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Is the use of management accounting in startups a paradox? - A systematic literature review of how static management accounting practices can support dynamic startups

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Abstract

This paper uses a systematic literature review to study the antecedents and consequences of management accounting (MA) in startup companies. Most literature focuses on large enterprises because it has generally thought that the adoption of MA is counterproductive in small firms. However, some authors state the contrary as to why we examine the empirical literature on this topic to create a wider base of knowledge. Our results indicate that the entrepreneur's personal, professional and the firm's characteristics trigger the timing of adoption of MA and thereupon show beneficial implications to a startup. Besides the positive impact of venture survival, startups that used management accounting practices such as budgeting, financial planning and cost control achieved higher performance in terms of growth.

Keywords: Management accounting, Systematic literature review, Startups, Entrepreneurship

1. Introduction

Management accounting (MA) uses a broad range of different tools and practices to improve the firm's organisational and planning ability as well as creating incentives and control systems. These practices are characterized as static tools which on the one hand are applied in large and established firms and are needed for decision facilitating and -influencing purposes. On the other hand, small startups are totally different. They are in contrast to large enterprises described as operating in a highly dynamic and unstructured environment with a high level of uncertainty and have informal structures and communication channels. This creates the impression that management accounting is completely useless for startup companies. However, some sources state the opposite as to why the topic of management accounting in statup has found increasing interest in the last years.

Both management accounting and entrepreneurship are two frequently studied and important fields of research. Today one is aware of the characteristics of small and young startup firms such as the limited access to resources, the lack of formal structures and the high level of environmental uncertainty. That implicates some reasons why small firms require special attention with respect to management accounting (Lavia López and Hiebl, 2014).

However, only in recent years research has addressed the topic of management accounting in the world of entrepreneurship and combine the two fields of research (Moores and Yuen, 2001). Despite the increasing interest of the topic, published research is scarce and according to Lavia López and Hiebl (2014), it is "fragmented, spanning various fields such as accounting, small business and entrepreneurship, general management, and production and operations management". Consequently, the knowledge gap lies within the largely unconnected research on management accounting in small firms from various fields of study.

Hence, the goal of this thesis is to give an overview of the research that has been conducted in the field on management accounting in startups, and it aims to create a reliable source of knowledge through accumulating findings from a range of empirical papers.

As we are interested in the research of the connection of the two topics in the current literature and how entrepreneurs can benefit from management accounting, three research questions were formulated as follows:

1. What types of management accounting practices do startups adopt and use?
2. What are the antecedents of the adoption of these practices?
3. What are the consequences of the adoption?
4. What arguments do empirical papers offer for the adoption of management accounting in startups?

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In order to answer the research questions, a comprehensive literature review of the use of management accounting in startups was conducted based on the guidelines of Tranfield et al. (2003) and Briner and Denyer (2012). The method used consists of three key steps: 1) planning the review, 2) conducting the review and 3) organizing the results. Based on Dos Santos et al. (2011), Hesford et al. (2006), the ranking of The Financial Times and the VHB ranking, 23 high quality entrepreneurship and management journals have been selected. By using the databases Scopus and Google Scholar we located the papers. As only empirical papers were selected, we aimed to analyse the hypotheses formulated by the authors. By breaking them down into their individual constructs we use a framework (Figure 1) to structure the research questions. The constructs are either a management accounting construct or an antecedent, a consequence or a moderator/ mediator construct which were categorized and analysed for a comprehensive overview.

We identified that most notably the firm's characteristics such as age and size drive the adoption of management accounting. But also, the professional characteristics of the entrepreneur such as work experience, formal education in the field of management and accounting as well as the personal traits such as willingness to grow, self-efficacy and planning affiliation leads to a faster adoption of management accounting. Environmental factors such as competition and environmental uncertainty force a company to reduce uncertainty to a certain extent using management accounting. External pressure from financiers and venture capitalists has shown to drive the adoption as well as the 'import in effect' of skilled executives, i.e. CFO or professional accountants. Hence, the presence of these financial and human capital resources are important prerequisites when adopting management accounting.

Further, the review revealed that startups and small firms that adopt suitable management accounting practices generally benefit from the adoption. They experience better business performance in terms of growth and profitability in the long term. Management accounting enables the company to manage growth and gain professionalism. The findings are equivalent that not adopting management accounting was found to increases the likelihood of venture disbanding.

This paper contributes to the work of researchers as well as practitioners. Due to fact that some researchers argue about the benefits of using management accounting practices this paper provides a comprehensive understanding of the different research methods, outcomes and arguments. With this thesis, we found meaningful answers to the research questions because management accounting in entrepreneurship is a promising field of research has gained relevance in the world of management.

The remainder of the paper is structured as follows: First the research methodology is presented. Second, the finding of the review, including the construct analysis and the argumentation of the authors, are given. Lastly, we present the discussion of the findings, the implications for researchers and practitioners, as well as a conclusion.

2. Research methodology

In order to find the suitable literature of management accounting in start-ups, we conducted a systematic literature review. Our review aims to provide an analysis and summarizes the existing literature concerning the topic of management accounting in startups (Briner and Denyer, 2012). Using the approach of Tranfield et al. (2003), the method embodies three proposed key steps: 1) planning the review, 2) conducting the review and 3) organizing the results.

2.1. Planning the review

The ultimate goal of this paper is to provide an overview of the research that has been conducted to date on the field of management accounting in startups, and it aims to create a reliable source of knowledge by accumulating findings from a range of empirical papers. As the focus of interest of the paper is on the research of the connection of the two topics in the current literature and how entrepreneurs can benefit from the research, we propose the following four research questions: 1) What types of management accounting practices do start-ups adopt and use?, 2) What are the antecedents of the adoption of these practices?, 3) What are the consequences of the adoption?, 4) What arguments do empirical papers offer for the adoption of management accounting in startups?

First, we selected the most influential peer-viewed journals to guarantee the quality of the findings. Based on Dos Santos et al., 2011, the most influential entrepreneurship journals were 'Entrepreneurship, Theory and Practice', 'Journal of Business Venturing', 'Journal of Small Business Management' and 'Entrepreneurship and Regional Development'. Furthermore, Dos Santos proposes the management journals 'Administrative Science Quarterly' and the 'Strategic Management Journal' as the most influential ones for the entrepreneurship domain. We included 'Strategic Entrepreneurship Journal', 'International Small Business Journal', 'The European Accounting Review' and 'Small Business Economics' due to a good rating in the VBH Ranking. As Hesford et al. (2006) propose the most influential journals in management accounting, we include 'Accounting, Organisations and Society', 'Contemporary Accounting Research', 'Journal of Accounting and Economics' and 'Management Accounting Research'. Lastly, the ranking of the Financial Times provided 'Journal of Management', 'The Accounting Review', 'Journal of Accounting Research', 'Research Policy', 'International Entrepreneurship and Management Journal', 'International Journal of Entrepreneurship', 'International Journal of Entrepreneurship and Small Business', 'Venture Capital' and 'Long Range Planning'.

This sums up to a total of 23 entrepreneurship and management journals in which we conducted the search using the databases Scopus and the Google Scholar Advance Search. The reason for using Scopus is that it allows using Boolean operators and filters. We used Google Scholar to broaden the scope.

The search terms can be divided into entrepreneurial keywords and management accounting keywords: we chose ten entrepreneurship-related terms (“entrepreneurship*“ OR “entrepreneur*“ OR “startup*“ OR “start up*“ OR “small firm?“ OR “young firm?“ OR ”SME“ OR “small enterprise*“ OR “new technology-based firm*“ OR “small business*”) and 14 Management Accounting keywords (“management account*“ OR “account*“ OR “controlling“ OR “budget*“ OR “financial plan*“ OR “planning” OR “cost*“ OR “cost control“ OR “control” OR “management control“ OR “financial statement“ OR “performance measure*“ OR “management” OR “activity based“).

The use of asterisks (*) and question marks (?) allowed to find equivalent meanings among various suffixes (e.g. “entrepreneur*” and “small firm?”), such as “entrepreneurship”, “entrepreneur” or “entrepreneurial” or “small firm” and “small firms”. This helped to consider as many relevant papers as possible in favour of the comprehensiveness of the review.

2.2. Conducting the review

We scanned the entrepreneurship and management journals using both the management accounting related search terms and entrepreneurship terms. In order to be considered, a paper had to include the combination of one of the terms in either the title, abstract or the keywords. The papers that resulted from the search were not restricted by the published date, but only published papers were selected. The review with the keywords, defined in the previous section, was conducted in November 2017 and yielded a total number of 2371 papers that consisted of at least one combination of the groups in the title, keywords or abstract. The reason for restricting it to the title, keywords and abstract was that the consideration of the whole text delivered too many irrelevant papers.

We only selected the papers in which the author conducted an empirical study, case study or survey with explicit or inferred hypothesis testing, focused on small firms dealing with a management accounting topic. By going through the titles, keywords and a brief first scan of the abstract of the paper we were able to exclude 89,12 % of the papers due to a lack of relevance at first sight. Using the search term “management” was one reason to why many irrelevant papers appeared. The keywords in the search did match with the ones in the paper, but the title covered different topics, i.e. dealing with risk management (i.e. Britzelmaier et al., 2015) or general management topics i.e. strategic management competencies or education and exit decisions (i.e. Yamakawa and Cardon, 2017). The search term ‘SME’ appeared in 196 papers. We excluded papers that did not deal with small firms. We looked at the mean size of the samples and distribution of small firms and slightly larger organizations. The definition of Small and Medium Sized Enterprises (SME) by the European Commission[1] states the consideration of firms from 10 (micro and small firms) up to 250 employees (medium-sized firms). We considered those SME that had a larger amount of small than medium enterprises, otherwise excluded them. The word ‘entrepreneur’[2] appeared in 839 papers. Irrelevant papers dealt with the motivation, incentives, personality traits of the entrepreneur and the creation of entrepreneurial firms (i.e. Jayawarna et al., 2013) or the direct effect on the startup performance (i.e. Kickul et al., 2009; Miao et al., 2017). Others addressed the gender roles and gender differences in entrepreneurship (i.e. Hechavarría et al., 2017) or the entrepreneurial education or orientation (i.e. Block et al., 2013).

Other topics that appeared which were not of interest for our paper were dealing with succession planning (i.e. Motwani et al., 2006) or the practice of bootstrapping as a management accounting practice. This practice was not counted as management accounting and therefore dismissed (i.e. Ebben and Johnson, 2006). We further excluded duplications (i.e. A. Davila et al., 2015).

By applying the steps mentioned above, we selected 46 papers for further research. Next, we performed a backward and forward reference search with the relevant papers. By using Scopus, we applied the filter to limit the results to the distinct papers as stated in the first stage. This led to additional seven relevant papers.

All in all, we selected 53 papers from 17 different journals. Four journals constitute 53% of all papers that were taken into account: Journal of Small Business Management (absolute number: 12), Small Business Economics (10), Accounting Review (4) and Journal of Business Venturing (4). Six journals (Research Policy, Journal of Accounting Research, Journal of Accounting and Economics, International Journal of Entrepreneurship, International Entrepreneurship and Management Journal and Administrative Science Quarterly) did not yield any contributions.

Table 1 illustrates how many papers were found in each journal.

2.3. Organizing the results

To be able to structure and organize the papers, we prepared a database with ‘excel’. This helps to create a systematic, transparent and replicable knowledge base, stated as the ‘core principles’ of a systematic review. (Briner and Denyer, 2012)

As we only considered empirical studies, most of the papers used hypotheses. These hypotheses were broken down into their individual constructs to run a 1st level coding procedure. The construct in the centre of Figure 1 describes a management accounting practice and is the main construct for the analysis. Every main construct is composed of either an antecedent construct or a consequence construct. An antecedent construct describes a preceding event, condition or cause for the emergence of the construct. A consequence construct showcases the effect of the usage of management accounting practices. All in all, one can be say that the 1st

[1]http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_de 05.01.18

[2]including the words entrepreneurship, entrepreneur, entrepreneurial

Table 1: Selection of 53 papers from 17 different journals

Journal title	Number of Selected Papers
Journal of Small Business Management	12
Small Business Economics	10
Strategic Management Journal	5
Journal of Business Venturing	4
The Accounting Review	4
Management Accounting Research	3
Long Range Planning	2
Accounting, Organizations and Society	2
International Journal of Entrepreneurship and Small Business	2
Venture Capital	2
Contemporary Accounting Research	1
Entrepreneurship and Regional Development	1
Entrepreneurship, Theory and Practice	1
European Accounting Review	1
International Small Business Journal	1
Journal of Management	1
Strategic Entrepreneurship Journal	1
Total	53

level coding looks into the cause and effect relationships of the adoption of management accounting practices. Figure 1 showcases the relationship between the constructs and the dependency path from the left to the right. Besides that, it illustrates which research questions, labelled as RQ1, RQ2, RQ3 and RQ4, relates to the appropriate construct. In particular, RQ4 looks at the whole cause and effect relationship.

In addition to that, some hypotheses had either a moderator or mediator construct. A moderator construct is a third-party variable that in this case modifies the relationship between the antecedent construct and the management accounting construct or the management accounting construct and the consequence construct. The purpose of the moderator construct is to measure the strength of their relationship. The mediator construct's objective is to explain the relationship between the management accounting construct and the antecedent or consequence construct and causes a mediation between them. In the further course of this paper we do not distinguish explicitly between those two constructs, as they only make up a fraction of the constructs found.

The quality of the definition of the construct is of major interest as it is important to see how precisely the authors dealt with each construct in their study. By scrutinizing the definition of each different construct, we paid special attention to its quality. Using four different categories, the quality of each construct was assessed:

Next, we conducted the 2nd level coding for each construct. We looked closely at the different constructs that we found and grouped the constructs with the same or similar meanings. Then, we defined superordinate categories and assigned each construct to one of the groups. The reason for this procedure is to ensure the clarity of the review and accumulate the relationships between the constructs.

Table 3 illustrates the categories for the antecedent, management accounting and consequence constructs.

The definitions of the second level coding for the 36 different moderators and mediators that we found are described in the appendix.

3. Results

In the following sections, we will present our findings from the systematic literature review. First, the descriptive statistics will be described to highlight the major findings and give answer to the first research question. Second, we will showcase the antecedents and consequences of the adoption of management accounting in order to answer the second and third research questions.

3.1. Descriptive Statistics

We found a total of 205 relevant hypotheses in the selected 53 papers. 80 hypotheses were on antecedents and 125 on consequences of management accounting. We distinguished eight different 2nd level categories for antecedents and seven categories for consequences for the adoption of management accounting as described in Table 3. Besides that, eight distinct categories for management accounting practices were established.

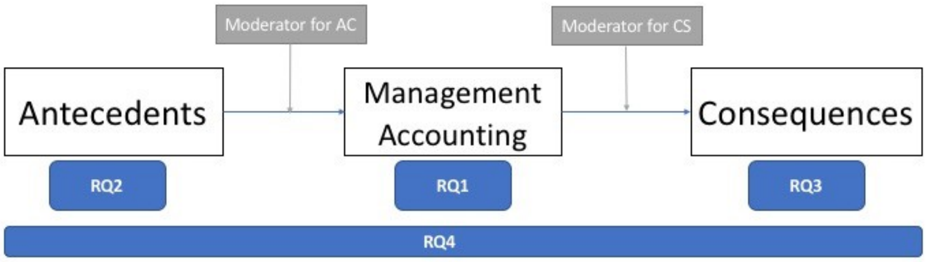

Figure 1: 1st Level Coding Constructs

Table 2: Quality of the Definitions

Category	Explanation
Explicitly defined from paper	The paper defines the construct explicitly or quotes a source of a clearly expressed definition.
Inferred from paper	The paper does not explicitly define the construct, but offers a description from which the construct can be deduced.
Equals measurement item	The paper explains the choice of measures for the study (e.g. questionnaire) in the variable part of the paper and makes clear the calculation of the construct.
No explicit definition	The paper does not provide a definition to describe the construct more precisely.

Table 4 presents the absolute frequencies of antecedents that were examined in the empirical work of management accounting in startups companies. The majority (75%) of the hypotheses on antecedents fall into three categories. The biggest part deals with the antecedents of 'accounting based control systems' (absolute number: 25), 'business planning' (19) and 'financial statements and reporting' (16). The remaining five categories only cover up twenty hypotheses in total: 'strategic use of information' (6), 'budgeting' (5), 'strategic management (systems)' (4), 'financial planning' (3) and 'costing method' (2). The antecedents that are the most striking ones in the research are the 'firm's characteristics' (24 hypotheses), the 'entrepreneur's professional characteristics' (14) and the internal and external pressures, respectively 'strategy' (11) and 'environmental factors' (9). Other categories that research focused on were the 'entrepreneur's personal characteristics' (7), the 'presence of venture capitalists' (6), the association to an 'outside network' (5) and the 'prior performance' of the company (4).

Table 5 presents the absolute frequencies of consequences that were examined in the empirical work of management accounting in startups companies. Of the all hypotheses on consequences 60% deal with implication of adopting 'business plans' (absolute number: 44) and 'accounting based control systems' (23). The remaining six categories only cover up 57 hypotheses in total: 'strategic management (systems)' (12), 'costing methods' (11), 'financial statements and reporting' (11), 'strategic use of information' (10), 'budgeting' (8) and 'financial planning' (6). 33 hypotheses address the firm's 'performance (growth)', 22 the 'survival of the firm' and 20 'subjective performance measure' as the consequences of adopting management accounting. The remaining categories make up the other 38 implications: 'acquiring financial resources' (14), 'entrepreneurial intensity' (13), 'profitability' of the company (12) and 'non-financial measures' (11). It is noteworthy that two hypotheses measure 'performance (growth)' and 'subjective measure' as consequences of 'strategic management (systems)' (Malagueño et al., 2018). Two hypotheses measure 'performance (growth)' and 'subjective measure' as consequences of 'business planning' (Rauch et al., 2000). Four hypotheses measure 'performance (growth)', 'profitability', and 'survival' as consequences of 'business planning' (Brinckmann et al., 2010). Four Hypotheses measure 'performance (growth)' and 'profitability' as consequences of 'accounting based control systems' (Voss and Brettel, 2014). These hypotheses are

Table 3: Second Level Categories for Antecedents, Management Accounting and Consequences

* "Entrepreneurial self-efficacy relates to an individual's belief that one is capable of successfully performing certain roles and tasks in the entrepreneurial domain", (Chen et al., 1998)
** "Management Control Systems are the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities", (Simons (1994))

Antecedents	Definition/ Explanation
Entrepreneur's Professional Characteristics	This antecedent covers the person and group specific characteristics such as education, work and founding experience that are related to the introduction and use of management accounting.
Entrepreneur's Personal Characteristics	This antecedent covers the person and group specific characteristics such personality traits, the aspects of self-efficacy* (i.e. motivation and achievement orientation) that are related to the introduction and use of management accounting.
Presence of Venture Capitalists	We describe the activities of Venture Capitalists (VC) that lead to the presence of financial and non-financial resource as antecedents that drive the adoption of management accounting.
Firm Characteristics	These characteristics are firm related aspects such as the structural (i.e. size, age and life-cycle stage) and behavioural variables (i.e. culture and management style).
Environmental Factors	They cover the aspects concerning external pressure such as the complexity and uncertainty of the environment as well as outside events and competition that lead to the adoption of management accounting.
Strategy	The strategy followed by the company explains its orientation for the future such as the pursued goals and development that influence the adoption of certain management accounting practices.
Prior Performance	It indicates the development of a company prior to the adoption of management accounting in terms of financial performance and growth indicators.
Outside Network	The network describes the influential outside factors and external parties such as the presence of international relations, number of outside owners or external financial advice.
Management Accounting	
Financial Planning	This construct comprises ex-ante financial projection activities to express future financial state predictions or estimations of the company.
Accounting Based Control Systems	These formal systems consist of multiple techniques in order to assist the entrepreneur to i.e. plan, complete internal control or comply (Definition according to Simons, 1994**).
Financial Statements and Reporting	This construct covers the aspect of the completion of ex-post financial statements containing at least a written balance sheet and income statement and reports about the current and past financial state.
Business Planning	We define business planning as all activities concerning the creation of formal business plans with a strategic purpose.
Budgeting	By budgeting, we mean the preparation of different budgets in order to expressing a plan in terms of money
Strategic Use of Information	This construct contains screening activities, the selection, presentation and usage of primary and secondary financial and non-financial information sources.
Costing Methods	These methods deal with the different costing and accounting methods such as accrual, standard and actual costing or ABC and factors used in the costing process.
Strategic Management (Systems)	Unspecific management, strategic and/or controlling practices such as BSC belong to the strategic management systems.

(Continued)

Table 3—continued

Antecedents	Definition/ Explanation
Consequences	
Performance (Growth)	The company's success measured in terms of sales growth and the revenue growth as well as employee growth are defined as performance.
Subjective Performance Measure	These measures describe the subjective evaluation of the firm's achievements in comparison with the past or with competitors.
Profitability	Profitability covers the indicators of the company value and contains well-established profitability measures such as ROA, ROI, etc..
Entrepreneurial Intensity	This intensity is measured by product quality and development and efforts in innovation outcomes influenced by management accounting adoption.
Acquiring Financial Resources	We count the acquisition of financial resources and external financing concepts to this construct category.
Survival of the Firm	This consequence indicates the continuance, respectively the termination of the venture or the entering of a new life-cycle stage.
Non-Financial Measures	This construct contains i.e. the accuracy of planning or forecasts or number of stores, goal alignment or goal clarity.

listed solely under 'performance (growth)'.

The 205 hypotheses that we found dealt with 85 antecedent constructs, 205 management accounting constructs, 153 consequence constructs and 45 mediator and moderator constructs. As many authors investigate multiple hypotheses, we had to exclude duplicates when checking the quality of each definition. After eliminating duplicates, we found a total amount of 331 constructs. 76 were antecedent constructs, 122 management accounting constructs, 97 consequence constructs and 36 moderator or mediator construct. Table 7 shows the proportions of the quality of each construct definition. It indicates that only 55% of the management accounting constructs are defined explicitly. Besides that, 22% of all constructs had to be either inferred from the paper or were not defined properly at all.

We also found that the moderator and mediator constructs are mainly used to describe or alter the relationship between the management accounting construct and the consequence construct (78%) and that they are less likely to be found between the antecedent and the management accounting construct (22%).

Figure 2 illustrates how many papers were published in each year. In the years of 2004, 2005, 2007 and 2015 five empirical research papers were published, followed by 2010 with four publications and 1998, 2001, 2009, 2012 and 2017 with three publications.

The following sections show the substantive results of the review. First, we highlight the content of the antecedents of the eight different management accounting practices with focus on 'accounting based control systems', 'business planning' and 'financial statements and reporting'. Thereafter, we show and explain the implications of the adoption of the different management accounting practices with focus on 'business planning' and 'accounting based control systems'.

3.2. Results of the antecedents

This section deals with the antecedents of the adoption of management accounting practices in startups and small companies. The antecedents of this review are seen as the drivers of an adoption in terms of timing and the scope of these practices, methods and systems. They explain the reasons and motives as to why and why not management accounting is adopted. Hence, the results in this section will help to answer our first and second research question.

To summarize, we identified that the firm's characteristics (age and size) drive the adoption of management accounting. An increase of size leads to more decentralized structures and demand systems to delegate decision making throughout the company and to gather (financial) information from the operational level. The professional characteristics of the entrepreneur such as work experience, formal education in the field of management and accounting as well as the personal traits such as willingness to grow, self-efficacy and planning affiliation leads to a faster adoption of management accounting. Environmental factors such as competition and environmental uncertainty force a company to reduce uncertainty to a certain extent using management accounting. External pressure from financiers and venture capitalists has shown to drive management accounting adoption as well as the 'import in effect' of skilled executives, i.e. CFO or professional accountants. The presence of these financial and human capital resources are important prerequisites when adopting management accounting.

3.2.1. Antecedents of accounting based control systems

First, we focus on the factors for the adoption of accounting based control systems. These systems are not named as such but rather found to have different names in the research (management accounting systems (MAS), management con-

Table 4: Absolute Numbers of Hypothesis on Antecedents of Management Accounting

	Entrepreneur's Professional Characteristics	Entrepreneur's Personal Characteristics	Presence of Venture Capitalists	Firm Characteristics	Environmental Factors	Strategy	Prior Performance	Outside Network	Total
Financial Planning	2	0	0	1	0	0	0	0	3
Accounting Based Control Systems	5	0	4	9	3	3	0	1	25
Financial Statements and Reporting	1	1	0	4	1	5	1	3	16
Business Planning	5	3	0	4	4	2	1	1	19
Budgeting	0	0	0	3	1	1	0	0	5
Strategic Use of Information	0	3	0	3	0	0	0	0	6
Costing Methods	0	0	0	0	0	0	2	0	2
Strategic Management (Systems)	1	0	2	1	0	0	0	0	4
Total	14	7	6	24	9	11	4	5	80

Table 5: Absolute Number of Hypotheses on Consequences of Management Accounting

	Performance (Growth)	Subjective performance measure	Survival of the firm	Profit-ability	Entrepreneurial Intensity	Acquiring Financial Resources	Non-Financial Measures	Total
Financial Planning	2	0	0	0	3	0	1	6
Accounting Based Control Systems	11	0	1	8	2	0	1	23
Financial Statement and Reporting	2	0	0	2	0	4	3	11
Business Planning	13	11	11	0	0	8	1	44
Budgeting	1	1	1	0	3	0	2	8
Strategic Use of Information	0	7	3	0	0	0	0	10
Costing Methods	1	0	6	2	0	2	0	11
Strategic Management (Systems)	3	1	0	0	5	0	3	12
Total	33	20	22	12	13	14	11	125

Table 6: Assessing of the Quality of the Construct Definitions

	Explicitly Defined	Inferred from Paper	Equals Measurement	Not Defined	% Total
Antecedent Constructs	42%	18%	34%	5%	23%
Management Accounting Constructs	55%	18%	20%	7%	37%
Consequence Constructs	25%	2%	66%	7%	29%
Moderator/Mediator Constructs	33%	33%	22%	11%	11%
% Total	41%	15%	37%	7%	100%

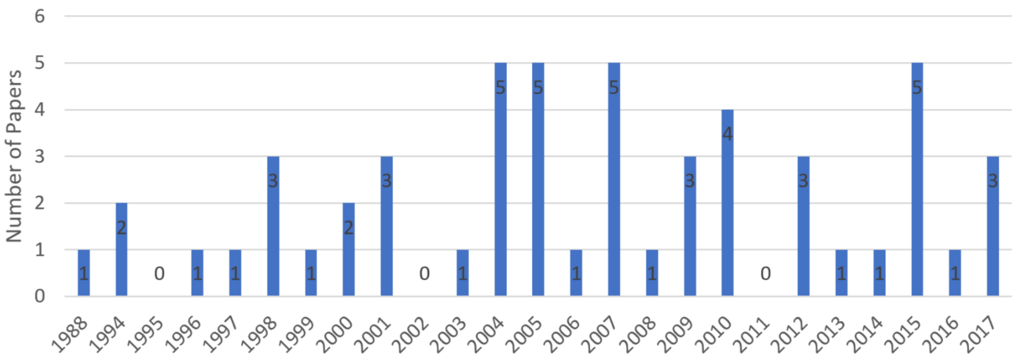

Figure 2: Published Empirical Research on MA in startups

trol systems (MCS) or control systems). These systems consist of a range of "formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities" (Simons, 1994, p. 5).

As motivated in the introduction, larger firms use management accounting to a greater extent than small firms. Our review confirms that the size of a company is an important antecedent of the adoption of accounting based control systems and that a higher number of employees is associated with faster implementation of MAS (Davila and Foster, 2005). The formality of MAS of the company increases as the company strives to reach the "growth stage" (Moores and Yuen, 2001). The life cycle theory is also applied by Granlund and Taipaleenmäki, 2005 to explain the adoption and development of MAS, but they contradict the findings of Moores and Yuen that the firm characteristics alone explain the MAS evolution. The internal complexity increases as the size of a startup increases (Cassia et al., 2005) as well as the sub-unit interdependence (Reid and Smith, 2000). It is proposed that a when a company grows and starts having departments, the need for information and sophisticated accounting systems increases.

The entrepreneur's professional characteristics represent a significant portion of the antecedents. Work experience of the CEO is related to a faster adoption of management accounting systems. This assumption goes hand in hand with the recruitment of an experienced CFO (Davila and Foster, 2005). These systems require a critical amount of knowledge as the implementation involves major changes within a company. Non-founder executive import knowledge and skills in accounting and controlling and thus lead to a faster adoption and use of management accounting systems (Davila and Foster, 2007). Besides that, an established network gained from founding helps the entrepreneur to perform well and hence remain in control of the company (Wasserman, 2017).

External contingencies force a company to adopt management accounting systems (Reid and Smith, 2000). By applying the contingency theory, they refer to cash-flow crises and shortages in funding sources and innovation. Main reason for the adoption is to cope and reduce the costs of the occurring events (Davila et al., 2009; Reid and Smith, 2000).

The lack of resources is a major characteristic of a startup but they are essential for growth prospects. Venture capital financing helps to overcome those shortcomings. An external pressure arises as financiers and venture capitalists (VC) demand factual information processing for controlling and monitoring financial activities (Granlund and Taipaleenmäki, 2005). The presence of venture capitalists leads to faster adoption of cash budgets as part of MAS (Davila and Foster, 2005) and specific monitoring activities by VCs are according to Wijbenga et al. (2007) positively associated with the degree of sophistication of a cost control system. The presence of VC is also positively related to the adoption of incentive and reward systems and its sophistication.

Lastly, the strategy being followed by a company leads to a certain management control system (Sandino, 2007). She particularly finds out that a firm following a low-cost strategy is more likely to adopt 'Cost MCS[3] and 'Risk MCS'[4]. Companies that follow a differentiation strategy are more likely to implement 'Revenue MCS'[5] and the presence of international operations is associated with faster adoption of MAS (Davila and Foster, 2005).

3.2.2. Antecedents of business planning

This section illustrates the constructs that lead to the preparation of a business plan which in most cases is defined as a "written document that describes the current state and the presupposed future of an organization" (Honig and Karlsson, 2004).

The entrepreneur's personal characteristics, such as self-efficacy and entrepreneurial perseverance are found to be antecedents of business planning (Brinckmann and Kim, 2015). Next to that, greater ability expectations ("expectation of personality efficacy") and commitment ("refers to the entrepreneurs' willingness to exert effort in the venture creation process to make the venture work") are positively associated with a higher intensity of business planning (Hopp and Sonderegger, 2015). The entrepreneur's professional characteristics delivered mixed results. On the one hand, advanced academic education and entrepreneurial experience were positively associated with business planning (Brinckmann et al., 2010; Hopp and Sonderegger, 2015). On the other hand, no empirical support was found that entrepreneurs with a formal business education (Honig and Karlsson, 2004) or managerial experience (Brinckmann et al., 2010) have a greater tendency to create business plans.

Business planning increases with environmental complexity but not with environmental dynamics (Risseeuw and Masurel, 1994) because planning in static environments seems unnecessary and in a dynamic environment impossible. Firm characteristics like an increased professionalism due to the growth in size (Peel and Bridge, 1998) and the achievement orientation within a firm are antecedents for the detail and intensity of business planning (Rauch et al., 2000). Companies that experienced increased performance in the past are more likely to formulate a strategic business plan (Gibson and Cassar, 2005) as well as companies with a higher degree of complexity and variability of the strategies (Piëst, 1994).

3.2.3. Antecedents on financial statements and reporting

Financial statements record the financial activities and position of a company and mostly cover an income statement as well as the balance sheet (Cassar, 2009). Accounting experience (Cassar, 2009), external advice and auditing (Luypaert et al., 2016; McMahon, 1999) drive the quality and a more frequent preparation of financial statements of small firms. Additionally, the financial reporting climate[6] and the development orientation, meaning how forward looking a company is, increase the comprehensiveness of financial reporting (McMahon, 1999). Firm size is negatively related to quality and is explained that larger firms face "more severe agency problems and thus having a greater need for monitoring" (Luypaert et al., 2016). A negative relation to firm's age and filing lag was not found. Consequently, age is not an antecedent for the quality of financial statements. However, increasing competition in combination with a greater number of outside owners leads to a more frequent creation of financial statements in order to make decisions based on accounting information, as stated by Cassar (2009).

3.2.4. Antecedents of budgeting, financial planning and strategic management (systems)

A crucial answer to the first research question can be given here. Budgeting is considered one of the first parts of a management accounting systems to be implemented (Davila and Foster, 2005; Granlund and Taipaleenmäki, 2005). It is mostly defined as "a forward-looking set of numbers which projects the future financial performance of a business, and which is useful for evaluating the financial viability of the business's chosen strategy or deciding whether changes to the over- all plan are required" (Davila and Foster, 2005). The firm size, structure and the strategy are important antecedents for the implementation of budgets (King et al., 2010; Maes et al., 2005). They argue that a "more decentralised structure makes controls more necessary" and that following a low-cost strategy leads to a greater extent of use of budgeting that following a product differentiation strategy. Further, a high market competition drives the adoption of budgets as well (Cassar, 2009; Peel and Bridge, 1998).

Environmental factors delivered mixed results for the antecedents of budgeting practices. On the one hand a perceive stable environment increases the likelihood of the adoption of budgeting (King et al., 2010). On the other hand, Peel and Bridge (1998) measure a positive relation between the environmental turbulence measured in environmental change and the detail of strategic planning, specifically capital budgeting techniques.

Setting up a financial planning and strategic management systems requires human and financial resources. Hence, the educational background, work experience and availability of financial resources drive its adoption (Cassar, 2009; Maes et al., 2005; Mengel and Wouters, 2015).

3.2.5. Antecedents of costing method and strategic use of information

The findings from the previous paragraph also apply to more sophisticated management accounting methods. Activity-based costing (ABC) is a strategic cost management

[3]"Cost MCS focus on enhancing operating efficiencies and minimizing costs", (Sandino, 2007)

[4]"Risk MCS focus on reducing risks and protecting asset integrity", (Sandino, 2007)

[5]"Revenue MCS are introduced to foster growth and be responsive to customers", (Sandino, 2007)

[6]„reflecting how conducive the climate is to financial reporting in terms of financial reporting to financiers, relationships with financiers beyond financial reporting, external scrutiny of financial statements, and the availability of internal financial advice", (McMahon, 1999)

practice to precisely identify, assign or allocate cost to a specific activity (Jänkälä and Silvola, 2012). The researchers examined the prior performance and found that a better prior performance leads to a higher probability of adopting ABC. The financial performance measured in the growth of net sales has a negative relation to the extent of ABC implementation, whereas the financial performance measured using the Return on Investments leads to a positive relation.

The extent of information about R&D projects and the competitors of a small firm depends heavily on the entrepreneur's personal characteristics. A "higher information sensitiveness of his personality", the "willingness to grow" and less working experience lead to an increase of information use. Yet, pessimistic entrepreneurs are more interested in information (Lybaert, 1998).

3.3. Results of consequences

This section focusses on the consequences of management accounting in startups and will help to answer our third and fourth research question. The adoption of management accounting practices promises to offer major benefits that exceed the cost of the implementation. Management accounting practices are substantial for large enterprises for complying with internal regulations, for monitoring costs and expenses, assists in financial planning and budgeting and facilitate and influence decision making. As the implementation is cost intensive, time consuming and requires high skills, the benefits for small companies have been questioned. The consequences found in empirical papers are grouped into performance in terms of growth and subjective measures, profitability, the survival of the firm, the acquisition of financial resources, non-financial measures and entrepreneurial intensity as explained in the 2nd level coding in Table 3.

In summary, the review revealed that startups and small firms that adopt suitable management accounting practices generally benefit from the adoption. They experience better business performance in terms of growth and profitability in the long term. This finding is equivalent that not adopting management accounting was found to increase the likelihood of venture disbanding.

3.3.1. Consequences of business planning

Out of the 18 papers dealing with the performance outcomes of business plans, 13 confirm a general positive correlation, whereas five contradict the total positive implications of planning.

First of all, it is supported that strategic business planning improves the overall business performance of a small firm, as it helps in the context of better decision making (Peel and Bridge, 1998). Besides that, written business planning outcomes and the planning process itself increase the performance in terms of sales and employee growth and profitability because it allows a startup to better manage their limited available resources (Brinckmann et al., 2010; Rauch et al., 2000). Further, it has been suggested that a higher level of planning sophistication leads to an increase in sales (Wijewardena et al., 2004) and is positively related to the subjective performance as well as the profitability (Rue and Ibrahim, 1998). The term planning sophistication is used by researchers to describe the completeness of a planning document and the level of detail. Firms that employ planning on a regular basis will financially outperform others (Bracker et al., 1988; Gibson and Cassar, 2005) or have a general positive effect on venture performance when planning is well-suited to the firm's environment as a highly dynamic environment negatively moderates the relationship between marketing planning and venture performance (Gruber, 2007).

Opposing to the positive implications of business planning, some researcher failed to support the hypotheses posed above (Honig and Samuelsson, 2012; Lange et al., 2007). The authors argue that business planning alone does not lead to improved performance by itself. As the company grows during its operation, business plans that were made in the beginning become useless if not updated. Firms are better off creating general plans or no plans instead of a detailed strategic plan, especially when the environment is highly uncertain. Hence, the "use of a structured plan is either useless or even counterproductive" (Risseeuw and Masurel, 1994).

Despite the fact, that a more sophisticated plan leads to an increased performance, several authors suggest to only establishing basic plans (Brinckmann et al., 2010; Lange et al., 2007; Risseeuw and Masurel, 1994). Reason for this is that the positive effect of sophistication is greater in established firms due to the high uncertainty in the startup's environment (Brinckmann et al., 2010) and that limited time available would be better used in the value creation during the startup phase as it might be detrimental to a company when the costs might exceed the benefits in the short run (Maes et al., 2005).

Multiple empirical results show that business planning decreases the likelihood of company failure (Borges et al., 2013; Brinckmann et al., 2010; Delmar and Shane, 2003, 2004; Perry, 2001; Shane and Delmar, 2004). The time invested in such activities will have positive implications as it makes the startup appear legitimate to outside stakeholders (Delmar and Shane, 2004), increases the intensity of other entrepreneurial activities increases (Davila et al., 2009; Shane and Delmar, 2004) and provides information for preventing making bad decisions (Borges et al., 2013) of which the timing (Hopp and Sonderegger, 2015) and content (Delmar and Shane, 2003) are crucial for startups' survival. Only one study failed to support a positive relationship between planning and survival of the firm (Honig and Karlsson, 2004). Lastly, business plans failed to be positive associated with the acquisition of financial resources (Borges et al., 2013; Kirsch et al., 2009), concluding that business planning documents only "serve a limited ceremonial role" (Kirsch et al., 2009).

3.3.2. Consequences of accounting based control systems

The review of the empirical literature clearly shows that the implementation of cost control or accounting control contributes to a small firm's performance (Ahire and Golhar, 1996; Davila and Foster, 2007; Roper, 1997; Sandino, 2007;

Voss and Brettel, 2014; Wijbenga et al., 2007; Wijewardena et al., 2004). However, multiple moderators relating to the firm characteristics influence the findings. A good fit between the strategy and management accounting systems is essential to an improved performance in terms of growth because those systems then gain usefulness (Sandino, 2007). VC service activities positively moderate and VC monitoring activities negatively influence sales growth and profitability (Wijbenga et al., 2007). Besides that, the adoption of MCS has a positive influence on the tenure of the CEO as well as on employee growth (Davila and Foster, 2007). These system further accelerate business growth (Roper, 1997). But not only the mere existence leads to improved performance. Also the sophistication of the control systems such as budget variance analyses shows positive effects on sales growth (Wijewardena et al., 2004).

Davila and Foster (2005) discover that MCS lead to a higher valuation of the company because "financiers of startup companies believe formal MCSs lead to better decisions or that they signal firm quality and future growth potential". Still, when a founder remains in control as the startups growth it causes a negative effect for the valuation of the company (Wasserman, 2017).

Furthermore , Ahire and Golhar (1996) focus on the concept of total quality management (TQM). Satisfying customer is crucial for small companies for its survival especially in the manufacturing sector. The adoption of quality control empirically shows an improved product quality and other types of control namely output control, behaviour control and professional control drive the firm's performance (Voss and Brettel, 2014).

3.3.3. Consequences of the costing methods, financial planning and budgeting

The costing method, chosen by startup as well as the implementation of systems for an efficient and effective deployment of financial resources have a positive impact on the future performance. Hence, the adoption of the strategic costing method like activity based costing leads to a direct increase of performance in terms of sales growth (Jänkälä and Silvola, 2012). Choosing either a real option reasoning approach[7] or the net present value[8] approach in planning makes a difference concerning the company's success (Hayward et al., 2017). ROR leads to a greater innovation output than the NPV orientation because it provides a more realistic view on the investment and flexible alteration of actions. Through the usage of financial planning, the performance in terms of growth can be improved (Mengel and Wouters, 2015; Wijewardena et al., 2004), although the preparation of projected financial statements leads to overly optimistic forecasts in regard to venture sales (Cassar, 2010) as it might "encourage the nascent entrepreneur to adopt an inside view in regard to the financial performance of the venture, resulting in overly optimistic financial expectations".

Budget preparation is found to be a driver for a better forecast accuracy (Cassar and Gibson, 2008) and performance growth (Davila and Foster, 2005; King et al., 2010) as it assists in predicting changes in future growth even in a setting of greater uncertainty.

3.3.4. Consequences of financial statements and reporting

Startups experience an increase of their performance in terms of sales when preparing a financial statement more frequently (Cassar, 2009) and additional firm value when applying cash flow measures (Black, 2003). It further helps the firm to improve accuracy in the revenue forecast as they show less absolute forecast errors than firms without (Cassar and Gibson, 2008). A more detailed financial statement helps a company to reduce leverage[9] (Van Caneghem and Van Campenhout, 2012) but besides the elaborateness, the quality also matters and leads to lower leverage. This sophistication of the financial statement can be achieved using accrual accounting (Cassar et al., 2015) which has a favourable effect on the cost of debt[10], but not on the probability of access to loan (Vander Bauwhede et al., 2015). Despite those positive prospects of creating a financial statement, the positive effects are greater in larger companies (McMahon, 2001).

3.3.5. Consequences of strategic management (systems) and strategic use of information

The use of a balanced scorecard (BSC) as a strategic management system promotes growth, assists to track performance, to provide focus, to align with goals, gain goal clarity and accountability (Gumbus and Lussier, 2006). This shows that the adoption of the balanced scorecard not only affects financial implications for a firm. Yet, the use of BSC increases the financial performance measured change in sales per employee and perceived performance, as well as profitability measured with the ROA (Malagueño et al., 2018). Better exploitative innovation is another consequence that the BSC enhances. Contrary to the authors expectations the BSC is not negatively associated with the exploratory innovation. Taking these two consequences together, the results suggest that "the use of BSC for feedforward control helps organizations to be more efficient in their ability to develop exploitative innovations without reducing exploratory innovations." However, more established profit even more from the use of BSC in terms of the financial performance.

The a priori screening of clients and gathering non-financial information of secondary information have positive performance implications in terms of survival (Maes et al., 2005). Gathering secondary information has according to Gruber (2007) a positive subjective performance implication. In particular, the use of information about market and

[7] ROR orientation applies option valuation techniques to capital budgeting decision wherein the real option is the right rather than the obligation to undertake a project.

[8] NPV analysis measures the present value of project cash flows.

[9] Total liabilites devided by total assets

[10] explains the initial interest rate on approved loans

external information about competitors influences the expected (subjectively measured) performance of a startup for the upcoming years (Lybaert, 1998).

4. Discussion

The analysis of 53 papers has provided interesting and meaningful aspects in field of management accounting in startups which we want to highlight in this section.

Major finding in terms of the antecedents is that size, concomitant with higher complexity, is the most notible factor for the adoption of management accounting. The remaining issue is the trade-off between time spent on 'organisational' activities and 'value creation' activities because little is known about the 'perfect timing' for the implementation of formal management acccounting. The review shows that larger firms not only adopt management accounting to a greater extent but also benefit more from the adoption (King et al., 2010; Davila and Foster, 2005, Davila and Foster, 2007; Cassia et al., 2005). This finding aligns with the review of Lavia López and Hiebl (2014). However, early implementation has significant benefits and is proposed by many researchers in order to promote the infrastructure for growth. As to what hinders startups to implement management accounting, we found that the financial and human capital resources explain this to reasonable extent. Interestingly, the findings of Jänkälä and Silvola (2012) and Mengel and Wouters (2015) are in contrast to their expectations and show that scarce financial resources are not a driver of the adoption of management accounting but decrease the likelihood of implementing systems to manage scarce resources.

To what drives a startup to adopt management accounting, professional expertise and accounting skills are antecedents for a faster adoption because it was shown that management accounting professionalizes a startup. Hence, it requires trained staff to customize the systems to the company's characteristics and needs and the willingness to execute controlling and monitoring processes in a sophisticated manner in order to profit from it.

However, the conflict about benefits of business planning remains. We found more benefits of the creation of business plans and even sophisticated planning. As a consequence, startups should put effort into their planning because it helps to make decisions based on a more accurate and precise information basis. As every decision in the startup phase is crucial for the survival of the firm, they should take the time to plan, even if constraints only allow basic planning. However, business plans do not facilitate the acquisition of financial resources, as to why the planning of startups should be primarily serve internal purposes. The implementation of business and financial plans as well as budgets alone does not lead to improved performance by its own. The matching with the business's strategy and environment is key for enabling company success. This result is also supported by the findings of the moderators and mediators as shown in the appendices. The moderators 'firm characteristics' and 'contingences' play a significant role for the relationship between management accounting and its consequence constructs.

Our study shows that budgeting is one of the first management accounting practices to be implemented in a small firm. This allows the company to better manage their scarce financial resources which turned out to drive the company performance. However, the measures for company performance vary heavily and make a comparison of the different research difficult. It is worth noting that success measures are different from measuring survival. Not to fail as a startup is certainly positive, yet, it does not mean that it is successful. Our study has shown that the differentiation between the performance measures is important in order to compare the studies. Nevertheless, the heterogeneous samples with a relatively wide range of size makes comparisons more complicated. We examined nascent entrepreneurs that were just about to launch their business and others that were small, but in business for years.

A critical aspect in accumulating and synthesizing the findings of management accounting practices is that the definition of MCS, MAS, and especially business plans is not clearly given in a reasonable amount of papers. This recognition supports an already observed problem (Bisbe et al., 2007). Most authors draw upon the definition of Simons (1994) for MCS, which delivers a very broad explanation. This in some cases is unsatisfactory because MCS consists of a wide range of tools and practices that need to be distinguished.

Reviewing our methodology, we need to be critical with our chosen keywords. The keyword search yielded a scope that was overwhelming and time consuming to manage. On the basis that we excluded almost 90 % of the papers, we would propose to restrict the search to fewer words and focus on the forward and backword reference search. It also showed that empirical research in this particular field of research is still scant and multiple closely related topics are studied to a greater extent.

5. Conclusion

The goal of this systematic literature review was to draw a precise overview of the empirical literature on management accounting practices in startups and young companies. We focused on the antecedents and consequences of management accounting to get insights of the drivers and reasons for the adoption of management accounting as well as its implications for the startup. The review was conducted according to the guideline of Tranfield et al. (2003) and revealed evidence that startups generally benefit from the use of management accounting. This understanding evolves from the analysis of the hypotheses that were empirically tested. Subsequently, we categorized the constructs into a 2nd level coding in order to condense similar constructs. By this attempt we were able to offer a comprehensively view on the relationship of the antecedents and management accounting as well as on the link between management accounting and its implications.

The use of management accounting is generally found in large and established companies and offers considerable benefits for them. However, small firms with limited time, financial and human resources and their informal communication and information flows and an aspiration for innovation might suffer disadvantages because management accounting seems not applicable for them and their uncertain environment. However, there are good reasons as to why management accounting paradoxically help entrepreneurship. This review confirms this assumption made by some authors and further indicates the different drivers and implications of management accounting.

We identified that the firm's characteristics such as age and size drive the adoption of management accounting. The professional characteristics of the entrepreneur such as work experience, formal education in the field of management and accounting as well as the personal traits such as willingness to grow, self-efficacy, planning affiliation leads to a faster adoption of management accounting. Environmental factors such as competition and environmental uncertainty force a company to reduce uncertainty to a certain extent. External pressure from financiers and venture capitalists has shown to drive management accounting adoption as well as the "import in effect" of skilled executives, i.e. CFO or professional accountants. The presence of these financial and human capital resources are important prerequisites when adopting management accounting.

Further, the review revealed that startups and small firms that adopt suitable management accounting practices generally benefit from the adoption. They experience better business performance in terms of growth and profitability in the long term. This finding is equivalent that not adopting management accounting was found to increase the likelihood of venture disbanding.

Our study contributes to the research of management accounting in young and small firms. It helps to assess the decision making of whether a startup should or should not implement MAS and to understand and reduce startup failure as consequence of not adopting management accounting.

The review contains some limitations that need to be considered. Contrary to the suggestion of Briner and Denyer (2012), we did not look into "grey literature" but only focussed on journals with the best reputation. Also, we only considered empirical studies. Other theoretical papers, case studies or exploratory studies as well as other well ranked journals might have broadened the scope and give more insights. In these limitations lies the avenue for further research.

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