

# Performance measurement systems in small and medium-sized enterprises and family firms: a systematic literature review

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**Abstract** In view of the increasing sophistication of small and medium-sized enterprises (SMEs) and their importance for global economies, the purpose of this paper is to provide comprehensive insight into the research on performance measurement systems (PMSs) in SMEs. Thus, a systematic literature review was conducted covering 98 top-tier journals in the areas of management accounting, SMEs, and general management, to structure the existing knowledge. The review of these journals comprises 34 studies that deal with PMSs in SMEs. The paper provides a comprehensive summary of empirical research of use, development and design, influencing factors, and consequences of PMSs in SMEs. In addition, it delineates the particular aspects of family firms. It considers research locations, theories, and methods applied, as well as research settings, and illustrates their changes over time. PMS research in SMEs is still scarce. The review shows that most research has been conducted in Europe and Australia, followed by North America. The majority of papers use the case/field study method. Multiple studies that describe their theoretical roots are informed by contingency theory, organization theory, or psychological/cultural theory. An assessment of the investigated topics illustrates the particularities of PMSs in SMEs, especially in family-controlled firms. Multiple studies highlight the importance of family influence, or continuous revision and knowledge exchange for sophisticated control systems, like PMSs. A lot of papers indicate that SMEs, including family firms, may benefit from the use of sophisticated control systems.

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**JEL Classification** M40 · M41

## 1 Introduction

Small and medium-sized enterprises (SMEs) contribute significantly to the development of global economies (Cromie et al. 1995; Vachani 2005; Jiang and Li 2010; Cosenz and Noto 2015). Despite their importance, about 15 years ago the management accounting research on SMEs was described as very limited (Mitchell and Reid 2000; Chenhall 2003). Since then, research in the area of SMEs has increased. However, there is no coherent research body, and the research findings are fragmented (Lavia López and Hiebl 2015). Lavia López and Hiebl (2015) see the main reason for this in the dispersal of research findings among various research fields, such as accounting or small business and entrepreneurship. Scanning the existing literature reveals that only a few literature reviews try to summarize and map existing knowledge of SME research (e.g. Garengo et al. 2005; Lavia López and Hiebl 2015). While Lavia López and Hiebl (2015) consider management accounting in SMEs in general, Garengo et al. (2005) discuss characteristics of various PMS models with reference to SMEs. In order to gain a better understanding of the effective implementation and use of PMSs in SMEs, a comprehensive summary of the PMS research could contribute to the development of this research stream. However, such an overview of PMS research in SMEs is still missing.

In the past decade, an increasing professionalization of SMEs has been observed. In their review, Garengo et al. (2005) summarize the literature on PMSs in SMEs and focus on the specific characteristics of PMSs in SMEs and their influencing factors. They identify four main factors that boost the implementation and use of PMSs in SMEs. Besides the need for growth in a competitive environment, Garengo et al. (2005) discuss the notable progress in information technology, the increased importance of quality (such as the introduction of norms and standards), and the focus on continuous improvement to reach the strategic objectives that support the implementation and use of PMSs in SMEs. Moreover, increasing internationalization is observed within SMEs (Vachani 2005). There is a broad consensus in the literature that if SMEs grow in size, the necessity of implementing a comprehensive measurement system arises (O’Gorman and Doran 1999; Perera and Baker 2007). However, it is not only increasing complexity in the internal and external environment which leads to professionalized management and control, but also other important factors, such as ownership structure (e.g. Filbeck and Lee 2000; Speckbacher and Wentges 2012; Hiebl et al. 2013). But it is questionable whether the increasing professionalization is reflected in formal control systems with characteristics comparable to those in large firms.

SMEs differ significantly from large firms in a number of ways. Academic literature sees one of the main distinctions of large firms in the environment in which SMEs operate (Garengo et al. 2005). They have to deal with greater external uncertainty

and are distinct from large firms in terms of innovation and continuous improvement (Hudson et al. 2001; Garengo et al. 2005). Often, SMEs operate in more limited markets with a small number of customers (Hudson et al. 2001). Previous research has noted SMEs' flat structures, high flexibility, and innovative potential, which allow them to react quickly to changes in market demands (Hudson et al. 2001; Tambunan 2005). Moreover, SMEs have to deal with limited resources, especially in terms of time, capital, and skills, to manage their day-to-day operations and to implement strategic decisions (Vachani 2005; Lohrke et al. 2006).

The question arises whether the particularities of SMEs affect the design and use of PMSs. Therefore, the systematic literature review focuses on empirical research on PMSs implemented in SMEs, and answers the following research questions in detail:

1. What makes SMEs special with regard to PMSs?
2. What are the specifics of PMSs in SMEs?
3. What implications can be drawn from SME specifics of PMS for general PMS research?

The aim of this paper is to provide a comprehensive picture of the current state of research on the topic, paying particular attention to the specifics of PMSs in SMEs and the particularities of SMEs influencing PMS. For the purpose of this systematic literature review, the PMS is understood as a set of metrics that quantify information about efficiency and effectiveness of actions to provide an overview of the organizational performance (Neely et al. 1995; Henri 2006b). This definition is broad enough to cover PMS, which may serve different functions (e.g. decision facilitating, decision influencing) and allows the inclusion of PMS research in its variations. Therefore, a systematic literature review is conducted following the process proposed by Tranfield et al. (2003). The paper summarizes the topics investigated and compares research methods and the applied theories. Moreover, the study shows how these characteristics have changed over time. The article reviews the top management accounting journals, journals of general management, and SME journals, and attempts to provide some guidance for future research.

The literature highlights the potential of PMSs in supporting SMEs in their management of the increasing complexity that faces them. This literature review focuses on PMSs and thereby extends previous literature reviews. Existing reviews focus on management accounting in general (Lavia López and Hiebl 2015) or concentrate on accounting in family firms (Salvato and Moores 2010; Songini et al. 2013; Senftlechner and Hiebl 2015; Prencipe et al. 2014). The literature review from Garengo et al. (2005) compares PMS models regarding their suitability for SMEs from a general management perspective. This paper focuses on empirical research. Moreover, it embeds family research of PMSs in SME research and takes into account the importance of family involvement. So, the main contribution of this systematic literature review is structuring the fragmented research of PMSs in SMEs. The paper contributes to a comprehensive understanding of the specifics of PMSs in SMEs and answers the question of why performance measurement may be different in SMEs. It shows that specifics of SMEs, like resource limitations or firm size may be reasons for a lower usage of PMSs in comparison to large firms. Moreover, research findings demonstrate that SMEs are not a homogenous group with regard to PMSs. The adaption of PMSs

in SMEs seems rather to be influenced by the education level of the top management, but also by the social environment of firms, like the knowledge exchange with other users, or discussions with consultants. The systematic literature review illustrates that SMEs not only use PMSs to a lower extent than large firms, but also that the usage within SMEs is different. Family influence is an important impact factor for the usage of sophisticated management control systems. Keeping in mind the limited resources of SMEs, the paper may give practitioners advice for effective implementation and use of the PMS. The results show much evidence that PMSs are beneficial for SMEs, even for family firms.

The remainder of the paper is structured as follows. The next section describes the research design by explaining the research framework and the criteria for selection. The results of the review are presented in Sect. 3. In Sect. 4 an excursus is provided about research on SMEs and performance measurement from local scholarly communities on the example in German-speaking countries. A discussion of the results and suggestions for future research conclude the paper in Sect. 5.

## 2 Research design

A systematic literature review is a key tool to manage the diversity of knowledge in a specific research field by assessing and mapping the existing results to identify gaps and provide guidance for further research (Tranfield et al. 2003). Tranfield et al. (2003) suggest various process phases within a three-stage process of a systematic review (planning the review, conducting the review, reporting/disseminating) to provide a replicable and transparent technology. The five process phases for conducting this review (Tranfield et al.'s Stage II) are described in the following sections.

### 2.1 Journal selection and identification of studies

The review was restricted to studies published in academic journals in order to identify relevant research. Top-tier journals have an important influence in the research field and represent validated knowledge (Podsakoff et al. 2005). The journal selection for this systematic literature review was based on the *Academic Journal Quality Guide 2015 Version 1* (ABS Guide) from the Association of Business Schools (ABS). The ABS is an association of leading business schools and higher education providers in the UK. The ABS rates academic journals in the field of business and management through both significant peer reviews and citation impact factors and provides a quality assessment of the empirical and theoretical research (Harvey et al. 2010; Harzing 2015). It covers a total of 1401 journals. The ABS Guide was chosen for the journal selection of this systematic literature review because it represents a comprehensive list of top-tier journals in the fields of management accounting, SMEs, and general management. This review is limited to all journals with a grade four, grade three, or grade two rating in the sections “Accountancy”, “Entrepreneurship and Small Business Management”, and “General Management, Ethics and Social Responsibility” of the ABS Guide. The combination of these three sections comprises 98 top-tier journals. Table 1 presents an overview of the included journals in the systematic literature review.

**Table 1** Selected journals for the systematic literature review

Section: accounting	
Abacus	Abacus
Accounting and Business Research	ABR
Accounting and Finance	AAF
Accounting and the Public Interest	API
Accounting Forum	AF
Accounting Horizons	AH
Accounting in Europe	AE
Accounting Research Journal	ARJ
Accounting, Auditing and Accountability Journal	AAAJ
Advances in Accounting Behavioral Research	AABR
Advances in Accounting, incorporating Advances in International Accounting	AA
Advances in Management Accounting	AMA
Advances in Taxation	AT
Accounting, Organizations and Society	AOS
Asian Review of Accounting	ARA
Asia-Pacific Journal of Accounting and Economics	APJAE
Auditing: A Journal of Practice and Theory	AJPT
Australian Accounting Review	AAR
Behavioral Research in Accounting	BRIA
British Accounting Review	BAR
British Tax Review	BTR
Contemporary Accounting Research	CAR
Critical Perspectives on Accounting	CPA
Current Issues in Auditing	CIA
European Accounting Review	EAR
Financial Accountability and Management	FAM
Foundations and Trends in Accounting	FTA
The International Journal of Accounting	IJA
International Journal of Accounting and Information Management	IJAIM
International Journal of Accounting Auditing and Performance Evaluation	IJAPE
International Journal of Accounting Information Systems	IJAIS
International Journal of Auditing	IJAU
International Journal of Disclosure and Governance	IJDG
Journal of Accounting and Economics	JAE
Journal of Accounting and Organizational Change	JAOC
Journal of Accounting and Public Policy	JAPP
Journal of Accounting in Emerging Economies	JAEE
Journal of Accounting Literature	JAL
Journal of Accounting Research	JAR
Journal of Accounting, Auditing and Finance	JAAF

**Table 1** continued

Section: accounting	
Journal of Applied Accounting Research	JAAR
Journal of Business Finance and Accounting	JBFA
Journal of Contemporary Accounting and Economics	JCAE
Journal of International Accounting Auditing and Taxation	JIAAT
Journal of International Accounting Research	JJAR
Journal of International Financial Management and Accounting	JIFMA
Journal of Management Accounting Research	JMAR
Journal of Public Budgeting, Accounting and Financial Management	JPBAFM
Journal of the American Taxation Association	JATA
Management Accounting Research	MAR
Managerial Auditing Journal	MAJ
Qualitative Research in Accounting and Management	GRAM
Research in Accounting Regulation	RAR
Review of Accounting Studies	RAS
Sustainability Accounting, Management and Policy Journal	SAMPJ
The Accounting Review	TAR
Section: entrepreneurship and small business management	
Entrepreneurship and Regional Development	ERD
Entrepreneurship Theory and Practice	ETP
Family Business Review	FBR
International Journal of Entrepreneurship and Innovation	IJEI
International Journal of Entrepreneurial Behaviour and Research	IJEBR
International Small Business Journal	ISBJ
Journal of Business Venturing	JBV
Journal of Family Business Strategy	JFBS
Journal of Small Business and Enterprise Development	JSBED
Section: general management, ethics, and social responsibility	
Journal of Small Business Management	JSBM
Small Business Economics	SBE
Strategic Entrepreneurship Journal	SEJ
Venture Capital: An International Journal of Entrepreneurial Finance	VC
Academy of Management Journal	AMJ
Academy of Management Perspectives	AMP
Academy of Management Review	AMR
Administrative Science Quarterly	ASQ
Business and Society	BS
Business Ethics Quarterly	BEQ
Business Ethics: A European Review	BE

**Table 1** continued

Section: general management, ethics, and social responsibility

Business Horizons	BH
British Journal of Management	BJM
California Management Review	CMR
Canadian Journal of Administrative Science	CJAS
Competition and Change	CC
European Business Review	EBR
European Management Journal	EMJ
European Management Review	EMR
Harvard Business Review	HBR
International Journal of Management Reviews	IJMR
International Studies of Management and Organizations	ISMO
Journal of Business Ethics	JBE
Journal of Business Research	JBR
Journal of General Management	JGM
Journal of Intellectual Capital	JIC
Journal of Management	JM
Journal of Management Inquiry	JMI
Journal of Management Studies	JMS
Journal of Revenue and Pricing Management	JRPM
Management Decision	MD
MIT Sloan Management review	MIT
Scandinavian Journal of Management	SJM

The table reports the selected journals for the key word search of the systematic literature review. The selection includes all journals with a grade four, grade three, or grade two rating in the sections “accountancy,” “entrepreneurship and small business management,” and “general management, ethics and social responsibility” of the Academic Journal Quality Guide 2015 Version 1 (ABS Guide)

The keywords “performance measurement\*”, “performance management\*”, “financial management technique\*”, and “balanced scorecard” were combined with the key words “small and medium-sized enterprise”, “family firms”, “family\*”, and “SME\*”. The search string were used to search the titles and abstracts of the papers in the selected journals for a period of time up to 2015. Therefore, the databases Business Source Complete and Web of Science were used.<sup>1</sup> This phase returned 283 studies published in 51 journals. The quality of the selected studies was considered implicit by restricting the search process to top-tier journals. Relying on the quality ranking of a particular journal for the assessment of the quality of studies is quite common in management research (Tranfield et al. 2003). In accordance with the developed review protocol, all studies with firms in their sample outside the definition of small

<sup>1</sup> Journals that are not contained in the database were screened with the same keywords and time period in Google Scholar or on the website of the journal.

and medium<sup>2</sup> were eliminated. The key words “performance measurement\*”, “performance management\*”, “financial management technique\*”, and “balanced scorecard” were also used to search the cited references of the selected papers.<sup>3</sup> The final data set is comprised of 34 studies published in 20 journals, three of these studies having been published in a special issue.<sup>4</sup>

Table 2 provides a summary of the journal distribution of the papers over time. The last decade of the considered time period reflects an increasing interest in PMSs in SMEs compared with the time period before. It can be observed that most of the studies (38.2%) in the research field were published between 2007 and 2011. A share of 41.2% of the studies were published before 2007, and 58.8% were published between 2007 and 2015.

## 2.2 Classification framework

To assess and evaluate the knowledge in a certain research field, an analytical review scheme is necessary (Ginsberg and Venkatraman 1985; Hutzschenreuter and Kleindienst 2006). Therefore, a classification framework was developed in order to provide a transparent process for the assessment. For a descriptive analysis, all studies are classified according to the research location, research setting, applied theory, and method used. Regarding the research location, all countries are listed individually. Following Massaro et al. (2016), tabulated findings are presented in the thematical analysis in order to develop insights in the research field.

For the categorization of the research setting, a slightly adapted version of the classification of Scapens and Bromwich (2001) is used. They code studies according to the following research settings: generic, manufacturing, specific industries, services, and the public sector. They categorize all studies with a general, abstract, or simplified setting in the generic sector. Research settings like telecommunications, mining, or coal are coded in specific industries. The service sector includes services like health-care, financial services, education, and retailing. In this review, a combination of the categories manufacturing and services is applied.

<sup>2</sup> There is no clear definition in the literature of what we understand by SMEs. Common criteria to distinguish SMEs from large firms are the number of employees and/or sales. In this review, the classification of Footnote 2 continued

the sample according to firm size is based on Günther and Gäbler (2014). Firms are defined as small firms if they have fewer than 100 employees or sales of less than 50 million USD. Medium firms have between 100 and 1000 employees or sales between 50 million USD and 1000 million USD. If neither employees nor sales are specified but the authors of the studies describe the sample as small and/or medium-sized, the study is included in the review.

<sup>3</sup> The search within the cited references of the selected papers resulted in two additional papers (Andrews et al. 2001; Sandhu et al. 2008). The paper from Andrews et al. 2001 is published in the journal *Interfaces* (Rating 2, Section Operations Research and Management Science of the ABS Guide).

<sup>4</sup> The paper from Liu et al. (2014) is published in the Special Issue: In memory of Dr. Lee J Yao 1958–2012: Performance and market anomalies of the *International Journal of Accounting and Information Management*, Hiebl et al. (2013) is published in the Special Issue: Management accounting and control: Routine and change of the *Journal of Accounting and Organizational Change*, and Naro and Travaillé (2011) is published in the Special Issue Accounting and management control of the *Journal of Applied Accounting Research*.



**Table 2** Number of papers by journal and time period

	Number of papers in time periods					Total
	-1996	1997–2001	2002–2006	2007–2011	2012–2015	
AAAJ	0	0	0	0	1	1
AAR	0	0	0	1	0	1
AOS	1	0	2	2	1	6
BAR	0	0	1	0	0	1
BRIA	0	0	0	0	1	1
CAR	0	0	0	1	0	1
CPA	0	0	0	0	1	1
FAM	0	0	0	1	0	1
FBR	0	2	1	1	0	4
I	0	1	0	0	0	1
IJAIM	0	0	0	0	1	1
ISBJ	0	0	1	0	0	1
JAOC	0	0	0	0	1	1
JAAR	0	0	0	1	0	1
JFBS	0	0	0	1	0	1
JMAR	0	0	1	0	0	1
JSBM	0	0	1	1	0	2
MAR	0	1	1	2	1	5
MAJ	0	0	0	1	0	1
SBE	0	0	1	1	0	2
Total	1	4	9	13	7	34

This table shows the number of papers by journal and time period. Three of these papers were published in special issues on the topic (Naro and Travaillé 2011; Hiebl et al. 2013; Liu et al. 2014). Abbreviation of journals: Accounting, Auditing and Accountability Journal (AAAJ), Australian Accounting Review (AAR), Accounting, Organizations and Society (AOS), The British Accounting Review (BAR), Behavioral Research in Accounting (BRIA), Contemporary Accounting Research (CAR), Critical Perspectives on Accounting (CPA), Financial Accountability and Management (FAM), Family Business Review (FBR), Interfaces (I), International Journal of Accounting and Information Management (IJAIM), International Small Business Journal (ISBJ), Journal of Accounting and Organizational Change (JAOC), Journal of Applied Accounting Research (JAAR), Journal of Family Business Strategy (JFBS), Journal of Management Accounting Research (JMAR), Journal of Small Business Management (JSBM), Management Accounting Research (MAR), Managerial Auditing Journal (MAJ), Small Business Economics (SBE)

The theories used in the studies are also classified according to the scheme of Scapens and Bromwich (2001). Their classification scheme reflects theories used in the research studies that were published in the first decade in the journal *Management Accounting Research*, and comprises a broad range of theories. The scheme includes the following theories: economics, institutional theory, social theory, contingency theory, organization theory, management control theory, psychology and behavioral science/cultural theories, operations management, strategic management, and the categories “applied” and “various”. The category “applied” is used for studies that do not name or use an explicit theoretical framework or that use an inductive

proceeding. The category “various” includes all coded studies that use theories other than those named in the scheme or more than one theory.

The research method of the studies is classified based on a scheme from Shields (1997). In the scheme, he distinguishes between laboratory experimentation and behavioral simulation, among others. To customize the scheme for the purpose of this review, both categories were summarized to experimentation. Studies with this method were included in the review only if the level of investigation was the organization (SME). The classification scheme comprises the following methods: analytic, survey, archival, experimentation, literature review, case/field study, and multiple research methods.

## 3 Results

### 3.1 Descriptive analysis

Table 3 reports a summary of the research location of the studies included in the review. The research location specifies the geographical region of data collection. A dominance of European research (32.4%)<sup>5</sup> and Australian research (23.5%) within the selected studies can be observed. Australian research demonstrates leadership, as 50% of the located Australian studies were published up to 2006, whereas 72.7% of the located European studies were published after 2006. Selected studies with samples located in North America (17.6%) were published between 1997 and 2011. Recently, PMS research in SMEs seems to have gained some importance in Asia. Between 2002 and 2015, more than 11.8% of the selected papers have investigated samples located in Asia (Korea, Singapore, and Taiwan). No study so far has been published with research in Latin America. To date, international studies, which use data from more than one country, are rare. But encouragingly with regard to international discussions in the research field, two papers with an international sample were published in 2012 and 2013.

Table 4 summarizes the classification of the studies according to their research setting. More than 52.9% of the studies use a sample focusing on the manufacturing industry. About 17.6% of the papers restrict their sample to the service sector, and 23.5% of the studies comprise samples focusing on the manufacturing industry and services.

Table 5 reports the spread of theories used over time in the studies analyzed. More than 23% of the studies analyzed use various theories, such as resource-based theory, theories of trust, media richness concept, knowledge creation theory, actor network theory, or a combination of theories. So, some studies combine economic and organizational theory, stewardship with principal-agent and teleological theory, or the contingency approach and resource-based view. The contingency theory is adopted in 11.8% of the papers. The majority of the studies (38.2%) are classified in the category “applied”. These studies use an inductive proceeding, or neither name an underlying theory nor use a theoretical framework for their investigation. However, these papers are distributed almost equally over the journals (Table 6) and use mostly

<sup>5</sup> European-based research comprises 11 studies of the selected 34 studies, including one international study with a sample located in Austria and Germany.

**Table 3** Number of papers by research location and time period

	Number of papers in time periods					Total
	-1996	1997-2001	2002-2006	2007-2011	2012-2015	
Australia	1	1	2	4	0	8
Austria	0	0	0	0	1	1
Canada	0	0	2	0	0	2
Egypt	0	0	0	1	0	1
Greek	0	0	0	0	1	1
France	0	0	0	1	0	1
Italy	0	0	0	1	1	2
Korea	0	0	0	1	0	1
Netherlands	0	0	0	0	1	1
Singapore	0	0	0	1	1	2
Spain	0	0	1	0	0	1
Sweden	0	0	0	1	0	1
Taiwan	0	0	1	0	0	1
UK	0	1	1	0	0	2
USA	0	1	2	1	0	4
international	0	0	0	0	2	2
not reported	0	1	0	2	0	3
Total	1	4	9	13	7	34

The table shows the number of papers by research location and time period. The category “international” comprises samples located in Great Britain and Sri Lanka as well as in Austria and Germany

**Table 4** Number of papers by research setting and time period

Industry	Number of papers in time periods					Total
	-1996	1997-2001	2002-2006	2007-2011	2012-2015	
Manufacturing + service	0	2	1	3	2	8
Manufacturing	1	1	6	6	4	18
Services	0	1	2	3	0	6
Specific industries	0	0	0	0	0	0
Public sector	0	0	0	1	1	2
Generic	0	0	0	0	0	0
n.a.	0	0	0	0	0	0
Total	1	4	9	13	7	34

The table shows the number of papers by research setting and time period. The category “generic” comprises studies with a general, abstract, or simplified setting. The category “specific industries” comprises research settings like telecommunication, mining, or coal

**Table 5** Number of papers by theoretical approach and time period

Theoretical approach	Number of papers in time period					Total
	-1996	1997–2001	2002–2006	2007–2011	2012–2015	
Applied	0	3	3	5	2	13
Economics	0	0	1	0	1	2
Institutional theory	0	0	0	0	0	0
Social theory	0	0	0	0	0	0
Contingency theory	1	0	0	2	1	4
Organization theory	0	1	1	1	0	3
Management control theory	0	0	0	1	0	1
Psychological/cultural theory	0	0	0	2	1	3
Operations management	0	0	0	0	0	0
Strategic management	0	0	0	0	0	0
Various	0	0	3	3	2	8
Total	1	4	9	13	7	34

The table shows the number of papers by theoretical approach and time period. The category “applied” comprises studies that do not name or use an explicit theoretical framework or that use an inductive proceeding. The category “various” comprises all studies that use theories other than those named in the table, or use more than one theory. It contains studies driven by media richness theory, knowledge creation theory, resource-based theory, theories of trust, actor network theory, or a combination of theories, such as economic and organizational theory, stewardship with principal-agent and teleological theory, or contingency approach and resource-based view

a case/field study (Table 7). Table 7 provides a summary of the number of papers by research theory and method. Studies driven by contingency theory use the survey method, a case/field study, or multiple research methods, and are published in journals like *Accounting, Organizations and Society (AOS)*, *International Journal of Accounting and Information Management (IJAIM)*, and *Management Accounting Research (MAR)* (Table 6). Studies using psychological/cultural theory are found in *Behavioral Research in Accounting (BRIA)*, *Management Accounting Research (MAR)*, and *Journal of Small Business Management (JSBM)* (Table 6), and apply the survey method or a case/field study (Table 7). Moreover, Table 6 shows that studies that use organization theory were only found in one of the SME-journals (*Family Business Review*). These studies use the case-study method or a combination of the survey method and interviews (Table 7). In the journals *Critical Perspectives on Accounting (CPA)* and *The British Accounting Review (BAR)*, studies are informed by economics theory (Table 6). These studies use case/field studies for their investigation (Table 7). This research method is also used in combination with management theory for investigation (Table 7), and is published in the *Journal of Applied Accounting Research (JAAR)* (Table 6). None of the studies included in the systematic literature review use institutional theory, social theory, operations management, or strategic management, which are contained in the classification scheme (Table 5).

Table 8 reports a summary of the methods used over time. To investigate PMSs in SMEs, the studies seem to use a limited range of research methods. Diverse calls for more research using case/field studies (e.g. Shield 1997; Scapens and Bromwich

**Table 6** Number of papers by journal and theory applied

Journal	Theories applied							Total
	Applied	Economics	Contingency theory	Organization theory	Management theory	Psychological/cultural theory	Various	
AAAJ	1	0	0	0	0	0	0	1
AAR	0	0	0	0	0	0	1	1
AOS	2	0	2	0	0	0	2	6
BAR	0	1	0	0	0	0	0	1
BRIA	0	0	0	0	0	1	0	1
CAR	1	0	0	0	0	0	0	1
CPA	0	1	0	0	0	0	0	1
FAM	1	0	0	0	0	0	0	1
I	1	0	0	0	0	0	0	1
IJAIM	0	0	1	0	0	0	0	1
JAOC	0	0	0	0	0	0	1	1
JAAR	0	0	0	0	1	0	0	1
JMAR	0	0	0	0	0	0	1	1
MAR	2	0	1	0	0	1	1	5
MAJ	1	0	0	0	0	0	0	1
								24
FBR	1	0	0	3	0	0	0	4
ISBJ	0	0	0	0	0	0	1	1
JFBS	1	0	0	0	0	0	0	1
JSBM	1	0	0	0	0	1	0	2
SBE	1	0	0	0	0	0	1	2
								10
Total	13	2	4	3	1	3	8	34

The table shows the number of papers by journal and theory. The theories of institutional theory, social theory, operations management, and strategic management were not applied by the studies included in the systematic literature review. Thus, these theories are not included in the table. The category “applied” comprises studies that do not name or use an explicit theoretical framework or that use an inductive proceeding. The category “various” comprises all studies that use theories other than those named in the table, or use more than one theory. It contains studies driven by media richness theory, knowledge creation theory, resource-based theory, theory of trust, actor network theory, or a combination of theories, such as economic and organizational theory, stewardship with principal-agent and teleological theory, or contingency approach and resource-based view. Abbreviation of journals: Accounting, Auditing and Accountability Journal (AAAJ), Australian Accounting Review (AAR), Accounting, Organizations and Society (AOS), The British Accounting Review (BAR), Behavioral Research in Accounting (BRIA), Contemporary Accounting Research (CAR), Critical Perspectives on Accounting (CPA), Financial Accountability and Management (FAM), Family Business Review (FBR), Interfaces (I), International Journal of Accounting and Information Management (IJAIM), International Small Business Journal (ISBJ), Journal of Accounting and Organizational Change (JAOC), Journal of Applied Accounting Research (JAAR), Journal of Family Business Strategy (JFBS), Journal of Management Accounting Research (JMAR), Journal of Small Business Management (JSBM), Management Accounting Research (MAR), Managerial Auditing Journal (MAJ), Small Business Economics (SBE)

**Table 7** Number of papers by theoretical approach and research method

Theoretical approach	Research method							Total
	Analytic	Survey	Archival	Experimentation	Literature review	Case/field study	Multiple research methods	
Applied	0	3	0	0	0	9	1	13
Economics	0	0	0	0	0	2	0	2
Institutional theory	0	0	0	0	0	0	0	0
Social theory	0	0	0	0	0	0	0	0
Contingency theory	0	2	0	0	0	1	1	4
Organization theory	0	0	0	0	0	2	1	3
Management control theory	0	0	0	0	0	1	0	1
Psychological/cultural theory	0	2	0	0	0	1	0	3
Operations management	0	0	0	0	0	0	0	0
Strategic management	0	0	0	0	0	0	0	0
Various	0	6	0	0	0	2	0	8
Total	0	13	0	0	0	18	3	34

The table shows the number of papers by theoretical approach and research method. The category “applied” comprises studies that do not name or use an explicit theoretical framework or that use an inductive proceeding. The category “various” comprises all studies that use theories other than those named in the table, or use more than one theory. It contains studies driven by media richness theory, knowledge creation theory, resource-based theory, theory of trust, actor network theory, or a combination of theories, such as economic and organizational theory, stewardship with principal-agent and teleological theory, or contingency approach and resource-based view. The category “multiple research methods” contains studies that combine interview and survey methods or a case study with archival data and a survey method

2001) seem to have had some influence on the research field. The most frequently used method in the papers over the whole period is the case/field study (52.9%). Another frequently used research method is the survey, which is used by 38.2% of the studies. In addition to case/field studies and surveys, sometimes a combination of research methods is used (8.8%). If multiple research methods are applied, the following methods are combined: interview and survey methods, or case/field study with archival and survey methods.

With regard to the journals, case/field studies are found in almost all journals publishing studies in the research field. The survey methods are found in the following journals: *Accounting, Organizations and Society (AOS)*, *Behavioral Research in Accounting (BRIA)*, *International Journal of Accounting and Information*

**Table 8** Number of papers by research method and time period

Research method	Number of papers in time period					Total
	–1996	1997–2001	2002–2006	2007–2011	2012–2015	
Analytic	0	0	0	0	0	0
Survey	0	1	4	4	4	13
Archival	0	0	0	0	0	0
Experimentation	0	0	0	0	0	0
Literature review	0	0	0	0	0	0
Case/field study	1	2	5	7	3	18
Multiple research methods	0	1	0	2	0	3
Total	1	4	9	13	7	34

The table shows the number of papers by research method and time period. The category “multiple research methods” contains studies that combine interview and survey methods or a case study with archival data and a survey method

*Management (IJAIM), Journal of Accounting and Organizational Change (JAOC), Management Accounting Research (MAR), Managerial Auditing Journal (MAJ), Family Business Review (FBR), International Small Business Journal (ISBJ), and Small Business Economics (SBE) (Table 9).*

### 3.2 Thematic analysis

An analysis of the selected empirical studies reveals five key themes analyzed over time (see Table 10). Studies that investigate family firms are clustered in Table 10 in “PMSs in family firms”, as well as in the key themes (use, development and design, influencing factors, consequences) according to the context(s) of the respective study. Given the importance of family firms, these studies are summarized separately in the literature review in Sect. 3.2.1, *PMSs in family firms*. In order to give a consistent overview of the researched key themes, the main findings of these studies are incorporated into Tables 11, 12, 13 and 14. Moreover, following the recommendation of Helfat (2007), all studies included in the review are reported in the timeline with their main findings in “Appendix A”.

#### 3.2.1 PMSs in family firms

As Table 10 shows, 10 out of the 34 studies included in the systematic literature review consider PMSs in family firms. Research suggests that even small to medium-sized family firms may benefit from the implementation and use of a PMS (Craig and Moores 2005; Gumbus and Lussier 2006; Craig and Moores 2010). Craig and Moores (2005) develop and introduce the BSC in a service company and show how the family business benefits from this concept by adding a family business focus to each perspective. Gumbus and Lussier (2006) conclude that the BSC contributes to continuous improvement and growth of the business. They investigate the use of the BSC in two case studies

**Table 9** Number of papers by journal and research method

Journal	Analytic	Survey	Archival	Experimentation	Literature review	Case/field study	Multiple research methods	Total
AAAJ	0	0	0	0	0	1	0	1
AAR	0	0	0	0	0	1	0	1
AOS	0	3	0	0	0	2	1	6
BAR	0	0	0	0	0	1	0	1
BRIA	0	1	0	0	0	0	0	1
CAR	0	0	0	0	0	1	0	1
CPA	0	0	0	0	0	1	0	1
FAM	0	0	0	0	0	1	0	1
I	0	0	0	0	0	1	0	1
IJAIM	0	1	0	0	0	0	0	1
JAOC	0	1	0	0	0	0	0	1
JAAR	0	0	0	0	0	1	0	1
JMAR	0	0	0	0	0	1	0	1
MAR	0	2	0	0	0	2	1	5
MAJ	0	1	0	0	0	0	0	1
								24
FBR	0	1	0	0	0	2	1	4
ISBJ	0	1	0	0	0	0	0	1
JFBS	0	0	0	0	0	1	0	1
JSBM	0	0	0	0	0	2	0	2
SBE	0	2	0	0	0	0	0	2
								10
Total	0	13	0	0	0	18	3	34

The table shows the number of papers by journal and research method. The category “multiple research methods” contains studies that combine interview and survey methods or a case study with archival data and a survey method. Abbreviation of journals: Accounting, Auditing and Accountability Journal (AAAJ), Australian Accounting Review (AAR), Accounting, Organizations and Society (AOS), The British Accounting Review (BAR), Behavioral Research in Accounting (BRIA), Contemporary Accounting Research (CAR), Critical Perspectives on Accounting (CPA), Financial Accountability and Management (FAM), Family Business Review (FBR), Interfaces (I), International Journal of Accounting and Information Management (IJAIM), International Small Business Journal (ISBJ), Journal of Accounting and Organizational Change (JAOC), Journal of Applied Accounting Research (JAAR), Journal of Family Business Strategy (JFBS), Journal of Management Accounting Research (JMAR), Journal of Small Business Management (JSBM), Management Accounting Research (MAR), Managerial Auditing Journal (MAJ), Small Business Economics (SBE)

and conclude that the concept of the BSC should be adapted for each company. The development process should be a team-based and continuous process. They illustrate that the BSC fosters thinking about critical success factors and their measures. In a later case study, Craig and Moores (2010) confirm that the BSC is a useful tool for linking the family with the business. It facilitates communication among family



**Table 10** Key themes of the selected papers

Key themes	Selected papers	Total
Use of PMSs	Greenhalgh (2000), Azofra et al. (2003), Chen and Huang (2004), Henri (2006a), Henri (2006b), Grafton et al. (2010), Naro and Travaillé (2011) and Liu et al. (2014)	8
Development and design of PMSs	Abernethy and Lillis (1995), Azofra et al. (2003), Craig and Moores (2005), Henri (2006a), Gumbus and Lussier (2006), Ismail (2007), Wouters and Wilderom (2008), Sandhu et al. (2008), Aidemark and Funck (2009), Martin et al. (2009), Craig and Moores (2010), Grafton et al. (2010), Wouters and Roijmans (2011), Speckbacher and Wentges (2012), Giovannoni and Maraghini (2013), Chenhall et al. (2013) and Kruis and Widener (2014)	17
Influencing factors on PMSs	Filbeck and Lee (2000), Moores and Mula (2000), Ghobadian and O'Regan (2006), Ismail (2007), Lamminmaki (2008), Lee et al. (2009), Speckbacher and Wentges (2012), Hiebl et al. (2013) and Stergiou et al. (2013)	9
PMSs and their consequences	Andrews et al. (2001), Azofra et al. (2003), Chenhall and Langfield-Smith (2003), Davis and Albright (2004), Gumbus and Lussier (2006), Grafton et al. (2010), Craig and Moores (2010), Hall (2011), Naro and Travaillé (2011), Giovannoni et al. (2011) and Liu et al. (2014)	11
PMSs in family firms	Filbeck and Lee (2000), Moores and Mula (2000), Craig and Moores (2005), Gumbus and Lussier (2006), Craig and Moores (2010), Giovannoni et al. (2011), Speckbacher and Wentges (2012), Giovannoni and Maraghini (2013), Stergiou et al. (2013) and Hiebl et al. (2013)	10

The table reports the papers that support the identified key themes of investigation

members, as well as, their education in terms of developing interest for the business. The study suggests that recognizing stakeholders' visions is critical for a beneficial BSC. Moreover, the BSC is able to reinforce the process of strategy formulation and implementation. Giovannoni and Maraghini (2013) look at the development process for an integrated PMS that reflects the firm's strategy in a comprehensive manner. Unquestionably, the development process is challenging as different organizational actors and their perceptions should be aligned according to the strategy. They found that the integrating mechanism helps to solve critical issues during the implementation process. These integrating mechanisms, like knowledge exchange or social interaction, may help to complete or to improve the integrated PMS. In structural conditions (internal as well as external) and the strategies of agents, Stergiou et al. (2013) found important factors that induce changes in performance measurement.

Nevertheless, the results highlight that the involvement of family members deserves particular attention with respect to the use of formalized control systems. Filbeck and Lee (2000) look more closely at financial management techniques in family firms, and

**Table 11** Main findings to the use of the PMS

Main findings	Supporting studies
<b>Interactive use</b>	
For attention focusing, strategic decision-making in firms with flexible culture	Henri (2006a)
Support organizational capabilities	Henri (2006b)
Focus on the search for new strategic capabilities	Grafton et al. (2010)
Only in the implementation stage	Naro and Travallé (2011)
<b>Diagnostic use</b>	
Negative influence on organizational capabilities	Henri (2006b)
Focus on current strategic capabilities	Grafton et al. (2010)
<b>Alternative natures of use</b>	
To support transnational activities	Greenhalgh (2000)
Controlling of behavior and organization	Azofra et al. (2003)
To support marketing activities	Chen and Huang (2004)
Legitimization in firms with flexible culture	Henri (2006a)
<b>Factors fostering usage</b>	
Cost leadership strategy	Liu et al. (2014)
Larger firms	
Products in an early life cycle stage	
Highly uncertain environment	

The table presents the main findings of the selected studies for the key theme “Use of PMSs”

**Table 12** Main findings to development and design of the PMS

Main findings	Supporting studies
<b>Performance measures</b>	
Diversity of measures used in SMEs	Azofra et al. (2003) and Henri (2006a)
Diversity of measures used in firms with flexible culture	Henri (2006a)
Diversity of measures dependent on nature of use	Henri (2006a)
Less use of measures in target setting and in the reward system in family firms	Speckbacher and Wentges (2012)
Older or smaller firms make less use of measures	Speckbacher and Wentges (2012)
Financial and non-financial measures were used	Ismail (2007)
Non-financial measures to support strategy implementation	Azofra et al. (2003)
Link to reward system to motivate for use of decision-facilitating measures	Grafton et al. (2010)
Link to reward system to support market-oriented strategy	Martin et al. (2009)
Continuous revision of performance measures	Azofra et al. (2003), Wouters and Wilderom (2008) and Chenhall et al. (2013)
Lower usage of learning and growth perspective of BSC	Ismail (2007)

**Table 12** continued

Main findings	Supporting studies
Development process	
Adjusting PMS by adding a family focus to each perspective	<b>Craig and Moores (2005)</b>
Customizing for each company	<b>Gumbus and Lussier (2006)</b>
Integrating mechanism help to overcome critical issues during implementation	<b>Giovannoni and Maraghini (2013)</b>
For acceptance and long-term, beneficial use	
Information and knowledge exchange in the development process, team-based process	Wouters and Roijmans (2011) and <b>Gumbus and Lussier (2006)</b>
Local implementation	Sandhu et al. (2008) and Aidemark and Funck (2009)
Implementation as a frame of reference	Aidemark and Funck (2009)
Support through the top management	Aidemark and Funck (2009)
Manager influence on design in combination with low levels of interdependencies between business units, high level of manager information relative to superiors and low levels to employees	Kruis and Widener (2014)
Recognition and incorporation of stakeholders vision	<b>Craig and Moores (2010)</b>
Design of PMS less important in firms with flexible manufacturing strategy	Abernethy and Lillis (1995)
PMS should reflect firm's strategy	Martin et al. (2009)

The table presents the main findings of the selected studies for the key theme "Development and design of PMSs". The studies in bold mark papers in the context of family firms

illustrate that firms with non-family members in the top management team are more likely to operate with sophisticated financial management tools. This is confirmed by Hiebl et al. (2013) who consider the difference between family and non-family firms regarding management accounting. Among others, they investigate the usage of strategic management instruments, like PMSs, as one indicator for the institutionalization of management accounting. During the development from a family firm to a non-family firm, management accounting becomes more professionalized. Moreover, their results suggest that a lower level of family influence is associated with greater emphasis on strategic management accounting systems for medium-sized firms. For larger firms, this association was not confirmed. Speckbacher and Wentges (2012) come to similar conclusions. They investigate the relationship between governance structure and PMSs in family firms. The results show that family-controlled firms seem to make less use of formalized control systems like the PMS. This effect becomes weaker and loses importance in larger firms. Moreover, the involvement of family members in the top management team is associated with less use of multi-perspective performance measures in setting targets and in the reward system. Interestingly, the use of performance measures is not only influenced by the size but also by the age of the firm. Older firms make less use of multi-perspective performance measures. Moores and Mula (2000) confirm in their survey study that family firms operate with different control practices,

**Table 13** Main findings on influencing factors on PMSs

Main findings	Supporting studies
IT infrastructure	
Inadequacy of IT-infrastructure	Ismail (2007)
IT-related communication support internal and customer perspective and finally financial performance	Lee et al. (2009)
Factors influencing sophistication of management accounting systems	
Performance	
Quality of firms (hotel)	
Time horizon strategic agenda	Lamminmaki (2008)
Ownership	
Transition from family to non-family firms increases sophistication of management accounting systems	<b>Hiebl et al. (2013)</b>
Lower levels of family influence, higher emphasis of management accounting systems in medium-sized firms; not confirmed for large firms	<b>Hiebl et al. (2013)</b> and <b>Speckbacher and Wentges (2012)</b>
Non-family member in top management team, more sophisticated financial management systems	<b>Filbeck and Lee (2000)</b>
No clear differences in performance dimensions between independent and subsidiary firm	Ghobadian and O'Regan (2006)
Different control systems during life cycle of firms	<b>Moore and Mula (2000)</b>
Structural condition and strategies of agents induce changes in management accounting practices	<b>Stergiou et al. (2013)</b>

The table presents the main findings of the selected studies for the key theme "Influencing factors on PMSs". The studies in bold mark papers in the context of family firms

e.g. systematic performance evaluation, during their life cycle. Beyond this, a performance measurement system may also assist in preserving the values and knowledge of the founder of a family firm. Giovannoni et al. (2011) found evidence in their case study that the BSC may help family firms to transmit knowledge of the founder across generations and to the management team. Therefore, it might be important for family firms to supplement informal control with formal control systems.

Unquestionably, family involvement in the top-management is an important impact factor regarding PMSs. Research suggests that with decreasing family involvement, the sophistication of PMSs increases. Thereby, an interesting size effect has been shown, as this is confirmed for medium-sized firms, not for large firms. Moreover, the special needs of family firms should be incorporated in the PMS in the customizing process of the PMS for the firm. Once implemented, research findings suggest that family firms may benefit from PMSs usage, even if they seem to make less use of performance measures in target setting and in the reward system. Besides the size of the firm, even the age of the firm seems to be influential for the usage of performance measures.

### 3.2.2 Use of PMSs

Despite the importance of the kind of use of the PMS for the perceived benefit or the strategic process of the firms (e.g. Malina and Selto 2001; Lillis 2002; Gimbert et al. 2010) and diverse calls for more research on the use of PMSs (e.g. Malmi 2001; Bukh and Malmi 2005; Tuomela 2005; Malina et al. 2007; Thaker 2011), there are few studies in this area. Just 8 out of the 34 studies included in the review investigate the use of PMSs in SMEs (Table 10). A summary of the main findings of the selected studies for the use of PMSs in SMEs is reported in Table 11. Naro and Travallé (2011) present results from two case studies and show that the PMS is used for interactive control only in the implementation stage of the PMS. Neither case study used the BSC diagnostically or interactively in the long term. Results from Henri (2006b) suggest that interactively used PMSs support organizational capabilities such as market orientation, entrepreneurship, innovativeness, and organizational learning, while diagnostically used PMSs affect these capabilities negatively. Grafton et al. (2010) found the performance measures of PMSs are used for both feedback and feed-forward purposes. While the feedback use is centered on current strategic capabilities, feed-forward use focuses on the search for new strategic capabilities.

A different point of view is presented by Azofra et al. (2003). They showed that the PMS is used for controlling the behavior of the employees on the one hand, and the divisions of the firm on the other. In another survey study, Henri (2006a) investigates the relationship between organizational culture and the nature of use of PMSs. He found that firms which emphasize flexible values in their organizational culture use the PMS towards legitimization, attention focusing, and for strategic decision-making more than control dominant firms.

A firm's strategy is an important contextual factor, which is investigated by Liu et al. (2014) in relation to PMS usage. Their results suggest that there are differences for various strategies with respect to the PMS usage. They found only confirmation for a significant association between cost leadership strategy and BSC usage, not for a differentiation strategy and BSC usage. Moreover, they showed in their study that BSC usage is more likely in larger firms, in firms with products that are at an early stage in their lifecycle, or in firms that are faced with a highly uncertain environment.

Chen and Huang (2004) used the BSC to develop a model to assist SMEs in their global marketing activities. By using the developed model, the results of a survey suggest four types of global strategic marketing alliances for SMEs. Greenhalgh (2000) investigates the requirements for management accounting systems for SMEs that begin to operate transnationally. Results suggest that there is a need for sophisticated management accounting techniques in order to manage the complex and competitive environment, especially for larger transnational firms.

SMEs are often characterized by high innovative potential, flexibility, and the focus on continuous improvement. Thereby, SMEs often have to operate within greater environmental uncertainty and with limited resources. Just one of the studies included in this subsection considers a typical characteristic of SMEs, namely limited resources. In that study, Chen and Huang (2004) found, that SMEs may profit from implementing a PMS in terms of the strategic alignment of the firm and in supporting an effective resource allocation. Their results also suggest that it may be favourable for SMEs to

establish alliances (e.g. for global marketing activities) to overcome constraints in limited financial resources. Despite the fact that none of the other studies in this subsection had their research focus on specifics of SMEs, some of the research findings are related with them. It seems that the kind of usage effect innovativeness. Henri (2006b) found that the diagnostic (interactive) use of the PMS is negatively (positively) associated with innovativeness. However, in firms, which operate within a high environmental uncertainty and which emphasize flexible values in their organizational culture, a balanced use of PMSs in an interactive and diagnostic manner seems to influence the firms innovativeness or organizational learning positively (Henri 2006b). Grafton et al. (2010) confirm this. They found that a balanced use of the PMS may support current and future capabilities to ensure competitive advantage in a changing environment.

### 3.2.3 Development and design of PMSs

One of the main points of interest focuses on the development and design of PMSs in SMEs. As Table 10 shows, 17 out of the 34 selected papers focus on this topic. Table 12 summarizes the main findings concerning the development process and the design features of PMSs. Azofra et al. (2003) documented in their case study the successful implementation and adaptation of a PMS with a large number of performance measures without any confusion. The majority of firms utilize financial and non-financial performance measures (Ismail 2007). But the results of the study from Grafton et al. (2010) suggest that these (decision-facilitating) measures should be incorporated into evaluation schemes in order to motivate managers to use them for feedback and feed-forward control. In particular, the incorporation of non-financial measures in PMSs facilitates strategy implementation and transmitting through the firm (Azofra et al. 2003). Henri (2006a) provides in his survey study evidence that firms which emphasize flexibility values in their organizational culture tend to make more use of performance measures than firms with a control dominant culture. Moreover, he found that the diversity of measures will vary depending on the nature of use of the PMS. Abernethy and Lillis (1995) investigate the association between a flexibility strategy for the production process and the PMS. They found that firms which emphasize a flexible manufacturing strategy focus more on liaison devices (e.g. regular meetings between departments, spontaneous contact between department managers, and permanent teams) than on the design of the PMS. Nevertheless, research findings suggest that the strategic orientation of the firm should be reflected in the PMS design (Martin et al. 2009). Martin et al. (2009) found that firms with high market orientation operate with a PMS containing links to a reward system for innovative ideas to support the market-oriented behavior of the employees, whereas firms with a less market-oriented strategy employ PMSs that “keep employees strictly focused on their own productivity” (Martin et al. 2009, p. 106).

The results of a survey conducted by Ismail (2007) show that the four perspectives of the BSC are not equally employed. Whereas the financial perspective is widely applied, the learning and growth perspective is the least applied. However, adaptations and changes to the PMS also seem to be important (Aidemark and Funck 2009; Azofra et al. 2003). The latter observed in their case study that successful and longitudinal use of a PMS requires continuous revision using the feedback information from applying

the performance measures in daily life. Some measures were dropped over time and some new measures were included.

The process of continuous revision also seems to have some relevance in the development process of PMSs. Wouters and Wilderom (2008) investigated the development process of PMSs and found the design of the PMS to be intertwined with the implementation process. The understanding of how performance measures operate and are used in the organizational environment should lead to adjustments in the design of the PMS. Such an experienced-based process links the design and use of the PMS and fosters acceptance by the employees. Their results suggest that local PMSs seem to have a higher chance of being implemented successfully, as the experience and knowledge of local employees contribute to a productive development process with regard to the PMS. This is confirmed by a case study from Wouters and Roijmans (2011) on the development process of a PMS. Their results show the importance of information exchange between managers who introduce and design the PMS and the (future) users in the process of developing the PMS. Such knowledge integration facilitates the validity of the PMS, as the employees perceive it as enabling better management of their daily work. Wouters and Roijmans (2011) conclude that the process of knowledge exchange fosters the acceptance of the PMS design, which is critical for continuous usage. Thereby, even imperfect measures that are changed or redesigned over time are helpful, as they enable dialogue between organizational actors (Chenhall et al. 2013).

Nevertheless, the incorporation of various organizational actors may result in a challenging implementation process. Sandhu et al. (2008) conclude that the implementation process of a BSC is not only about the characteristic features of the control system, but also about the successful management of the different images and hopes of the network on the part of organizational actors. Hence, the implementation is more likely to be successful if it is done locally. This is confirmed by Aidemark and Funck (2009), who investigate the usefulness of the BSC with a case study. They found three characteristics of PMSs that are important for a continual and voluntary usage of the PMS. In addition to the support through the management and an introduction as a frame of reference that enables flexibility in design and use, they identified a decentralized development process as critical for the long-term use of the PMS.

Kruis and Widener (2014) found that the influence that managers have on the design of PMSs may decrease the perception of PMS failure, but this depends on the situation. Their results suggest that business unit managers perceive the PMS as useful for managing their business unit if, on the one hand, they have influence on the PMS design and, on the other hand, if there are low levels of interdependencies between the business units, if they have high levels of information relative to superiors and low information levels relative to employees.

As none of the studies described in this subsection restricts its research explicitly on SMEs and their specifics, some research findings are related to specifics of SMEs, such as external uncertainty or flexibility. The study from Henri (2006a) shows a positive relationship between the diversity of measurement and environmental uncertainty. His results also suggest a greater diversity of measurement for firms which emphasis flexibility values in their organizational culture. Moreover, it seems that flexibility firms use the PMS to focus on organizational attention, strategic decision-making, or legitimization of actions to a greater extent than firms which emphasis control

values in their organizational culture. The study from Aidemark and Funck (2009) indicate that the implementation of a PMS may become an instrument for quality improvements. Other studies (e.g. Azofra et al. 2003; Liu et al. 2014) found that firms are more likely to adopt a PMS, like the BSC, if they operate within a competitive environment or a high environmental uncertainty. Abernethy and Lillis (1995) found a negative relationship between flexibility and efficiency-based performance measures. Moreover, their results suggest that structural arrangements, like informal management structures, are used to maintain flexibility.

### 3.2.4 *Influencing factors on PMSs in SMEs*

Just 9 out of the 34 articles are grouped in the cluster “Influencing factors on PMSs” (Table 10). An overview of the main findings is presented in Table 13. An important issue for successful implementation and usage of the PMS seems to be an appropriate IT infrastructure. Ismail (2007) found the inadequacy of the implemented information system to be an obstacle for the adoption of the PMS. Appropriate IT facilitates the assimilation of the PMS in the firm. Beyond this, IT selection and knowledge may have a positive effect on financial performance. Lee et al. (2009) investigated the association between IT knowledge, media selection, and performance, which was measured by the BSC. Their results show that IT-related communication has positive effects on internal process performance and customer performance, both of which affect financial performance.

Lamminmaki (2008) studies the role of management accounting in hotel outsourcing decision-making. His results suggest that the sophistication of the management accounting systems is influenced by the hotel performance, the quality of the hotels, and the time period of the strategic agenda. Ghobadian and O’Regan (2006) investigate independent and subsidiary firms with respect to various organizational factors, among others a matrix of performance measures. Despite differences in the strategy formulation, implementation, and leadership style, the results for performance measurement are inconsistent. The results show that independent firms are better than subsidiary firms regarding some performance dimensions.

Regarding SMEs and external uncertainty, research work from Ghobadian and O’Regan (2006) suggest that independent firms, which are faced with a higher degree of uncertainty may have some problems in implementing their strategic plans, especially if they have to operate with limited resources.

### 3.2.5 *PMSs and their consequences*

Another important theme in the research of PMSs in SMEs are the consequences of the implemented PMSs. Table 10 shows that 11 out of the 34 studies investigate these aspects. The main findings on the consequences of PMSs are reported in Table 14. Many studies found a positive effect of the PMS on performance (Azofra et al. 2003; Chenhall and Langfield-Smith 2003; Davis and Albright 2004; Grafton et al. 2010; Liu et al. 2014). Research results suggest that the integration of non-financial measures in the PMS and the link to the reward systems seem to have a positive effect on organizational performance (Chenhall and Langfield-Smith 2003; Davis and Albright



**Table 14** Main findings to PMSs and their consequences

Main findings	Supporting studies
Positive effects on performance, because of	
Integration of non-financial measures	Davis and Albright (2004)
Links to the reward system	Chenhall and Langfield-Smith (2003)
PMS usage/BSC usage	Azofra et al. (2003) and Liu et al. (2014)
Decision-facilitating measures via the influence of strategic capabilities	Grafton et al. (2010)
PMS decreases operating expenses	Andrews et al. (2001)
PMS supports mental model building and confirming	Hall (2011)
PMS supports strategic processes	Naro and Travaillé (2011) and <b>Craig and Moores (2010)</b>
BSC foster thinking about critical success factors and their measures	<b>Gumbus and Lussier (2006)</b>
BSC foster communication among family members and their education regarding business	<b>Craig and Moores (2010)</b>
Formalized control systems support preserving of values/knowledge of the founder	<b>Giovannoni et al. (2011)</b>

The table presents the main findings of the selected studies for the key theme “PMSs and their consequences.” The studies in bold mark papers in the context of family firms

2004). Liu et al. (2014) found a positive correlation between BCS usage and organizational performance, product life cycle, and external environment. The results of Grafton et al. (2010) suggest that the usage of decision-facilitating measures influences strategic capabilities as well as organizational performance. Andrews et al. (2001) investigate the financial effects of a PMS in a case study. Their results show that the implementation of the PMS decreases operating expenses.

Hall (2011) investigates the relationship between PMSs, mental models, and managerial performance. His results illustrate that PMSs help managers both to confirm their existing understanding of how certain business units in the firm operate and to develop a new understanding of how matters progress. However, this seems to be the case only if the manager has a short organizational tenure and/or if business units are small. Both mental models have a positive effect on managerial performance.

Naro and Travaillé (2011) found that the BSC fosters the strategic processes of the firm. In the phase of developing strategies, the BSC generates a process of collective thinking, while it supports the process of control in the implementation phase of the strategy.

With regard to specifics of SMEs in relation to PMSs, it can be summarized that implementation and usage of a PMS, like a BSC, may contribute to improve financial performance or to continuous improvement in general (e.g. Andrews et al. 2001; Davis and Albright 2004). Liu et al. (2014) found an improvement of performance in relation with the usage of a BSC only if the firms are larger in size or in firms with products at an early product lifecycle stage.

## 4 PMSs in SMEs: evidence from the German-speaking scholarly community

Besides the focus of the literature search on papers published in leading international journals as presented in the results section, there are also important contributions to the research field in other languages and/or journals outside the ABS journal guide (see Günther 2013). In German-speaking countries high quality research is often also published in regional field journals with good reputation in these countries. As both SMEs and family firms have high importance for the German economy, I finally present selected papers which focus on German-speaking countries, which are published in German or English. The paper were selected with the same search string as described in the research design of this paper. In the following, important research on SMEs and performance measurement of this local scholarly community is summarized.

Schachner et al. (2006) investigate the effect of family influence and firm size on the usage of management control systems, like the BSC. They found a higher usage of formalized control systems in firms with lower influence of the family. If the number of employees increases and there are non-family managers in the firm, the usage of formalized control systems increases. Family-managed firms use these systems to a lower extent, relatively independent of the number of employees. There is broad consensus in literature for the association between family influence and a lower usage of formalized management control systems as described in Sect. 3.2.1 (Schachner et al. 2006; Posch and Speckbacher 2012; Scheiber et al. 2012; Speckbacher and Wentges 2012; Neubauer et al. 2012; Payer-Langthaler et al. 2012; Hiebl et al. 2013, 2015). Neubauer et al. (2012) examine whether firm size or the differentiation between family and non-family firms affects the sophistication of management accounting systems. They found firm size to be the key factor for the implementation of formalized management control systems. In addition to their findings on firm size, their results confirm that family firms tend to use strategic management accounting systems to a lower extent than non-family firms. The study from Payer-Langthaler et al. (2012) considers the differences between family and non-family firms for the implementation of a PMS. Their findings confirmed the importance of firm size for the BSC implementation. They show that it is not the fact of being a family or non-family firm that is influential for BSC implementation, but rather the influence of the family and the owner generation. The results suggest that decreasing family influence and the management by the founder generation are associated with BSC usage. The results from Haas and Speckbacher (2017) confirm a negative association between the CEO and the usage of an objective performance evaluations of middle manager performance, if the CEO is the owner of the firm. Moreover, they found a positive association between the CEO education and the usage of such objective systems. Hiebl et al. (2015) investigate the influence of the family as a contextual variable for management accounting systems. They found that higher levels of family influence are associated with lower use of strategic and operational management accounting systems. Moreover, firms with higher levels of family influence tend to establish fewer management accounting departments, have lower training levels of management accountants, and employ fewer management accountants with academic degrees. Posch and Speckbacher (2012) study the effects of family influence on the decision-facilitating and decision-influencing role of man-

agement control systems. Compared to non-family firms, they found a lower usage of management control systems in family firms for decision-facilitating. But their results suggest that this could be a success factor for family firms. Nevertheless, the higher usage of decision-influencing performance measures might have positive impacts on the organizational performance of family firms. Kallmuenzer et al. (2017) show that various entrepreneurial attitudes have different effects on the financial performance of family firms. While proactiveness and autonomy contribute to financial performance, a high family focus has a negative effect on the influence of risk-taking on financial performance. If control systems are in place, the positive effect of autonomy is strengthened and innovativeness has a weaker effect on financial performance. Independent from the influence of ownership, Scheiber et al. (2012) investigate the general retention of SMEs regarding the adoption of management control systems. They identified resource endowment and the embedding in social environments as possible explanations. While the interaction to medial environments increases the knowledge of management control systems, the interaction with local organizational environments, like lower firm size, lower education levels of the management, or fewer processes of knowledge exchange with other users, may hamper the adoption. Interestingly, even discussion with consultants (e.g. tax consultants or legal advisors) seems to be associated with lower usage of management control systems.

## 5 Discussion and conclusion

This review was motivated by the outstanding importance of SMEs for global economies and their increasing professionalization in recent years. Garengo et al. (2005) recognized a gap between the importance of PMSs in SMEs and the sparse research in this field. More than 10 years later, it must be acknowledged that there is still limited research focusing on PMSs in SMEs.

The systematic literature review extends previous reviews by focusing on empirical research of PMSs in SMEs. Thereby, it takes into account the particularities of SMEs and demonstrates the importance of family firms. Moreover, it reports on the theoretical approaches and methods used, research location, and settings of the studies. An assessment of the investigated topics reveals that the development and design of PMSs in SMEs attracted more attention, while the usage or the influencing factors of PMSs are less-researched fields.

A closer look into the thematic analysis provides an overview of what we already know about the specifics of SMEs influencing PMS adoption and usage. Keeping specifics of SMEs, like high innovative potential or the emphasis of continuous improvement in mind, the systematic literature review suggests that the implementation of PMSs may contribute to improvements in terms of quality or performance (e.g. Andrews et al. 2001; Davis and Albright 2004; Aidemark and Funck 2009). The latter may be affected by firm size or other internal factors, like the product lifecycle stage (Liu et al. 2014). Moreover, managers of SMEs should be aware of the influence the type of usage of PMSs may have on innovativeness (e.g. Henri 2006b). SMEs are often faced with a high uncertainty (e.g. Garengo et al. 2005). The results of the systematic literature review indicate that a balanced use of PMSs in a diagnostic

and interactive manner affects current and future capabilities, like innovativeness and organizational learning, positively, if the SMEs operate within high environmental uncertainty and if they emphasize flexible values in their organizational culture (e.g. Henri 2006b; Grafton et al. 2010). Beside this, research with SME dominated samples suggests that higher environmental uncertainty may be a motivator for implementing PMSs and facilitate diversity of measurement (e.g. Henri 2006a). While the degree of environmental uncertainty seems to foster the adoption of PMSs (e.g. Azofra et al. 2003; Liu et al. 2014), limited resources may provide SMEs some problems in implementing their strategic plans (e.g. Ghobadian and O'Regan 2006). SMEs tend to use sophisticated management control systems to a lower extent than large firms (e.g. Scheiber et al. 2012; Neubauer et al. 2012). Research identified resource limitations, which SMEs are often faced with, as possible barriers for the implementation of such systems (Scheiber et al. 2012). With regard of the available resources it might be favourable for SMEs to establish alliances to overcome these constrains (e.g. Chen and Huang 2004). Another specific of SMEs is their flexibility (e.g. Tambunan 2005). Studies with SME dominated samples suggest a greater diversity of measurement for firms which emphasize flexibility values in their organizational culture. These firms seems to focus to a greater extent on the usage of PMSs to focus on organizational attention, strategic decision-making, or legitimization of actions than control dominated firms (Henri 2006a). Moreover, lower firm sizes and the associated rather centrally-organized governance structure contribute to the observed lower PMS usage. But SMEs seem to be not only different to large firms. Obviously, SMEs are not this homogenous group we often believed. Research findings suggest that some factors, like a greater extent of family influence, lower levels of education of the top management, fewer knowledge exchange processes with other users, or lower levels of complexity and uncertainty of their external environment are also associated with lower usage of PMSs (e.g. Schachner et al. 2006; Speckbacher and Wentges 2012; Scheiber et al. 2012; Hiebl et al. 2013, 2015).

Furthermore, the review answers the question regarding the specifics of PMSs in SMEs. It shows that family influence is an important impact factor. The research findings demonstrate that family firms use PMSs to a lower extent, but this effect loses importance in large firms (e.g. Speckbacher and Wentges 2012; Hiebl et al. 2013). An increasing involvement of non-family members seems to be associated with a higher emphasis of sophisticated control systems. Moreover, research demonstrates that family firms make less use of performance measures in target setting and in the reward system compared to non-family firms (e.g. Speckbacher and Wentges 2012). The findings indicate a lower usage of performance measures for decision-facilitating in family firms (e.g. Posch and Speckbacher 2012). Nevertheless, some papers show that even family firms benefit from PMS usage as these systems support communication and the preserving of the knowledge of the founder (e.g. Craig and Moores 2010; Giovannoni et al. 2011). The customizing of the PMSs by adding a family focus to each perspective fosters their beneficial use (Craig and Moores 2005). Besides firm size, or family influence, even the age of SMEs affects the usage of performance measures. Therefore, research findings indicate that older firms tend to make less use of performance measures (e.g. Speckbacher and Wentges 2012).

Finally, the review summarizes what implications can be drawn from SME specifics of PMSs for general PMS research. Many studies report positive effects of PMSs on performance. In general, the consequences from PMS implementation and usage are described positively (e.g. Chenhall and Langfield-Smith 2003; Azofra et al. 2003; Davis and Albright 2004; Craig and Moores 2010; Grafton et al. 2010; Giovannoni et al. 2011). SMEs benefit from PMSs as they may support the firms in their strategic processes as well as assisting managers in their daily work (e.g. Craig and Moores 2010; Naro and Travailé 2011). Nevertheless, it can be summarized that a lot of studies do not relate their research explicitly to the specifics of SMEs. Despite they investigate samples with a focus on SMEs, they do not distinct their research clearly from larger firms. Future research should place greater emphasis on the specifics of SMEs, such as firm size, ownership, organizational culture, or the environment in which SMEs operate, compared to larger firms.

Other possible aspects for further research may address the usage of PMSs in family firms. Some research has been done regarding the usage of PMSs in SMEs. Nevertheless, the literature suggests that family-influenced firms are, in some aspects, different to non-family firms. One question that remains unanswered is, how are PMSs used in family firms? What factors foster the use of PMSs in family firms? There is a broad consensus in the literature that in terms of personalized management, the greater internal consistency of motivation differentiates SMEs from larger firms (Hudson et al. 2001; Garengo et al. 2005). Keeping the resource limitations of SMEs in mind, it might be interesting to know which role informal control plays for the usage of PMSs. Widener (2007) highlights the importance of the beliefs system for other management control systems, like the use of PMSs. A closer look at the linkage of PMSs with other control systems, even informal control, may give interesting answers as to why SMEs tend to use PMS to a lower extent than large firms. In general, further research in SMEs should be aware of the importance of the family dimension, which is a critical factor for PMSs. For illustrative purposes, the following research questions are summarized:

PMS usage in SMEs

- What role do other formalized control systems play, and how are these systems intertwined?
- What role does informal control play for implementation and use of PMSs?
- How can PMSs supplement informal control?
- How influential are national cultures on PMSs usage?

PMSs in family firms

- How can PMSs support the family by preserving their interests?
- Which factors may influence the long-term beneficial use of PMSs?
- What role do differences within family firms play in PMSs adoption (e.g. with regard to organizational culture)?

This review has some limitations. It is largely restricted to 98 top-tier journals in the fields of accounting, entrepreneurship and small business management, and general management. Other academic journals, or journals with other quality rankings, may offer additional insights into the research field. Moreover, the papers were selected

from two databases (Web of Science and Business Source Complete). It cannot be ruled out that other databases might deliver additional papers.

Nevertheless, by using a systematic and structured approach to identify and map the empirical literature, this systematic literature review contributes to a comprehensive understanding of our knowledge in the research field. It provides insights into the current state-of-the-art and, hopefully, provides some guidance for further research.

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## Appendix A

See Table 15.

**Table 15** Timeline of the reviewed papers with their main results

Year	Study [data collection]	Research focus	Main findings
1995	Abermethy, M.A./Lillis, A.M. [case study]	Examine the impact of flexibility on the design of management control systems (MCS), in particular on the use of efficiency-based PMSs and the use of integrative liaison devices	In firms with a focus on flexibility, integrative liaison devices (e.g. spontaneous contact between department managers, regular meetings between departments, interdepartmental task forces, permanent teams) are more important than the design of PMSs for effective management
2000	Greenhalgh, R. W. [case study]	Investigate the management accounting for transnational SMEs	Traditional management accounting (e.g. RoI, Product and Standard Costing, Marginal and Relevant Costing) are not sufficient to meet the challenges of an international, competitive world
2000	Filbeck, G./Lee, S. [survey]	Investigate financial management techniques of family firms	Traditional management accounting may be sufficient for smaller transnational firms in order to manage profitability in their niche Family firms with non-family members on the board of directors or a non-family member in the financial decision-making role are more likely to operate with sophisticated financial management tools
2000	Moores, K./Mula, J. [survey, interview]	Investigate control practices of family firms with respect to the stage of the lifecycle of the firms	Family firms use different controls in different life cycle stages  Clan controls are dominant in the collectivity stage, the formalization/control stage and the adaptation stage Bureaucratic controls are dominant in the formalization stage and to some extent in the collectivity stage and the adaptation stage Market based controls are dominant in the adaptation stage

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2001	Andrews, B.H./Carpentier, J.J./Gowen, T.L. [case study]	Implement a PMS and examine the financial impact of the PMS	Implementation of PMS decreases the operating and maintaining expenses  PMS allows a better planning and evaluation of their performance and the establishment of goals
2003	Chenhall, R.H./Langfield-Smith, K. [case study]	Examine a PMS and a gain-sharing reward system with respect to strategic change over a 15-year period	Performance measurement and reward systems based on financial rewards supported the development of performance improvement and encouraged organizational trust  The development of personal trust (e.g. by team-based initiatives) did not result in performance improvements because of the inconsistency with the kinds of control systems (which are compatible with organizational trust)
2003	Azofra, V./Prieto, B./Santidrian, A. [case study]	Examine the usefulness of performance indicators	Suggest a correlation between some financial and non-financial measures with profitability  Used to control the behavior of the employees and to control the top management team/head office
2004	Davis, St./Albright, T. [case study]	Investigate the effect of the BSC on financial performance	Large number of measures is valuable, not confusing Including non-financial measures support strategy implementation and translating it throughout the firm Results suggest that the BSC can improve financial performance



Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2004	Chen, H.I.J./Huang, Y. [survey]	Develop a model based on the BSC to support SMEs in their global marketing activities	Propose four types of global strategic marketing alliances for SMEs using a BSC based The model may support the SME in a two-stage process to make the best choice in their marketing activities
2005	Craig, J./Moore, K. [case study]	Develop and investigate the use of BSC for management of family businesses	Extends the theory of the BSC concept by including a family dimension in each perspective of the BSC
2006	Gumbus, A./Lussier, R.N. [case study]	Investigate the question of why small businesses should use the BSC	SMEs can also benefit from using a BSC There is not one BSC for all firms
2006	Ghobadian, A./O'Regan, N. [survey]	Examine the relationship between independent firms and subsidiary firms regarding leadership style, strategy process, barriers on strategy implementation and the matrix of performance measures	BSC: stimulate thinking about critical success factors and their measures Development of BSC should be a team-based, continuous process Independent units place less emphasis on strategy making process, face more implementation barriers, have more likely a transformational style of management Subsidiary plants emphasize more transactional leadership style and most dimensions of strategic planning Independent units should focus on formal strategy planning process to reduce barriers

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2006	Henri (2006a) [survey]	Examine the relationships between organizational culture and PMS (diversity of measurement and nature of use)	Firms with flexibility dominant culture tend to use more performance measures than firms with a control dominant culture
2006	Henri (2006b) [survey]	Examine the relationships between PMS and organizational capabilities	Firms with flexibility dominant culture tend to use the PMS more to focus organizational attention, to support strategic decision-making and to legitimate actions than firms with a control dominant culture Depending on nature of use diversity of measurement will vary Interactive use of PMS support organizational capabilities (market orientation, entrepreneurship, innovativeness, organizational learning) Diagnostic use of PMS exerts negative pressure on these organizational capabilities
2006	Schachner, M./Speckbacher, G./Wentges, P. [survey]*	Investigate the relationship between firm size as well as ownership and control structure on PMSs	Owner-managed firms: more centrally organized; tend to use PMSs like BSC to a lower extent relatively independent from firm size With family and non-family managers in the firm the usage of the BSC increases; size effect: with an increasing number of employees, BSC implementation increases
2007	Ismail, T.H. [survey]	Examine performance evaluation measures and barriers for the adoption of the BSC	Non-family firms use PMS relatively independently from firm size Firms use financial and non-financial measures Most commonly used financial measure: profit margin; most commonly used non-financial measure: customer satisfaction

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2008	Lammimäki, D. [interview, survey]	Study the role of accounting in the hotel outsourcing decision-making	<p>BSC widely used, but the four perspectives are not used equally (financial perspective most widely used; learning/growth perspective the least used)</p> <p>Important barrier for adoption of the BSC: inadequacy of the implemented IT infrastructure</p> <p>Considerable variation in the degree of accounting system involvement in outsourcing management across hotels</p> <p>The degree of accounting sophistication and involvement is influenced by the performance of the hotel and whether outsourcing decisions are made in the context of a long-term strategic agenda</p> <p>Higher quality hotels have more sophisticated outsourcing management accounting systems</p>
2008	Wouters, M./Wilderom, C. [survey, case study, archival data]	Investigate characteristics of a development process of a PMS	<p>A development process that is experience-based contributes to the perception of employees that the PMS enable their work, supports the acceptance of the PMS</p> <p>Continuous revision of specific performance measures enhance the enabling nature of the PMS; design and implementation are interrelated</p> <p>The endeavor to continuous learning in order to improve work practice is related to a positive attitude toward performance measures</p> <p>A good understanding of the PMS itself is a prerequisite for an enabling PMS</p>

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2008	Sandhu, R./Baxter, J./Emsley, D. [case study]	Examine the implementation process of the BSC	The implementation process of the BSC comprises the implementation of the generic attributes of the BSC as well as the managing of different images and hopes of the network of actors associated with the BSC BSC have to be translated locally
2009	Lee, S.M./Kim, J./Choi, Y./Lee, S.-G. [survey]	Examine the association between IT knowledge, media selection, and operational performance (measured by the BSC)	Internal process performance: supported by individual IT knowledge, traditional and electronic communication Customer performance: supported by internal process performance, organizational IT knowledge, and electronic communication Financial performance: supported by customer performance
2009	Martin, J.H./Martin, B.A./Minnillo, P.R. [case study]	Explore the relationship between manager's market orientation and their strategic orientation	Leaders with low market orientation focused on the goal productivity and efficiency; the PMS is used to keep the employees strictly focused on this goal: more hierarchical structures; closed communication system
2009	Aidemark, L.-G./Funck, E.K. [case study]	Examine the usefulness of the BSC for healthcare organizations	Market-oriented leaders focus on low levels of hierarchical structures/decentralization, open communication, PMSs that reinforce market-oriented behavior (links to a reward structure for innovative ideas), and an internal customer/supplier structure The BSC was continually redesigned and adapted to organizational conditions during their usage over 10 years Identifies some success factors for usage: Decentralization of the development

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2010	Craig, J./Moores, K. [case study]	Consider the strategy alignment of a family firm using the BSC	<p>Support by the management</p> <p>Flexibility of design and use of the BSC</p> <p>Recognition of the stakeholder's visions is critical for a beneficial BSC</p> <p>BSC reinforces the strategy formulation and implementation process and the alignment between a family and the business</p> <p>BSC fosters the communication and education of family members</p> <p>BSC is a useful system to link family with the business</p> <p>Decision-facilitating measures are more used for feedback and feed-forward control</p>
2010	Grafton, J./Lillis, M./Widener, S.K. [survey]	Examine the processes of performance measurement and their relevance for feedback and feed-forward control	<p>The extent to which decision-facilitating measures are used impacts the strategic capabilities and also the performance of the firm</p> <p>To motivate to use the multiple financial and non-financial performance measures, it is important that these measures also be reflected in the evaluation schemes</p> <p>Feedback use of decision-facilitating performance measures supports the exploitation of current strategic capabilities; feed-forward use of these performance measures supports the development of new strategic capabilities</p>
2011	Wouters, M./Roijmans, D. [case study]	Investigate the development process of a PMS	<p>Knowledge exchange from various functional areas is important in the development process for an enabling PMS</p> <p>Presentation, learning, transformation of knowledge, identification and resolution of differences in the understanding are steps for knowledge integration in the development process</p>

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2011	Hall, M. [survey]	Examine the relationship between PMS, mental model development, and managerial performance	PMS support managers in the confirmation of their mental models  For managers with a short organizational tenure and/or for managers from a small-sized strategic business unit the PMS support the building of new mental models  Mental model confirmation and mental model building have positive effects on managerial performance  BSC generates a process of collective thinking in the phase of developing strategies and a process of control in the phase of implementing the intended strategies  In the implementation stage the BSC is used interactively  BSC was neither used diagnostically nor interactively in the long term
2011	Naro, G./Travaiillé, D. [case study]	Investigate the BSC as tool in strategic processes	
2011	Giovannoni, E./Maraghini, M.P./Riccaboni, A. [case study]	Investigate the role of management accounting practices in the processes of transmitting knowledge in family firms	Management accounting practices can affect the transfer of knowledge and are able to reinforce the knowledge of the founder across generations  Informal control needs to be complemented with formal control in the processes of knowledge transfer
2012	Speckbacher, G./Wentges, P. [survey]	Investigate the relationship between firms governance structure and PMS	Involvement of family members in the top management team is associated with less use of multi-perspective performance measures in strategic target setting and incentive practice  Family controlled firms make less use formalized systems (PMS)  The association is moderated by size

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2012	Scheiber, F./Wruk, D./Huppertz, S./Oberg, A./Woywode, M. [survey]*	Investigate the diffusion of modern management concepts among SMEs	Resource endowment and embedment in social environments of SMEs are possible explanations for differences among the adoption of SMEs Interaction with medial environments increases knowledge about these concepts Interaction with local environments (e.g. lower firm size, lower education level of management, less intense knowledge exchange processes, discussions with tax consultants, legal advisors) may hamper the usage
2012	Posch, A./Speckbacher, G. [survey]*	Investigate the effects of family ownership and control on the decision-facilitating usage and decision-influencing usage of management control systems	Family firms differ from non-family firms in the decision-facilitating as well as decision-influencing usage of management controls More intuitive decision-making and more centralized leadership in family firms may be a success factor Non-family firms tend to use more decision-facilitating management controls than family firms
2012	Neubauer, H./Mayr, S./Feldbauer-Durstmüller, B./Duller, C. [survey]*	Investigate differences between family and non-family firms regarding formalization and usage of management accounting systems	Family firms tend to make less use of cultural controls and result controls than non-family firms, but use more action controls than non-family firms Main influencing factor for implementation and usage is firm size, but the differentiation between family and non-family firms is also important Non-family firms tend to use more strategic management control systems than family firms More separate control units and sophisticated control systems in large firms and non-family firms

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2012	Payer-Langthaler, S./Duller, C./Feldbauer-Durstmüller, B. [survey]*	Investigate the implementation of the BSC in Austria and influencing factors	<p>Austrian firms tend to have more independent control units than German firms</p> <p>Main factor for BSC implementation: family influence on the management and owner generation; firm size is also important</p> <p>No significant differences between family and non-family firms with respect to BSC implementation</p> <p>Significant BSC usage by founder-managed firms</p> <p>BSC usage increases with decreasing family influence</p> <p>Differences in the design and operation accounting practices can affect the extent of compromise</p> <p>“Imperfect” performance measures can be used by practitioners to generate productive dialogue</p>
2013	Chenhall, R.H./Hall, M./Smith, D. [case study]	Examine how debates about design and operation of PMS foster compromise among organizational actors	<p>Accounts play an important role in the processes of compromise</p> <p>Integrating mechanisms occurred during the implementation phase of the PMS in order to overcome critical issues</p>
2013	Giovanmoni, E./Maraghini, M.P. [case study]	Investigate challenges in the development process of the PMS and the management of these issues	<p>Integrating mechanism completes the incomplete PMS or improves the integrated nature of the PMS</p>
2013	Stergiou, K./Ashraf, J./Uddin, S. [case study]	Investigate changes of management accounting controls in a family firm	<p>Different structural conditions and the strategies of agents are associated with changes in management control practices</p>
2013	Hiebl, M.R.W./Feldbauer-Durstmüller, B./Duller, C. [survey]	Investigate changes in management accounting in the transition from a family to a non-family firm	<p>In medium-sized firms, lower level of influence of the family is associated with emphasis on management accounting (not for large firms)</p> <p>During the transition from family to non-family firms the management accounting systems become more professionalized in medium-sized firms</p>



Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2014	Liu, L./Ratmatunga, J./Yao, L..J. [survey]	Examine the effects of BSC on performance in relation to four contingency factors (size, strategy, external environment, and product lifecycle stage)	<p>Large firms have higher levels of management accounting institutionalization</p> <p>Level of education of management accountants is negatively associated with the influence of the family</p> <p>BSC usage positively significant correlated with product life cycle, external environment, and performance</p> <p>Use of the BSC is more likely in large firms with products in an early product life cycle stage or that are faced with a highly uncertain environment</p> <p>BSC usage associated with cost leadership strategy</p> <p>Managerial influence in PMS design decreases the perception of PMS failure, in the case of</p>
2014	Kruis, A.-M./Widener, S.K. [survey]	Investigate the association between managerial influence in PMS design and the perception of failure of the PMS	<p>Higher levels of information asymmetry between managers and superiors,</p> <p>Lower levels of interdependencies with other business units, or</p> <p>Lower levels of information asymmetry between employees and managers</p>
2015	Hiebl, M.R.W./Duller, C./Feldbauer-Durstmüller, B./Ulrich, P. [survey]*	Investigate the association between family influence and management accounting systems	<p>Negative association between higher family influence and the use of management accounting (MA) systems</p> <p>Negative association between family influence and usage of strategic and operational MA systems, formalization of strategic plans, higher level of management accounting training, and establishment of separate MA departments</p>

Table 15 continued

Year	Study [data collection]	Research focus	Main findings
2017	Kallmuenzer, A./Strobl, A. [survey]*	Investigate the effect of control mechanisms and family-related goals on the association between entrepreneurial attitudes and financial performance in family firms	Emphasis of family-related goals has a negative effect on the association between Risk-Taking and financial performance
2017	Haas, N./Speckbacher, G. [survey]*	Investigate the influence of CEO personality/CEO ownership/CEO education on the evaluation of middle manager	Proactiveness and Autonomy contribute to financial performance; control mechanisms boost the effect of Autonomy and weaken the effect of Innovativeness on financial performance Negative effect of CEO ownership on the use of objective performance evaluations Positive effect of CEO education on the use of objective performance evaluations Direct effect of CEOs with internal control locus on subjective performance evaluations

The table reports the main results of the papers included in the systematic literature review as well as papers marked with \*, that are included in the excursus (Sect. 4), in chronological order

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All references marked with \* represent papers that are included in the systematic literature review.

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