Sustainability Management Control Practice: A Study of German SMEs

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Abstract

Media coverage and public perception of topics such as child labor, exploitation of workers, and ecological malpractice have risen considerably over the last years. A rising number of executives therefore consider sustainability issues both in their companies and in companies’ supply chains. However, a holistic approach towards sustainability requires management control (also referred to as management accounting). Employing control practices and state-of-the-art sustainability information systems can be seen as the preconditions to be compliant with laws and regulations, to provide data for different stakeholders and reports, and to facilitate economic success. To provide empiric evidence on sustainability management control (SMC), we conducted a study on practices undertaken by SMEs in Germany. We present the results compiled from 74 participants (37 providing full answers to our questionnaire). We sketch the status quo and provide recommendations for companies.

1. Introduction

In the recent years, media coverage of topics such as child labor, worker exploitation and pollution has risen considerably [1, p. 24]. Along with the increased availability of information, public perception has changed. Consumers now ask how products have been made and tend to condemn companies for social and environmental malpractices.

Not only the media covers issues such as reports about bad working conditions at Apple’s supplier Foxconn (cf. e.g. [2]); the scientific discourse [3] has taken up the topic, too. It is particularly notable that sustainability is a field of interest for diverse scientific disciplines. Among others, business administration and information systems (IS) investigate topics such as sustainability reporting [4], responsible supply chain management [5], and green IS [6]. This multi-faceted approach is needed to grasp the complexity inherent to sustainability. The coverage of topics, however, is inconsistent.

Management control has been given nonuniform attention: While it is heavily discussed in the business administration literature and even specialized forms exist (e.g. IT controlling [7]), its relation to sustainability leaves many questions open. Specifically practices within organizations are neglected [8][1, p. 4].

The importance of including sustainability concerns into management control is rising [9]. It is very inefficient for companies to pursue a strategy that includes sustainability goals without being able to control them – or to acquire data for it [9]. What makes the sustainability view on control challenging (yet exciting) is the link to other fields of research. Most notably, the more advanced the support by IS is, the more effective management control can be organized.

To help closing the research gap (cf. Section 3), we conducted a study. We prepared a detailed questionnaire and asked SMEs from Germany to fill it. We received replies from 74 participants, of which 37 provided full answers. In this article we not only present the results from our study but derive recommendations for businesses. Our article makes several contributions. Firstly, we highlight the importance of management control in corporate sustainability. Secondly, we present detailed results from a study with SMEs. Thirdly, we generalize our findings. Fourthly, we propose recommendations for SMEs based on our insights.

This paper is structured as follows. Section 2 draws the background of our work. Related literature is discussed in Section 3. Section 4 explains our research methods, which has been used to come to the results presented in Section 5. An elaborate discussion of our findings is given in Section 6. Section 7 draws a conclusion.

2. Background

2.1. Terms and Tasks

Corporate sustainability is a consequence from the demand of sustainable development as described in the Brundtland Report [10]. Unfortunately, neither sustainable development is defined [11, p. 71-76], nor it is clear how a sustainable company should look like [9]. A reason might be the discursive creation of the term and the contradictory usage. Typically, sustainable development covers economic, environmental and social aspects [12, p. 373]. Companies have to deal with their own sustainable issues and the problem of society. Therefore, there are many reasons for companies to deal with corporate sustainability. The importance for different stakeholder has risen over the last years [1] due to an increased awareness about companies’ performance [13, pp. 431][14, p. 93][15, p. 63-75][16,
p. 104]. Following ELKINGTON’s triple bottom line [17] we define corporate sustainability as sustainable management that involves economic, environmental and social goals.

There is no definition for sustainability management control (SMC) or an adequate concept [18, p. 37][19, p. 239][20]. The term often is implicitly used in the context of management accounting [9][1, p. 3]. Two lines of thoughts are popular: the first is the philosophical debate about sustainability accounting [21][22]. The second is the management perspective [20], which we follow. It deals with information complexity and develops tools to measure and to take steps towards sustainability [20]. SCM is often developed from environmental accounting. Many authors use its tasks and functions to describe SMC [23, p. 15][18, p. 38]. Especially the link between the three dimensions is seen as a task of SMC [18, p. 43]. We define sustainability management control as the intra-corporate planning, checking and managing of economic, environmental and social indicators, along with the coordination of tasks and duties.

The following functions are part of SMC: coordination [24, p. 48], integration [19, p. 242], moderation [19, p. 242], decision support [25, p. 6], supply of data and information [26, p. 226][12, p. 377], and rationality (of management) assurance [25, p. 176]. Moreover, it takes a variety of duties within planning, checking and managing of environmental and social aspects [27, p. 365][19, p. 240]. In addition to the preparation of measuring, assessment and steering aspects, SMC should sensibilize top management for sustainability [14, p. 93]. Another duty of SMC is the development of operational figures and of performance measurement systems [26, p. 226][28, p. 424], as well as the integration of social and environmental aspects into management processes [28, p. 424][29, p. 29][30, p. 47][19, p. 240].

2.2. Instruments and Organization

In the following, concepts of SMC are introduced. Firstly, environmental instruments are sketched. Widely known concepts such as life-cycle costing are omitted for brevity.

The carbon footprint describes the total greenhouse gas emissions directly and indirectly caused by a company, in its supply chain and by its products [31, pp. 421][19, p. 56]. Similarly, the water footprint summarizes the usage of fresh water [31, p. 422][32, p. 38]. Primary energetic costs, which arise during production, usage and disposal of a product, form the cumulated energy demand (CED) [31, pp. 420][33, p. 105]. Moreover, several balances exist. The material and energy balance is the foundation of the environmental balance [34, p. 301]. Used energies and material are documented as inputs, energetic, material emissions and produced goods as outputs [35, pp. 58]. While the environmental balance is not formally defined [36, p. 290], its idea is to summarize the total environmental impact of a company [37, p. 81][38, p. 117]. It thereby can be used for decision support [37, p. 81][39, p. 269][38, p. 125]. Finally, environmental audits are used for the inspection of environmental performance [37, p. 64], typically checking accordance with regulations (e.g. ISO 14001 and environmental management and audit schemes (EMAS – a statutory ordinance in the European Union) [40].

Secondly, social instruments are sketched. Again, well-known instruments such as suggestion schemes are omitted. Management accounting of social aspects is hardly discussed in the literature [41, p. 69]; there is neither a definition nor a concept. A reason might be that social aspects are cumbersome to measure and, therefore, their importance is hard to prove [42, p. 52]. Social life cycle assessment (SLCA) shows social costs (e.g. water pollution, noise pollution) and social benefit (e.g. employee benefits) of a company [37, p. 82]. Known in Germany since 1972 [43] this instrument so far was mostly ignored by companies [37, p. 82].

Thirdly, integrative instruments link sustainability to management accounting. Integration of sustainability into the accounting and finance has become increasingly important [44]. Two instruments are common: the sustainability balanced scorecard [19, p. 239][45, p. 295], which based on the balanced scorecard [46] focuses on the integration of social and environmental aims with company objectives [37, p. 67]. The strategy map uses the balanced scorecard to draw a cause and effect relationship [47, p. 513].

Fourthly, the organizational anchoring leaves room for company-depended decisions. SMC can be organized as a central department, or decentralized [25, pp. 189]. It could be an own staff unit, integrated into the sustainability management, or into the management accounting department [25, p. 123][27, p. 364]. Literature highlights the importance of a link to top management [25, p. 151][29, p. 25].

Fifthly, implementation constraints are discussed that could prevent companies in the integration of SMC. Often costs of implementation, missing knowledge [44] and the available time are named [48, p. 18][49, p. 5]. Since the measurement of sustainability aspects is not common, it could be a constraint to set targets or key figures [26, p. 228].

2.3. Small and medium sized companies (SMEs)

The German word Mittelstand describes SMEs but also a social status [64, p. 182]. While there is no regular definition [65, p. 149][66, p. 2], SMEs often are defined with quantitative criteria such as turnover and employee figures [67]. Due to dependence to listed enterprises, these criteria are not sufficient: qualitative criteria should be taken into consideration. We address SMEs that belong to the German Mittelstand, that are not capital market oriented and that do not belong to capital market oriented enterprises.

Since organizational structures, resources and the capacity in SMEs differs from large companies, SMC is perceived uniquely [68, p. 107][65, p. 149][69, p. 123]. Many SMEs
feel less pressure to address sustainability than multinational companies. Consequently, diverse instruments and indicators that are developed based on studies are useless for SMEs. This topic is picked up in Section 6. Besides the pressure from key-customers and other stakeholders, SMEs might access new markets, reduce costs and adhere to the moral concept of the owner by embracing SMC. [71, p. 48][69, p. 125].

### 3. Study Review

There is no theoretic work that helps to forecast results of our findings; in fact, the reason for our study is to become able to contribute to theory. At the same time, much theoretic work on sustainability management and also on management control exists; it has been discussed in the preceding section and more of it is addressed along with our findings (see Sections 5 and 6). Notable empiric work on SMC is compiled in Table 1. Four observations have to be kept in mind. Firstly, some studies are about 10, one even about 20 years old. The understanding of sustainability (and even of management control) was different by then. Secondly, SMC typically is only a subtopic in most of the studies. Thirdly, many studies have not been assessed scientifically and most have not been published in scientific outlets. And fourthly, several studies have only been published in German. The latter is not surprising given the importance of both SMEs in the German economy and the popularity of management control practices among German enterprises. Nevertheless, without proper generalization and linking to global topics and trends the significance of these studies is limited. We do not list exploratory work (such as [1]) in the table but rather address it where applicable throughout this paper.

It has to be noted at this point that we cite a number of sources that are written in German. While doing so in general is (justifiably) discouraged, it is necessary in this context in order to draw the full picture. Moreover, we bridge access to such articles by crediting them. This particularity of sustainability research honors “vibrant research cultures […] in non-English speaking countries” [72, p. 7].

Green IS literature is relevant due to its implications for management control efficiency. However, two approaches to green IS have to be distinguished. The “greenness“ of information systems is hardly important for our work. Whether IS use much energy or not is no major factor when considering environmental effects in energy-intensive industries such as the metal sector or nutrition manufacturing. Green IS in terms of IS support for environmental and social practices is highly relevant since it forms the interface to SMC. [73]. Modern management control is unthinkable without sophisticated IS. In fact the better the IS and the more integrated IS are inside the company and among its supply chain, the more profound data can be provided for SMC. [74]. It improvements are a current subject of research [74]. The relevance of information is also highlighted in the non-IS literature (cf. e.g. [9]) This topic is picked up in Section 6.

### 4. Method

#### 4.1. Basics and Research Questions

Due to the kind of questions in the questionnaire, we have roughly based our study on methods from marketing
research. To address the expected low reply rates (cf. Table 1), we decided to work descriptively. Keeping in mind the literature background in both sustainability and management control as well as the existing studies, we decided against working exploratively. However, we deem qualitative work perfect for a follow up study (see Section 6.4).

The goal of our study is to find out whether instruments of environmental and social management control are known by companies and to investigate how integrative instruments are used. Moreover, we aim at getting insights on the organization and tasks of sustainability management control.

Several research questions can be raised based on our previous (unpublished) work on the topic and the literature, in particular some of the discussed studies [54, 55, 58]:

1) Which instruments of sustainability management control are known by SMEs and how does usage relate to management control in general?
2) How and in which organizational way do SMEs consider sustainability? Is it a strategic objective? Which consequences does this have on management control?
3) Does usage and practices of sustainability management control relate to sector or by company size?
4) What trends in SMC can be expected?
5) Which constraints hinder SMC?

4.2. Study Setup and Participants

Since a global study would require massive resources and take very long to pursue, we decided to start on a smaller scale. Germany has a very strong background regarding its SMEs, which makes the German Mittelstand a well-suited subject of our study. Moreover, we picked one federal state of Germany. North Rhine-Westphalia is the largest state with a population of 17.5 m and provides ample opportunities to conduct a research as ours. In fact, extending our study to Germany as a whole would most likely have yielded inferior results due to a decrease in controllability without much gain in data quality. Studying SMEs from Germany is no limitation of our study: in fact, it fills a research gap.

While we work descriptively, our question design allows to derive explanations for some of the encountered phenomena. In particular, the instruments we ask companies about are based on the literature, additional qualitative answers are possible, and we are able to distinguish by company size (turnover and employees) and sector.

The population is made up by companies with at least 200 employees and a turnover of at least 50m EUR (68 m USD). While this factors out the smallest companies, it is a deliberate choice because small companies typically neither put much emphasis on management control nor embrace advanced sustainability practices; the feasibility of this lower boundary was acknowledged by our partners from industry. Companies selected for the study are not listed and do not belong to listed enterprises, thereby also avoiding double counting (cf. [32, p. 16]). Similar boundaries are also proposed in the studies discussed in Section 3.

Companies were derived from the amadeus [75] database. The number of participants is compiled in Table 2. As expected, we did not reach the optimal sample quantity, which rules out extended statistical testing. Our questionnaire was refined after a pretest with a selected small sample of cooperative companies. This procedure can be seen as a good practice (cf. [32, p. 15]).

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As highlighted in the background, SMEs share structural characteristics but have individual features. Since they are active in various sectors, they should be grouped [76, pp. 311]. As a consequence, we did a variance analysis (not included here) to build groups of participants. However, with a low reply rate a test of normal distribution – required for variance analysis [77, p. 581] – is not useful. Nevertheless, in a small control sample, the variance analysis is robust [78, p. 214]. Therefore, we did not test for normal distribution; results of the variance analysis were not significant. Still, a trend was notable that enabled us to set up groups.

We distinguish processing and service industry (including distributive trades) companies. Moreover, we separate by turnover and by the number of employees. 15 of the 37 interviewed companies belong to the service industry, 22 to processing. 12 of the asked companies have less than 500 employees (in the following: small), 14 companies employed a staff of 500 to 1999 (mid-sized). Moreover, 11 companies have 2000 employees or more (large). Differentiation by turnover can be neglected since it almost perfectly equals the grouping by employees.

5. Results

Most of the interviewed companies acknowledged that sustainability related topics are important. Only two companies took part in the study but deemed sustainability unimportant. The relevance of sustainability issues is also reflected in the companies’ history of dealing with it. Nearly 65% engaged in sustainability for over 5 years. The majority of companies (57%) include it in their strategy. Half of those that do not include it intend to do so in the future. Independent from size and sector the asked companies forecast that sustainability will be important in the future.

Environmental instruments are more frequently known by mid-sized and large companies (Figure 1). Especially, carbon footprint is known by every large but only by 42% of the small companies. Only some larger companies know less common instruments like the water footprint. Some instruments are known by the interviewed companies independent
from their size. Examples are the environmental balance and the environmental audit. Instruments like the material flow cost accounting are better known by processing companies.

Some social instruments independently from size and sector are known by nearly every company (Figure 2). These include key figures, suggestion schemes and flexible working time; social life-cycle accounting (SLCA) is hardly known.

It was notable that integration instruments are not so common (Figure 3). Over 30% of the interviewees stated that they do not know any of the listed instruments. At the same time, over 60% know the sustainability balanced scorecard. Service companies nearly exclusively know the strategy map. This could be a hint to sector-dependent approaches.

Environmental instruments known by most of the interviewed companies are also the instruments that are used for the longest time (Figure 4). Especially service companies use them for longer than one year already. However, the environmental audit is more important for the processing companies. The duration of usage aligns with the size of the company. The amount of companies that knows an instrument but neither uses nor plans to use it is fairly high.

The three most known social instruments are often used for longer than one year (Figure 5). While large companies use or plan to use key figures, some small companies do not use them. Over 70% of the asked companies reported that they employ company suggestion schemes and flexible working time. Only 8% do not plan to use these instruments.

Most of the companies do not use and do not plan to use instruments for integrative management. Only two companies use the sustainability balanced scorecard and the strategy map. Service companies use these instruments more often than producing trade companies.

The frequency of collecting environmental data for planning, managing and integration into internal reporting is sector-dependent. Service companies collect information ei-
ther continuously or yearly. Some processing companies collect data monthly or quarterly. The frequency of collection correlates with its integration, i.e. frequent collection goes along with frequent integration.

Subsequently we asked the companies how they integrate environmental and social data such as CO$_2$ emissions and the related costs in their planning and management process (Figure 6). We found that integration is not at an advanced stage. 60% of the interviewed companies replied that they integrate environmental data into operational planning. Almost 50% indicated that they do not integrate data into strategic planning or have no information about this.

Nearly 25% of the asked companies do not know if they integrate social data into planning and management (the figure is very similar to Figure 6 and thus omitted). Slightly over 50% of the interviewed companies integrate social data into operational planning. In total, integration of social data is less advanced than that of environmental data. Especially large companies integrate data more often (and more broadly) than small companies.

Huge differences can be observed between the size groups regarding the adoption of tasks and functions (Figure 7). Primarily large companies fulfill a lot of these. Numerous small and mid-sized companies adopt many tasks and functions but do so much less intensive. 65% of the interviewees fulfill collecting and preparing of sustainability data with medium intensity (scale 4–7). Establishing a system for information, planning and control is not a primary focus of many companies. This again is notable, since a lack of IS support likely hinders better management control.

Over 50% of the interviewed companies perceive several constraints (Figure 8). Besides the identification of relevant topics, which is primarily named by small and mid-sized companies, there are no specific characteristics in accordance with the size or between the sectors. The three most severe constraint are the available time, costs of implementation and the collection of relevant data.

Finally, we asked the companies about the interface between the department that deals with planning and management of sustainability, and other departments (Figure 9). Results depend on the size of the company. Human resources is involved in companies with more than 500 employees. Large companies name departments like logistics, marketing and even sustainability management. However, mid-sized companies name the management control department.

6. Discussion

6.1. Findings

The elaborate results presented in the prior section allow to formulate findings in dependence on our research questions. We gained notable insights regarding the first research question (instrument awareness and usage).

The best-known environmental instruments are environmental balance, environmental audit and balance of materials.
and energy. These instruments have also been the best-known instruments in other studies [58, p. 7][54, p. 23]. Larger companies know more instruments then smaller companies and they also use them more often. This was also affirmed in a previous study [62, p. 10]. All of the studies present similar results regarding the popularity of environmental instruments for managing sustainability. The usage of these instruments and particularly environmental management systems was different in the considered studies [54, p. 23][55, p. 63][58, p. 9][49, p. 18][62, p. 16][57, p. 9][48, p. 9]. A reason might be that the companies, which were addressed in the studies, are different. Another reason might be the age of the studies – some of the studies are 20 years old. Thus, our findings can be perceived as an update. Insights about the alignment of instrument usage period and company size are novel – and notable.

Regarding the most common social instruments, other studies reported suggestions for improvements and sponsorship [55, p. 63][58, p. 27]. Additionally, flexible working time is named [58, p. 27][61, p. 2]. In one of the studies, the interviewed companies said that instruments like the employee satisfaction are not important [61, p. 2]. Our findings draw a different picture. The interviewees stated that many instruments in the social area are used for longer than one year. Companies underlined the significance of flexible working time schemes and suggestions for improvements. SCLA has been famous in the 1980s but is not popular anymore, as confirmed by [48, p. 9].

Other studies report that environmental issues are favored over social issues [55, p. 56]. This was also noticed by us. Companies measure more environmental aspects than social ones [55, p. 68][32, p. 30]. One study noted that green aspects are not integrated with existing instruments for financial management [54, p. 22]; SCHALTEGGER and ZVEZDOV mention the lack of integration of social and environmental aspects into existing instruments [13, p. 432]. Our findings confirm a lack of integration.

Only one of the other studies addresses tasks [79]. Due to a difference in selected tasks, a comparison is not possible. Our findings indicate that large companies employ tasks relating to activities of financial management. A particularity is the low level of integration of tasks and functions – based on the literature review, this was unexpected. For example, a planning system is not used by most of the interviewees.

Considering the second question, some findings about the organizational background can be presented. They align with other studies, such as [55]. Most of the interviewed companies said that sustainability is an important topic. Contrasting other studies, which found that management control is not involved in sustainability [57, p. 7][55, p. 44][58, p. 5], (particularly larger) companies asked in our study said that management control is involved. It is notable that most companies do not have a special department for SMC. Considering the integration of sustainability into the company this might even be a good sign. Building an extra department for SMC would not necessarily help with the integration of sustainability but could pose new boundaries.

Regarding the third question, analysis shows that there are differences in the integration of sustainability into the organization based on company size and sector. In general, integration is an important topic (cf. [32, p. 28]) Enterprises that belong to the processing trade seem to work harder on the integration than service providers do. A reason could be the increased response of stakeholders (cf. [32, p. 45]). Another reason could be the higher consumption of resources that pushes controlling of environmental parameters. Processing companies could be involved in supply chains for multinational companies. Since most of them cover the complete supply chain in their sustainability reports, interviewed companies are possibly involved [55, p. 3].

Less pressure from stakeholders could be a reason why instruments for integrative managing are more popular with service providers. Dealing with sustainability could be internally motivated. Therefore, sustainability seems to be treated in a more integrated way as in processing companies.

Besides the differences in awareness and usage of managing instruments in dependence of company size, variance is also notable in the organizational fixing of sustainability. A reason could be that some departments (e.g. corporate communication) are not integrated in small companies.

Besides the status quo, we wanted to learn about trends (fourth research question). Most companies deem sustainability to be relevant in the future. Therefore, they plan to use social and environmental instruments in the near future or implement them at the moment. Since larger companies already use more instruments, the plan to use instruments was more often reported by small and mid-sized companies.

In April 2014, the European Commission adopted a directive on disclosure of non-financial information [79]. It was discussed for over a year which companies have to fill reports. While most SMEs still do not have to prepare reports, the discussion indicates that the topic as a whole is gaining momentum and that SMEs might soon face stricter regulation regarding sustainability – most likely companies that align with the definition taken for our selection.

Finally, we sought insights about constraints (fifth research question). The main constraints named in other studies were time, costs and difficulty in measuring sustainability [53, p. 29][48, p. 18][59, p. 20][49, p. 5]. Our findings well align with these results.

We also tried to find interrelation with a multiple regression. It was possible to find aspects that influence the completion of assumed duties. Besides, it was possible to show interrelation between company size, industrial sector, and the usage of instruments for sustainability management. However, these findings are not significant due to the small number of participants. Thus, analyses such as the ANOVA are not included here.
6.2. Recommendations

Although our study is not representative, results provide the foundation to support SMEs in their development to sustainability [1, p. 6] — especially in the field of sustainability accounting. We deem recommendations particularly important since there still is much room for improvement [32, p. 54]. There are notable differences regarding the size of the company and the industry classification. In general, companies who want to deal with sustainability accounting should consider the organizational structure and what kind of information are relevant for the company. To filter the relevant information they should start with a stakeholder analysis. Especially for SMEs it is important to think about the cost-benefit ratio. Therefore, it should be proven that the relevant information can be collected with acceptable effort.

For small companies instruments like environmental management systems, audits and the environmental balance could be relevant. In the social area, instruments like company suggestion schemes and flexible working time models can foster the way to sustainability. These instruments build a good basis of information while requiring minor time and cost. Additionally, they promise savings. Besides, environmental or energy management systems have to be installed in some countries to get refunds on electricity tax (e.g. due to §10 StromStG in Germany).

If companies deal with sustainability accounting, they should also deal with the integration of the realized information into planning and management. However, they have to keep in mind cost efficiency. Information, which are necessary for the environmental management system, could also be relevant and interesting for the planning process. For example, planning of the energy demand and costs for the energy are relevant for budgeting. To get the integration started, two things are important. On the one hand, the company should take care of the different departments that could be involved. Therefore, the communication between the departments and the flow of information should be documented. On the other hand, the company has to think about the IS. Systems involved in affected departments need to be integrated; at the same time, information systems have to be employed as tools for the integration of relevant data (rather than collecting information ad hoc [1, p. 38]). Besides, improved information availability can help to rise satisfaction. A main goal could be an integrated platform or a tool. This is also true for instruments that help to optimize the production process in an environmental way, e.g. the material flow cost accounting.

6.3. Limitations

In empirical studies, the limitations have to be considered. Our study is descriptive: it was only possible to identify aspects, which were already known in the beginning. Uncovering new aspects, however, was no focus of our study. Since we only used half open and closed questions, participants had limited possibilities to add new aspects. Thus, explanations of phenomena are limited. However, this (unfortunately) is pretty much usual for a study in this field (exception: [49]). Besides, there could be implications based on the sample. In our study, the mistake of the irregular refusal was noticed. Primarily companies answered our questionnaire that already deal with sustainability. Only two companies not interested in sustainability answered our questionnaire. It must be taken into account that the limitations are natural to the kind of study conducted. Therefore, they do not reduce the value of our results.

6.4. Generalization and Outlook

On the one hand, due to the particularity of SMEs in Germany results are not generalizable without careful considerations. On the other hand, other studies (and the theory) suggest that at least for countries in central Europe [1, p. 23] and probably for all so called developed countries, findings will be similar but for slight variations. These variations might be based on the different cultural background [80]. Nevertheless, the differences that are highlighted in our study due to the size of the company and, consequently, our recommendations might be transferred in other countries. In general, drawing a global picture based on local insights from many countries remains a challenge for the future.

Results on data integration hint that the area of green IS will become crucial; IS could help with the integration and especially in collecting data; in fact, continuous integration without powerful IS will not be possible. Processing trade companies and service companies collect social information in the same rhythm as environmental information.
Our findings indicate research gaps. Especially the link between IS and accounting in the sustainability field should be analyzed in the future. Besides, it would be interesting to see if studies in other countries with the focus on the same company size would confirm our results. As mentioned before, it could be interesting to work on an exploratory study with some companies that answered our questionnaire.

7. Conclusion

We presented a study on sustainability management control practice in German SMEs. We explained our method and results from 37 companies. Our findings partly align with the literature but also indicate novel insights. In particular, we were able to compile recommendations for companies that want to deal with sustainability in the future.

Topics of sustainability have gained much attention in the last few years. In particular, research with a business perspective as well as work connected to topic from the field of IS now complement the general social sciences coverage. We think that SMC deserves much more interdisciplinary attention and will keep on investigating. In particular, we deem the connection to information systems research to be of particular significance and, thus, hope to see follow-up work that closes the research gaps we sketched.

Acknowledgments

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References


