models. The first model includes only the control variables, the second model adds proposed direct effects (including those of the moderator variable), and the third model additionally includes the interaction effects (see Hartmann & Moers, 2003). For the computation of the interaction terms, the underlying independent variables were mean-centered before multiplying them (Cohen et al., 2014). The findings of all three models can be obtained from Table D 6. In all OLS models, the abbreviation *involvement* is used when referring to involvement in strategy development.

Dependent Variable: Level of Organizational Ambidexterity

	Model 1			Model 2			Model 3		
	Standardized Beta	p value	VIF	Standardized Beta	p value	VIF	Standardized Beta	p value	VIF
Controls:									
Environmental Uncertainty	0.001	0.993	1.136	-0.011	0.907	1.144	-0.001	0.993	1.224
Family Firm	-0.143	0.136	1.158	-0.179	0.090*	1.326	-0.181	0.093*	1.367
Firm Size	-0.048	0.604	1.079	-0.051	0.610	1.190	-0.066	0.526	1.308
Industry	0.152	0.102	1.085	0.156	0.114	1.155	0.147	0.149	1.233
Past Performance	0.286	0.003***	1.115	0.254	0.012**	1.180	0.249	0.017**	1.252
Strategic Orientation	0.229	0.014**	1.070	0.234	0.016**	1.096	0.224	0.022**	1.104
Venture Capital Financing	0.150	0.097*	1.023	0.183	0.059*	1.110	0.170	0.081*	1.120
Direct Effects:									
Financial Manager Age				0.024	0.840	1.674	0.015	0.899	1.778
Financial Manager Business Degree				-0.022	0.833	1.308	-0.028	0.790	1.332
Financial Manager Gender				-0.043	0.669	1.203	-0.049	0.631	1.261
Financial Manager Tenure				0.051	0.677	1.796	0.043	0.731	1.844
Financial Manager IEB				0.174	0.074*	1.129	0.192	0.059*	1.212
Financial Manager Involvement (Moderator)				0.073	0.442	1.100	0.073	0.477	1.259
Interaction Term:									
Financial Manager Age X Involvement							0.035	0.779	1.863
Financial Manager Business Degree X Involvement							0.193	0.058*	1.214
Financial Manager Gender X Involvement							0.017	0.866	1.185
Financial Manager Tenure X Involvement							0.082	0.504	1.794
Financial Manager IEB X Involvement							0.007	0.945	1.157
F-Value		3.882			2.361			1.903	
Adj. R Square		0.159			0.145			0.135	
Sig. F.		0.001			0.009			0.026	
n		108			105			105	

***p < 0.10, **p < 0.05, ***p < 0.01**

Table D 6: Multiple Regression Analyses

For the analysis of the direct effects proposed in Hypothesis 1 to 5, we used the results in Model 2, which includes the direct effects only. Hypothesis 1 assumed that younger financial managers would be more likely to achieve a high level of organizational ambidexterity. Our findings do not provide any support for this assumption. Similarly, no statistically significant relationships were found between the business degree (Hypothesis 2), the gender (Hypothesis 3), and the tenure (Hypothesis 4) of the financial managers and ambidexterity. Therefore, Hypotheses 1 to 4 have to be rejected. We did, however, find – as proposed in hypothesis 5 – a significant positive relationship between the financial manager's IEB and organizational ambidexterity. Therefore, Hypothesis 5 can be confirmed.

For the analysis of the interaction effects proposed in Hypothesis 6, we analysed the results in Model 3, which includes both the direct effects and the interaction terms. When taking into account the moderating effect of financial managers being involved in strategy development, it appears that the financial managers' business education is of importance for achieving ambidexterity. Although there was no significant direct relationship between business education and organizational ambidexterity in Model 2, there is a significant positive moderation effect on the relationship between a financial manager's business education and the level of organizational ambidexterity. Hence, Hypothesis 6 can be partially confirmed. To analyse this moderation effect in more detail, an interaction plot is presented in Section 4.3.

4.3 Interaction Plot

Figure D 1 shows two graphs. The continuously lined graph illustrates the relationship between the involvement of financial managers in strategy development and organizational ambidexterity for managers who do not hold a business degree. Mittelstand firms employing financial managers without a business degree achieve an average ambidexterity level of 136 when the financial manager is involved in strategy development to the lowest possible extent. When such financial managers without business degrees are involved in strategy development

to the greatest possible extent, Mittelstand firms achieve an average organizational ambidexterity score of 122 as of our results. Although slightly lower scores can be observed for higher strategy involvement levels of financial managers, Mittelstand firms with financial managers without business degrees score relatively high in terms of ambidexterity for all levels of involvement.

The interrupted line in Figure D 1 illustrates the relationship between the involvement of financial managers and Mittelstand firms' organizational ambidexterity for business-educated managers. It shows that Mittelstand firms with business-educated financial managers who are hardly involved in strategy development achieve rather low average scores (i.e., 64) regarding organizational ambidexterity. Our results indicate that by involving business-educated financial managers in strategy development, Mittelstand firms' ability to achieve high scores of ambidexterity increases strongly. When financial managers with business degrees are involved in strategy development to the highest possible extent, the average score for Mittelstand firms' organizational ambidexterity is 146 as of our results. Consequently, our results suggest that the involvement of financial managers *with* business degrees in strategy development is linked to Mittelstand firms' higher levels of organizational ambidexterity, but for financial managers *without* business degrees, their involvement in strategy development does not much affect the firms' level of organizational ambidexterity.

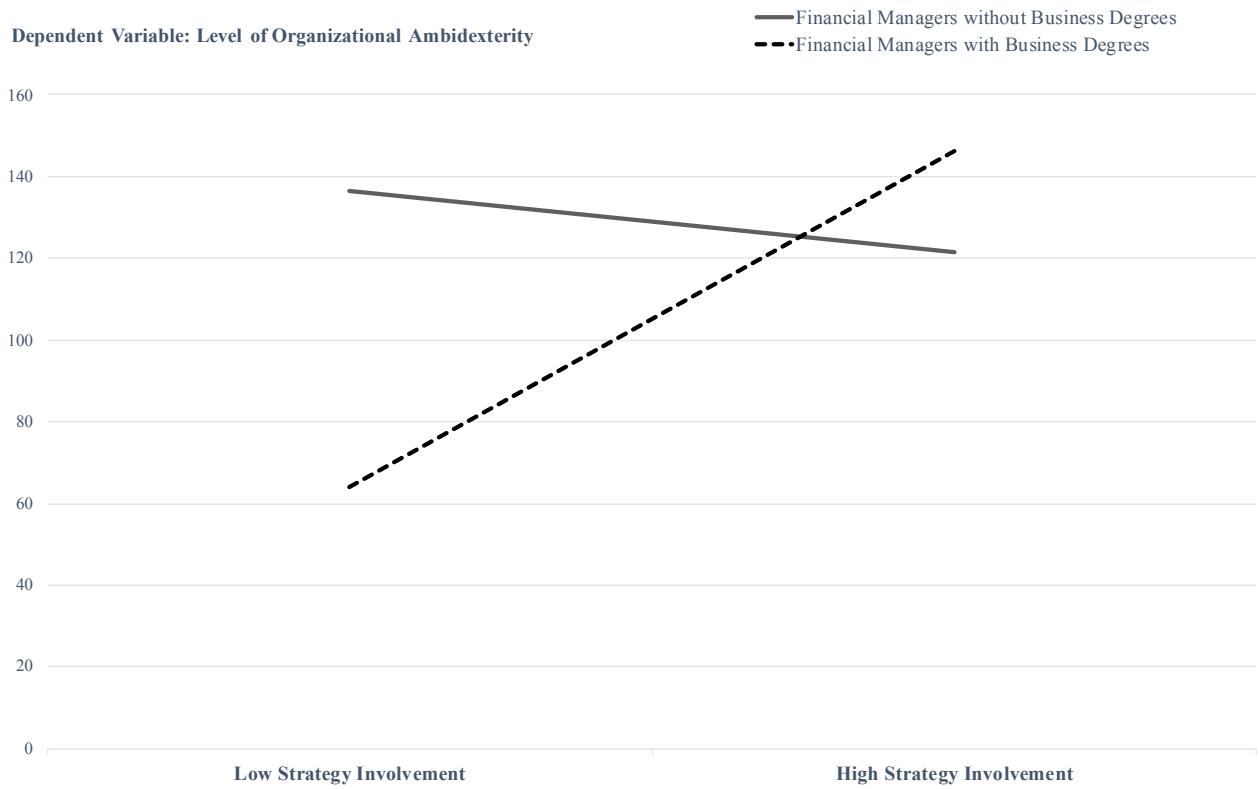

Figure D 1: Interaction Plot on the Moderating Role of Financial Manager Involvement in Strategy Development in the Relationship between Financial Manager Business Degree and the Level of Organizational Ambidexterity

4.4. Additional Analyses Regarding CEO Characteristics

As a robustness check, we additionally estimated a fourth OLS model on the impact of CEO characteristics on organizational ambidexterity as a robustness check. We did this as it is common in organizational ambidexterity research to link the organization's level of ambidexterity with the characteristics of CEOs (for a review on leader characteristics and their influence see Junni, Sarala, Tarba, Liu and Cooper, 2015) and we wanted to ensure that we were, in fact, capturing the influence of financial managers' characteristics beyond the potential influence of CEO characteristics on organizational ambidexterity.

For this purpose, we asked the respondents of the survey to provide information on the CEOs' age, business education, gender, and tenure. Since we did not send the survey to the CEOs of the firms, but to the highest-ranked financial managers, we did not ask for information on the CEOs' level of IEB as it would not be possible for the financial managers to estimate the

CEOs' IEB. In addition to that, we did not ask for the CEOs' involvement in strategy development, nor would it have made sense to have asked it since it can be assumed that CEOs generally have the highest possible involvement in strategic issues in any firm. The findings of Model 4 can be obtained from Table D 7.

Model 4 (Dependent Variable: Level of Organizational Ambidexterity)			
	Standardized Coefficient	p-Value	VIF-Statistics
Controls:			
Environmental Uncertainty	-0.026	0.854	1.253
Family Firm	-0.093	0.522	1.353
Firm Size	-0.01	0.993	1.248
Industry	0.043	0.750	1.183
Past Performance	0.413	0.004***	1.163
Strategic Orientation	0.267	0.053*	1.165
Venture Capital Financing	0.140	0.290	1.101
Direct Effects:			
CEO Age	-0.05	0.720	1.240
CEO Business Degree	-0.028	0.834	1.131
CEO Gender	-0.093	0.516	1.296
CEO Tenure	0.113	0.425	1.274
Adj. R2	0.134		
F-Value	1.785		
Significance F-Value	0.085		
n	57		

*p < 0.10, **p < 0.05, ***p < 0.01

Table D 7: Robustness Check for CEO Influence on Organizational Ambidexterity

The findings of Model 4 show that neither CEO age, business degree, gender, or tenure have a significant effect on organizational ambidexterity. These results at least indicate that in our Mittelstand data, CEO characteristics do not play a significant role in explaining organizational ambidexterity, but financial manager characteristics do. Ideally, we would have included the CEO variables as additional control variables in the above Models 1-3, which, however, was not possible for the following reasons. The sample size of the main Model 3 is 105. Following suggestions by Khamis and Kepler (2010), the number of predictors k in

multiple regression models should not exceed k=(n-20)/5 to avoid overfitting issues. Hence, for a sample size of n=105 (Model 3), 17 predictors could have been incorporated in the model. Model 3 already includes 13 direct effects, and if CEO characteristics had been included in this model, the number of observations would have been lower due to missing data on CEO characteristics (see n=57 as of Table D 7). Consequently, including all CEO variables in the main models presented in Table D 6 would not have been feasible without running into a severe overfitting problem. Such an overfitting problem is also affecting our robustness checks presented in Table D 7. That is, since we only obtained CEO characteristics on 57 CEOs, a model including the CEO characteristics should normally not exceed seven predictors. Since Model 4 in Table D 7 includes four CEO characteristics and the seven control variables used above, it is already facing substantial overfitting risks, and must thus be interpreted with care. However, we still include this table in our analyses to show that CEO characteristics do not seem to have a material effect on organizational ambidexterity in our data.

5. Discussion, Conclusion, and Limitations

Summarizing the above section, our findings show that the financial manager's IEB is positively correlated with organizational ambidexterity. In addition, there is a significant interaction effect between the financial manager's business education and his or her involvement in strategy development. Whereas the educational background of the financial managers does not directly impact the level of organizational ambidexterity, the interaction between a financial manager's educational background and his or her involvement in strategy development do so. The interaction plot on this effect suggests that it is particularly important for financial managers with a business degree to be involved in strategy in order to achieve high levels of organizational ambidexterity. One reason for this might be that financial managers without a business degree might come from rather innovation or engineering backgrounds themselves and may be generally more prone to innovative ideas than financial managers with a background in business. This is in line with findings by Schäffer et al. (2008), who have

shown that those financial managers in Germany who do not hold a business degree mostly hold a degree in engineering. Hence, the financial managers without a business degree do not benefit from involvement in strategy as much as financial managers with a business degree as they might not need as much support as financial managers with business degrees need to understand the ambiguities associated with an ambidextrous strategy. Financial managers without a business degree might, therefore, not need involvement in strategy involvement to provide resources for innovations, whereas financial managers with a business degree are more likely to provide resources for ambidextrous activities when being involved in the strategy development.

One reason for this might be that financial managers from business backgrounds show greater difficulties in managing the contradictory demands of an ambidextrous strategy because they might be less familiar with the operations of the firm as compared to a financial manager from a non-business (e.g., technical) background. Lubatkin et al. (2006, p. 647) have argued that in particular in smaller firms with fewer hierarchical levels, the involvement of managers in both strategy and operations could help them to "directly experience the added dissonance of competing knowledge demands inherent in the pursuit of an ambidextrous orientation". Our findings might indicate though that this assumption is too broad. Managers who have a generally better understanding of the operations of firms – as it might be the case for financial managers with backgrounds in other fields than business – do not benefit much from being involved in strategy development. Whereas the ambidexterity literature in the past has indicated that top management team heterogeneity helps managers to cope with the contradictory demands associated with ambidexterity (e.g., Cao et al., 2009), our findings show that a single player – the financial managers – can either foster ambidexterity or not depending on their, entrepreneurial behaviour, their educational background and their involvement in strategy development.

These findings contribute to the organizational ambidexterity literature by showing that an important player (i.e., the financial manager) has so far been largely overlooked. Especially in firms with scarce resources, such as Mittelstand firms, financial managers can play an important role in fostering ambidexterity. Being the one responsible for both providing and rejecting resources, he or she can be either an important supporter or obstacle when aiming for ambidexterity. Therefore, firms who aim for ambidexterity are well-advised to not only chose their financial managers wisely but also to incorporate them – especially the business-educated ones – in the strategy development. Our findings show that financial managers with business degrees can benefit hugely from participating in strategy development as it apparently enables them to better understand the requirements of an ambidextrous firm strategy and hence support it by providing the necessary resources.

In addition – as already briefly outlined above – our findings contribute to the Mittelstand literature. Often times, firm size has been linked with a lower level of resources to achieve ambidexterity (De Massis et al., 2018; Voss & Voss, 2013; Zhang et al., 2017). It has long been assumed in the ambidexterity literature that simultaneously pursuing exploration and exploitation would not be feasible for smaller firms at all as only larger firms possess the resources required for benefiting from ambidextrous orientations (Voss & Voss, 2013). More recent qualitative empirical findings by Sinha (2019) suggest, however, that both decision-makers and implementers in resource-constrained firms could try to foster explorative and exploitative activities when realizing how important they are for the organization. We contribute to this literature by providing quantitative empirical evidence that in resource-constraint Mittelstand firms well-suited financial manager can help to achieve organizational ambidexterity.

Lastly, we contribute to the literature on financial managers. More traditionally, research on financial managers has linked their employment and their characteristics with finance-related outcomes such as financial accounting choices (see Plöckinger et al., 2016 for a review).

When the literature links financial managers to innovation outcomes, such outcomes mostly refer to innovative accounting or finance choices (e.g., Filbeck & Lee, 2000; Naranjo-Gil et al., 2009). Additionally, there is literature that sees financial managers as an obstacle to organizational innovation (Tyler & Kevin Steensma, 1995). Our findings show, however, that under certain circumstances, financial managers can also support innovation-related organizational goals such as increasing organizational ambidexterity and furthermore provide valuable insights into the requirements for this by highlighting the role of involving financial managers in strategy development.

Our study has, from our point of view, two main limitations. The first is limitation is commonly associated with cross-sectional studies, which is that we can only make statements on correlations between financial manager characteristics and organizational ambidexterity, but not on the direction of such effects. It could, for example, be the case that financial managers who show a high level of IEB choose to work for more ambidextrous firms. Additionally, another limitation results from the survey being sent to the highest-ranked financial managers of the firms only and not sending it to the CEOs of the firms simultaneously. Although it would have been interesting to have analysed the IEB of the CEOs as well, which was not possible due to our survey set up, the impact of the CEO on ambidexterity has been – as outlined above – well documented. Our main focus was, however, to analyse the impact of the financial manager's characteristics. Hence, we do not consider the last limitation to be too concerning.

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Appendix Section D

D 1. Individual Entrepreneurial Behavior (based on Sieger, Zellweger, & Aquino, 2013)

Respondents were asked to indicate whether they would agree with the following statements or disagree.	
1 = Strongly disagree	**7 = Strongly agree**
IEB 1	I often make innovative suggestions to improve our business.
IEB 2	I often generate new ideas by observing the world.
IEB 3	I often come to new ideas when observing how people interact with our products and services.
IEB 4	I often generate new ideas by observing our customers.
IEB 5	I boldly move ahead with a promising new approach when others might be more cautious.
IEB 6	I devote time to help others find ways to improve our products and services.

D 2. Level of Organizational Ambidexterity (based on Lubatkin et al., 2006)

Respondents were asked to assess whether they agree or disagree with the following statements about their firms' orientation. The first six items describe an exploratory orientation, whereas the last six items describe an exploitative orientation.	
1 = Strongly disagree	**7 = Strongly agree**
EXPLOR 1	Our firm is a firm that looks for novel technological ideas by thinking "outside the box".
EXPLOR 2	Our firm is a firm that bases its success on its ability to explore new technologies.
EXPLOR 3	Our firm is a firm that creates products or services that are innovative to the firm.
EXPLOR 4	Our firm is a firm that looks for creative ways to satisfy its customers' needs
EXPLOR 5	Our firm is a firm that aggressively ventures into new market segments.
EXPLOR 6	Our firm is a firm that actively targets new customer groups.
EXPLOI 1	Our firm is a firm that commits to improve quality and lower cost.
EXPLOI 2	Our firm is a firm that continuously improves the reliability of its products and services.
EXPLOI 3	Our firm is a firm that increases the levels of automation in its operations.
EXPLOI 4	Our firm is a firm that constantly surveys existing customers' satisfaction.
EXPLOI 5	Our firm is a firm that fine-tunes what it offers to keep its current customers satisfied
EXPLOI 6	Our firm is a firm that penetrates more deeply into its existing customer base.

D 3. Financial Manager Involvement in Strategy Development (based on Erhart et al., 2017)

Respondents were asked to indicate how strongly the following statements apply to their organization	
i) During the analysis and design phase of the strategy process, the controlling department or the controlling responsible performs the following tasks:	
1 = Not at all	**7 = Entirely**
INVOLVE 1	Support of objective setting (e.g., by quantifying corporate goals)
INVOLV 2	Provision of strategically relevant information/analyses (e.g., on internal factors or through continuous monitoring of competition, market, customers)
INVOLV 3	Administration/coordination of the strategy process.
INVOLV 4	Challenging of management's proposals (e.g., regarding realism, objectives and assumptions)
ii) The controlling department or the controlling responsible …	
1 = Not at all	**7 = Entirely**
INVOLV 5	… consults management on own initiative with proposals regarding the strategic development of the firm.
INVOLV 6	… is influential with respect to strategic matters.
INVOLV 7	… takes part in decisions when choosing strategy.

E. Summary of the Findings and Concluding Remarks

As outlined in Section A, this dissertation had the purpose of analysing the role that accountants play in Mittelstand firms, and the impact they can have in solving problems many Mittelstand firms struggle with. The overall assumption of this dissertation was that the currently – at least implicitly – prevailing assumption in many studies that an accountant will have a certain effect given that the accountant's characteristics and the firm's characteristics are comparable is overly simplified. As a first step, the current literature on accountants in SMEs was analysed in a systematic literature review. The theoretical lens of the RBV was chosen to highlight why some accountants can provide great benefits to SMEs, whereas others provide very little benefits. The findings show that – depending on the role accountants play – more or less valuable outcomes can be achieved. Although accountants can help SMEs to overcome many of their problems, not all of the accountants are equally likely to do so. Through our analysis, three roles of accountant employment were identified. The first one, accountants as providers of statutory services, appears to be the most common one. However, it also appears that accountants within this role mostly fulfil external purposes (e.g., preparation of tax statements), and create little to no internal value. Additionally, our analysis has outlined that accountants in this role are most likely to be substituted by software soon as compared to accountants in the other groups. Although accountants in this role could be linked to SME professionalization, little other positive outcomes could be linked to them. The second role, accountants as a source of self-validation and translation, appears to be one that still offers several opportunities for future research. Although it could be linked to positive outcomes such as SME financing – which is a very valuable outcome given the struggles many SMEs face regarding restricted financial resources – the evidence in this field is still rather anecdotal. The role identified as the one being the most likely to create competitive advantages is the role of accountants as advisors. This role could be linked to many outcomes SMEs often-times struggle

to achieve (SME financing, SME professionalization, SME succession, SME growth, legal and regulation issues). However, although obviously connected to several positive outcomes, only a minority of SMEs actively use accountants in this role. It appears, therefore, that the resource-constraints many SMEs face affect the roles accountants play in SMEs, as past research has shown that employing accountants in more advanced roles are perceived as too costly. This creates a vicious circle for many SMEs in which those who might require the most support (that is, the least financially successful ones) are the least likely to get it. A lack of financial resources can foster a lack of managerial resources in accounting, which, in the worst case, can have severe negative outcomes such as a further decrease of financial resources resulting in not being able to manage the problems described above. This underpins – from an RBV – that accountants who are able to help SMEs to take on such problems are, in fact, a very rare, valuable, and hardly to be imitated or substituted resource. Our findings further show that research in this field would benefit from a more thorough theoretical foundation. As outlined in Section B, researchers have put great effort into analysing the performance outcomes of accountant employment with very mixed results. We argue that both the research questions and the research designs in this stream of literature would have benefited from an RBV-perspective as RBV-theorists have argued in great detail that performance outcomes are not suitable as the outcome of an individual's employment, but rather business-process-outcomes should be chosen. Regarding this dissertation's overall topic, this means that accountants can – depending on the role they play in firms – provide support to SMEs in many fields. However, linking accountant employment to SME performance might be difficult and would, if possible at all, require a much more complex research design setup than the ones current research offers. In line with the RBV, two business-process-related outcomes were analysed in this dissertation, each in the context of the degree to which the accountant is involved in the firm's strategy development.

The first empirical paper has linked controller involvement in strategy development with improved business-processes regarding the firms' MCS in SME firms. It was shown that

controllers who are involved in the processes of strategy development are more likely to design MCS that are efficient, which means that the MCS help support the firms in achieving their goals. The paper thereby links controllers to a professionalization outcome that has not been analysed before and shows that the controller's involvement in strategy development is beneficial for firms. Hence, employing controllers in more progressive roles does provide a positive value for firms. It was furthermore found that the relationship between controller involvement in strategy development and improved MCS is very complex as the precise mechanisms depend on the firm strategy. Whereas defender firms benefit more from involving controllers in the processes of strategy development than prospector firms, prospector firms benefit more from involving controllers in the content-part of strategy development as compared to defender firms. The findings underline that controllers can provide important business-outcome related outcomes to SMEs, but that it requires a deep understanding of the mechanism through which such outcomes are created in order to benefit from them. Mere employment of a controller is apparently not sufficient to create value.

This is further supported by the last paper of this dissertation which analyses the impact of financial managers on a business outcome that has not been in the focus of accounting- or finance-related research, the level of organizational ambidexterity. The findings show that – in Mittelstand firms – financial managers who show very strong individual entrepreneurial behaviour can increase a firm's level of organizational ambidexterity. However, the degree to which financial managers are involved in the strategy development of the firms plays an important role when it comes to the effect of the education of the financial managers. Whereas non-business educated managers do not benefit from being involved in strategy development, business-educated once can improve their ability to foster the level of organizational ambidexterity enormously by being involved in strategy development. Hence, business-educated managers can improve the level of organizational ambidexterity, they do, however, require a deep understanding of the firm's strategy. If business-educated financial managers are

not involved in strategy development, they are not very likely to support organizational ambidexterity through ambidexterity-fostering resource allocation.

Summarizing the dissertation, the findings show that accountants can – depending on many factors – function as a valuable resource for Mittelstand firms in overcoming many struggles they commonly face. However, the findings also indicate that employing an accountant is not enough to enjoy those benefits. Most Mittelstand firms can benefit greatly from employing accountants in advisory roles or involve them in strategy development.

The dissertation has several limitations, though. Regarding the systematic literature review, the first limitation arises from the theoretical lens. Although we consider the RBV to be most appropriate theoretical lens for this review, other theories could have been chosen. Furthermore, we limit the review on scientific journals in English, and the review is based on our interpretation of those articles. It is possible that adding scientific journals in other languages could have provided insights that we did not include in the review. Furthermore, it is possible that other researchers would have interpreted the articles differently. In regard to the empirical papers, several limitations need to be mentioned. Section C might suffer from endogeneity issues which could arise when the firm strategy variable is in fact influenced by the controller and therefore not entirely exogenous. Although we do not believe controllers to have such high levels of organizational power, this could be an issue. Section D could suffer from one limitation associated with cross-sectional research designs. Another explanation for some of the findings presented in Section D – in particular for the direct effects – could be that firms with a high level of organizational ambidexterity attract a different type of financial managers than firms with a low level. More precisely, it is possible that financial managers who show high levels of individual entrepreneurial behaviour chose ambidextrous firms, instead of the level of individual entrepreneurial behaviour impacting the level of organizational ambidexterity. The last limitation of Section D that we consider important is that we were not able to obtain data from the firms' CEOs in addition to the data on the firms' financial managers.

Although we requested the financial managers to provide information on the CEOs' demographics, we only received a fraction of the information that we received on the financial managers.

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