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RESEARCH ARTICLE

Towards a sustainability management tool for food manufacturing small and medium-sized enterprises—Insights from a Delphi study

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Abstract

Small and medium-sized enterprises (SMEs) are crucial for a sustainable development of the food sector. Common tools to manage and improve business sustainability are not applied widely amongst food manufacturing SMEs yet. Therefore, this paper derives important aspects to consider for an SME-suitable tool, based on an extract from a Delphi study. By conducting qualitative analysis of expert opinions, light is shed on needed initial requirements of a sustainability management tool for SMEs to use it. Furthermore, important conditions to create credibility are elaborated on, which can increase the application value of a sustainability management tool for SMEs. The different aspects hint at a sustainability management tool integrating not only sustainability assessment but also reporting and certification. With regard to content, the present paper recommends application of sustainability management tools for food manufacturing SMEs that take a holistic view on sustainability, including not solely the environmental but also social, economic and governance dimensions. The aspects explored through the present research lay a foundation for the development of a sustainability management tool for food manufacturing SMEs and can assist practitioners and researchers.

KEYWORDS

business sustainability, Delphi study, food manufacturing, SME, sustainability management, sustainable development

1 | INTRODUCTION

Small and medium-sized enterprises (SMEs) are titled as ‘the backbone of European economy’ (European Commission, 2022). Zooming in on the European food industry, 99% of the companies are SMEs, accounting for 43% of the turnover in this industry (FoodDrink Europe, 2020). This makes SMEs a central part of European food production with an important role in European economy.

As food manufacturing SMEs are part of a more decentralised food production, connected to local and regional values and practices (Cohen et al., 2017), contributing to regional development, while also

depending on their home region (Tödtling & Kaufmann, 2001), they are vital actors in transferring global demands into regional action for sustainable development. For this task local tools and expertise are needed (Kanter et al., 2016).

In contrast to SMEs, many big enterprises already pursue aim-oriented and strategic sustainability management. Tools for that include sustainability assessment, reporting and certification (Amundsen & Osmundsen, 2020; Burritt & Schaltegger, 2010; Sala et al., 2015). In SMEs those practices have not been implemented widely yet (Jansson et al., 2017; Rekik & Bergeron, 2017; Steinhöfel et al., 2019). This is partly due to SMEs' special characteristics

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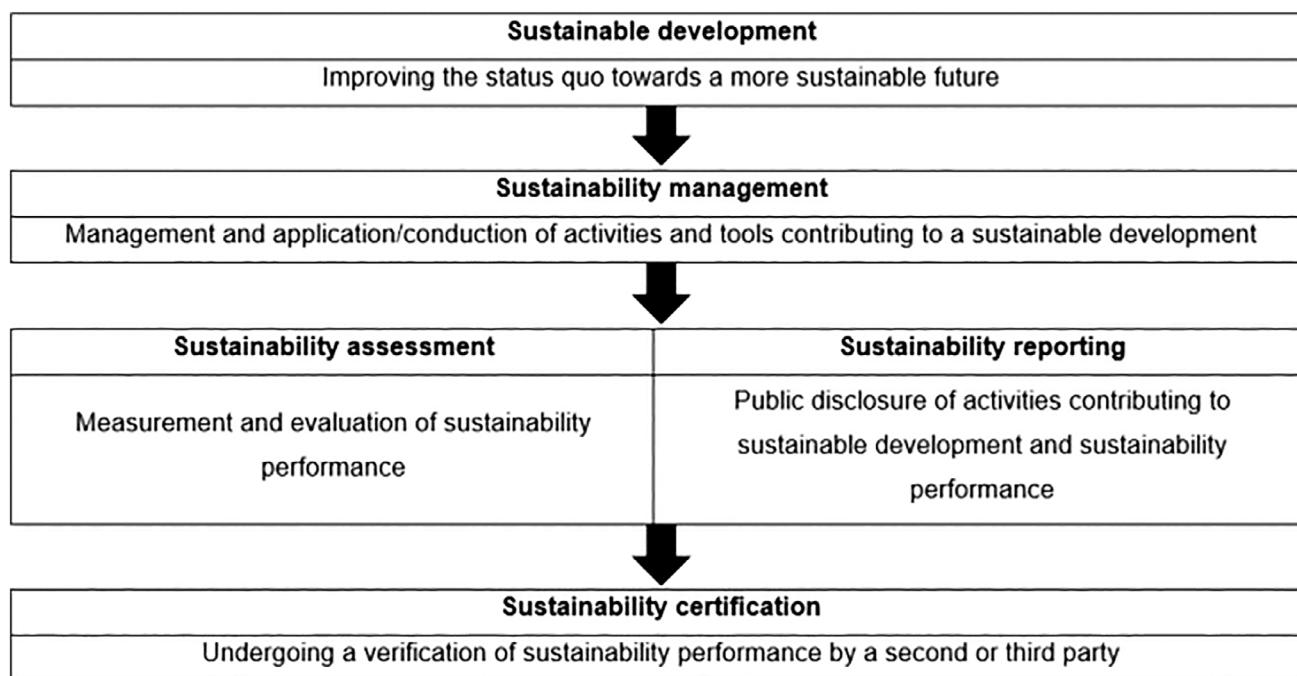


FIGURE 1 Definition of terms used in the paper

(Grothe, 2012), leaving SMEs between the pressure to develop sustainably and the lack of tailored tools and support (Arena & Azzone, 2012). Acknowledging the importance of food manufacturing SMEs' participation in sustainable development, the question occurs how a tool of sustainability management can be used and implemented by food manufacturing SMEs in a beneficial way and whether tool requirements for a food manufacturing SME differ from tool requirements for SMEs in general.

With an extract from a Delphi study this paper collects expert insights on the potential use and application of sustainability management tools for food manufacturing SMEs and derives practical implications for future tool development. The paper is structured as follows: First, basic characteristics of SMEs and their relationship with sustainability management as well as a description of sustainability management components such as sustainability assessment, reporting and certification are briefly summarised with reference to existing literature, followed by the methodological description. The part about results and discussion displays both quantitative and qualitative results including their discussion for each study question before conclusions are drawn.

2 | SMEs AND SUSTAINABILITY

2.1 | Components and content of sustainability management

Different concepts for evaluation and communication of sustainability performance can be applied to support sustainability management. Three possible sustainability management tool components dealt

within this paper are briefly described in the following (Figure 1) to illustrate their differences and requirements:

According to Sala et al. (2013), sustainability assessment can 'bridge the knowledge to action gap providing efficient and reliable methodologies to measure progress towards sustainability and to assess sustainable development objectives and goals' (p.1663). Thus, *sustainability assessment* can help decision-makers with the complex task of sustainability management (Ness et al., 2007). Despite being a supportive tool, sustainability assessment is not one fixed method as 'there are usually many competing objectives to consider' (Morrison-Saunders & Pope, 2013, p). Therefore, criteria or indicators for measuring sustainability need to be chosen carefully, because what is measured determines the outcome (Moldavska & Welo, 2015). Sala et al. (2015) also express three requirements for sustainability assessment: It 'has to fulfil at least three main features of sustainability science: inter-disciplinarity; its foundation on a holistic perception of reality; and collaboration in scientific research [...]' (p.323). When the current sustainability performance has been measured, it can be advantageous to communicate the results internally and externally.

Sustainability reporting is one way to communicate activities for sustainable development and sustainability performance towards stakeholders as well as to legitimise behaviour (Genç, 2017; Shnyder et al., 2015). The findings of Gallego-Álvarez and Pucheta-Martínez (2021) suggest, that the disclosure of sustainability aspects is 'a mechanism by which firms can gain visibility, legitimation and enhanced reputation and, as a result, improved firm performance' (p. 12). The often systematic way of disclosure, supported by frameworks such as the Global Reporting Initiative, is not of common use amongst SMEs (Steinhöfel et al., 2019) and not prevalent in parts of the food sector such as in German dairies (Westerholz & Höhler, 2021). Often, reports

are not written according to a standard, which makes comparison difficult and threatens credibility (Westerholz & Höhler, 2021). Regarding more integrated approaches, new concepts combining measuring and reporting are evolving, as for example, dashboard technology that can be useful even for very small companies (Shields & Shelleman, 2020).

Contributing to successful and credible communication of sustainability performance (Amundsen & Osmundsen, 2020), *certification* functions as an assurance of a certain standard or level of sustainability. It can help to build a trusting relationship with stakeholders and create differentiation of goods for consumers. For a producer, this can mean market access (Amundsen & Osmundsen, 2020; Blackman & Rivera, 2011) and higher prices (Blackman & Rivera, 2011; Harris, 2007). In order to create high credibility, certification should be conducted by a third party (Blackman & Rivera, 2011; Tanner, 2000) and the process should be transparent (Blackman & Rivera, 2011).

Closing the brief description of possible components of sustainability management (Figure 1), the question arises as to what the actual content of these concepts should be. Sustainability can be seen as a complex system with multiple interactions (Ben-Eli, 2018), which concerns nature, society and economy. Thus, researchers have stressed the importance of a holistic perspective in sustainability assessment, certification and reporting (Chen et al., 2014; Moldavska & Welo, 2019; Morrison-Saunders & Pope, 2013; Pintér et al., 2012; Sala et al., 2015; Talukder et al., 2020). Holistic frameworks with application in the agri-food sector have been investigated (Küchler & Herzig, 2021; Schader et al., 2014; Talukder et al., 2020), yet it remains questionable how far this holistic perspective is feasible for SMEs in food manufacturing.

2.2 | SMEs and their relation to sustainability

A witty quotation from Gerstenfeld and Roberts (2000) states: 'One thing that makes SMEs similar is that they are all different' (p. 117). Despite that great diversity, similarities of SMEs are reported in literature. They have strong regional bonds (Cohen et al., 2017; Tödtling & Kaufmann, 2001), are often owner-managed (Hillary, 2000; Lee et al., 2016; Revell et al., 2009), prefer to pursue more long-term oriented instead of short-term quarter goals (Grothe & Marke, 2012) and have a flatter and less formalised organisational structure (Jansson et al., 2017) compared to big enterprises.

If initial internal barriers such as the value-action gap by the owner-managers (Revell et al., 2009) or a reluctant attitude towards sustainable development and environmental management are overcome, 'the first hurdle' (Hillary, 2004, p. 568) towards sustainability is passed. However, further internal problems such as lack of knowledge and training (Hillary, 2004) as well as external barriers such as high costs of certification systems or unsuitable indicator and management systems (Grothe & Marke, 2012) exist. Despite these obstacles: since activities for a sustainable development are not only necessary but also a competitive advantage (Morsing & Perrini, 2009; Oelze &

Habisch, 2018), it is not a question of whether SMEs should engage but a question how it can happen.

Until now, SME engagement has often been happening in an unsystematic way. For instance, due to an often fragmentary understanding of sustainability, SMEs concentrate on environmental measures (Broccardo & Zicari, 2020; Carvalho et al., 2021), or measures and progress are not communicated (Bianchi & Noci, 1998; Oelze & Habisch, 2018; Revell et al., 2009) to the outside, missing a chance to stand out. In order to facilitate sustainability management in SMEs leading to sustainable development, appropriate tools need to be established (Hörisch et al., 2015).

Research is emerging examining sustainability in the context of food manufacturing SMEs (Bourlakis et al., 2014; Topleva & Prokopov, 2020) and approaches have been made to adapt sustainability management tools to the circumstances of food manufacturing SMEs (Arzoumanidis et al., 2013; Smith & Barling, 2014). However the lack of implementation of such tools in SMEs mentioned in the introductions as well as the reported need for sustainability research in food manufacturing SMEs (Adams et al., 2021) raises the question as to what exactly a management tool for food manufacturing SMEs needs in order to improve sustainability performance.

2.3 | Subject of research

Therefore, a Delphi study with experts in food production and/or sustainability management was conducted to collect aspects that a sustainability management tool and its possible components, namely sustainability assessment, reporting and certification, need to be applied by a food manufacturing SME. This insider perspective is preferable to a third-party perspective because it draws advice from practice and thus allows for a more transdisciplinary approach. To the knowledge of the researchers, this approach has not been chosen before and promises novel insights. In order to connect to the usefulness of a tool, the overarching research question was divided into sub-questions investigating factors for the decision to use, the implementation of and the communication about the use of a sustainability management tool (Figure 2).

3 | METHOD

3.1 | Delphi technique

For the investigation of the research questions, a Delphi study design was employed to collect expert opinions and forecasts for the potential use of a sustainability management tool and its likely components and content. Delphi studies can be used as a forecasting tool (Kreuzhof et al., 2016), as a consensus-seeking tool (Miller, 2001; Niederberger & Renn, 2018; Valentijn et al., 2015; von der Gracht, 2012), as an analysis tool (e.g., to explore drivers and barriers) (Barnes & Mattsson, 2016), and as a policy-developing (Fletcher & Marchildon, 2014) or framework-developing tool

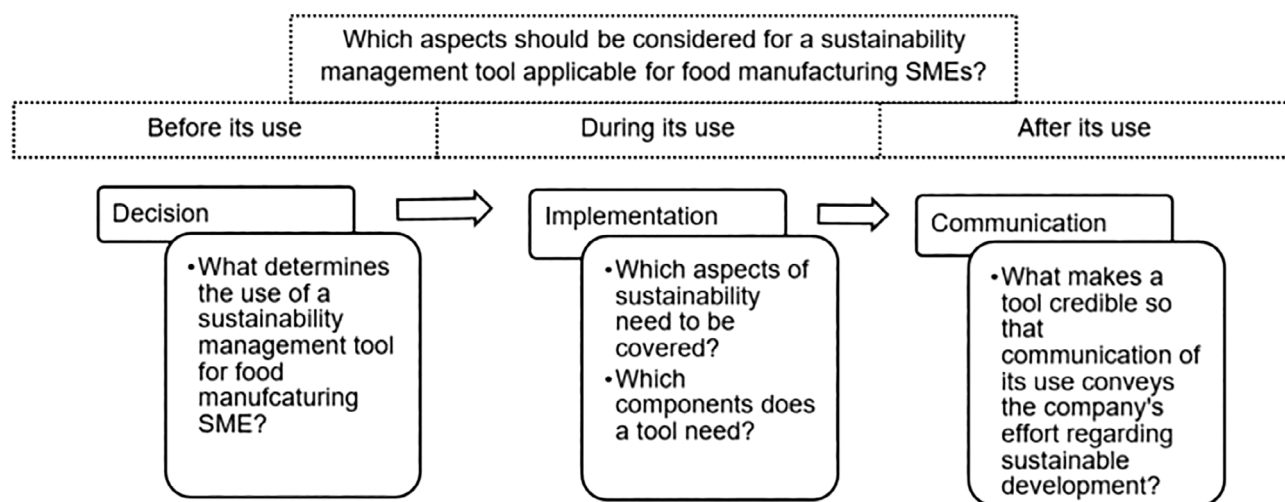


FIGURE 2 Visualisation of the research question and its subquestions

(Gbededo & Liyanage, 2020). They have been applied to various areas and issues (Seuring & Müller, 2008) and multiple variations have developed throughout the years; that is, group Delphi workshops in real life (Niederberger & Renn, 2018) and as part of participatory action research (Fletcher & Marchildon, 2014).

Rather than seeking consensus, this research was carried out to deliver a broad overview of aspects concerning SMEs and activities in sustainability management, considering the whole facet of answers (qualitative part) and estimating application probabilities (quantitative part and forecasting element). This aim, although rare in comparison to consensus-seeking Delphi studies, has been previously pursued by other researchers (van Gelderen et al., 2021).

Regardless of different aims and applications, one common characteristic of all Delphi studies is the involvement of an expert panel 'for capturing and refining expert opinion based on the experiences of those who are actively working in a domain' (Barnes & Mattsson, 2016, p. 2) in a structured process for group communication (Linstone & Turoff, 2002). The experts answer the questions while spatially separated and an overview of the results is handed back to them to initiate another round that is inspired by the cumulated results of the first round. This process is stopped if the aim of the study is reached or if no major changes are expected (Linstone & Turoff, 2002). The advantage of a Delphi study compared to an open discussion is the exclusion of interferences such as influence amongst the participants (Häder, 2002) prevented by anonymous responses (Toma & Picioreanu, 2016) and access to 'a geographically dispersed group of experts' (Toronto, 2017, abstract) made feasible via the internet. Thus it was possible to conduct the study during Covid-19.

3.2 | Question design

A mixed methods approach covering both qualitative and quantitative parts was employed. The Delphi study contained more questions but only thematically relevant ones are presented here. Three questions asked for the probability of a certain scenario and an elaboration on the estimated

TABLE 1 Questions evaluated

With what probability will small and medium-sized enterprises (SMEs) commit themselves to a sustainability certification to assess and evaluate their level of sustainability?
With what probability will sustainability certification have a positive impact on small and medium-sized enterprises (SMEs)? (Due to similar answers this question was merged with the question before in round 2, therefore only qualitative data is included into evaluation of the first question)
With what probability can an assessment of sustainability in a small and medium-sized enterprise (SME) of the food industry be credible?
Will all four dimensions of sustainability mentioned by the FAO (environmental, social, economic and good governance) be equally important for assessing sustainability in small and medium-sized enterprises (SMEs) of the food industry? Please divide 100% between the four dimensions to show the estimated importance.

probability (Table 1 for questions in detail). A seven-point Likert scale was used in which each Likert item was paired with a percentage and a term to create a full understanding of each number (Table 2). Expressions of probability and matching percentages were derived from Intelligence Community Directive 203 Analytic Standards (2015). For one question, participants were asked to divide 100% between given categories and to explain their division. A pre-test was conducted and, finally, the questionnaire was presented to the experts via the online questionnaire tool Analyzer.

3.3 | Participants

Out of 54 requested experts with a background in sustainability and/or the food sector (mostly from the study region Denmark and Germany), 30 agreed to take part in the study. Seven experts dropped out during implementation or did not participate. Therefore, 23 answers were received in the end. In the second round, five participants did not respond. Consequently, 18 participants took part in the

TABLE 2 Scale of probability used in the questionnaire

1	2	3	4	5	6	7
Almost no chance	Very unlikely	Unlikely	Roughly even chance	Likely	Very likely	Almost certainly
1–≤5%	>5–≤20%	>20–≤45%	>45–≤55%	>55–≤80%	>80–≤95%	>95–≤99%

second round. The average experience of the 18 participants was 22 years in the sustainability and/or food sector.

3.4 | Data analysis

Due to the number of participants, statistical results are displayed in absolute numbers. In round one (R1) 23, in round two (R2) 18 estimations are shown. The dropouts are marked with white rectangles in the bars for R1, so the reader can see whether a bar changed because of a dropout or because of a change of answer.

Analysis of the qualitative data was conducted by methods from the field of socio-scientific research engaging in a summarising method for qualitative analyses described by Mayring (2015). The text was organised according to the questions and not according to individual participants. After initial text work, for each question, internal codes were formed inductively; these were generated by the existent data (Kuckartz & Rädiker, 2019). The first coding framework offered insight into the different aspects covered by the expert's answers and it was included in the feedback following the first round. After the second round, the analysis was deepened by working with in vivo coding to a large extent, because in vivo coding can reduce the amount of interpretation by the researchers (Jaques, 2021). The code variety evolving was again summarised largely under existing codes from the first coding round and was partly summarised under new, more appropriate codes. For the first question, a mainly deductive approach was used for categorisation based on a classification from Windolph et al. (2014). Also, creative coding maps were used to reorganise the existing codes. Furthermore, a spreadsheet was prepared to visualise matching qualitative and quantitative data and the changes made from R1 to R2. MAXQDA was used as coding software.

4 | FINDINGS AND DISCUSSION

In this section, both quantitative and qualitative findings are described for each question and the experts' answers are examined in conjunction with recent research. Although quantitative answers are presented to give an overview of the experts' estimations, more emphasis is placed on the exploration of the qualitative results to reveal and discuss important arguments. Original quotes from the experts' answers are highlighted as indented and coding categories are highlighted in italics. The findings are presented for each question separately, starting with two questions asking for a probability, continuing with a question asking the experts to divide 100% between different options and ending with a framework summary.

4.1 | Question: 'With what probability will SMEs commit themselves to a sustainability certification to assess and evaluate their level of sustainability?'

In order to investigate the decision of an SME to apply a sustainability management tool, the question was connected to sustainability certification, including assessment, as this can be 'seen as leverage for effectively promoting sustainability and not only for evaluating its progress and/or comparing options' (Sala et al., 2015, p.323). The results are presented together with qualitative results from the question, 'With what probability will sustainability certification have a positive impact on SMEs?' This supported and deepened the qualitative analysis of the other question.

No indication can be derived from the quantitative answers, as an equal number of experts rated the probability as unlikely and likely in round one. Eight experts rated the probability as unlikely and seven experts rated it as likely (due to dropouts and not due to change of mind, Figure 3).

In relation to the estimation of probability, advantages, disadvantages and requirements were mentioned regarding the commitment of an SME to assess, evaluate and certify its sustainability performance. Advantages and motivation can be categorised into internal improvement, legitimisation and market success according to Windolph et al. (2014) (Table 3).

Internal improvement contained *performance evaluation*, strengthening of *internal processes* and benefit through a *systematic approach*; all aspects were mentioned three times. Also, the advantage of reducing other *reporting obligations* was brought up. The benefit of internal improvement through sustainability assessment has been reported by researchers (Jones & Mucha, 2014), as well as the internal inspiring and motivating character of a certification (Amundsen & Osmundsen, 2020; Carvalho et al., 2021) for example, through the definition of focus areas (Amundsen & Osmundsen, 2020). An interesting aspect is the finding by some researchers, that often only front-runners, who know they will perform well, strive for certification (Amundsen & Osmundsen, 2020; Blackman & Rivera, 2011). This partly challenges the advantage of internal improvement and points to the need for other mechanisms than certification to get poorer performing SMEs engaged in sustainable development.

The possibility to legitimise through sustainability certification was further specified by *external certification* and enhanced *credibility*. Hatanaka et al. (2005) describe the connection between legitimisation and certification in the agri-food sector. Through third-party certification (external certification) higher credibility is achieved due to the perceived independence of the certification body. This in turn contributes to the legitimacy of an enterprise.

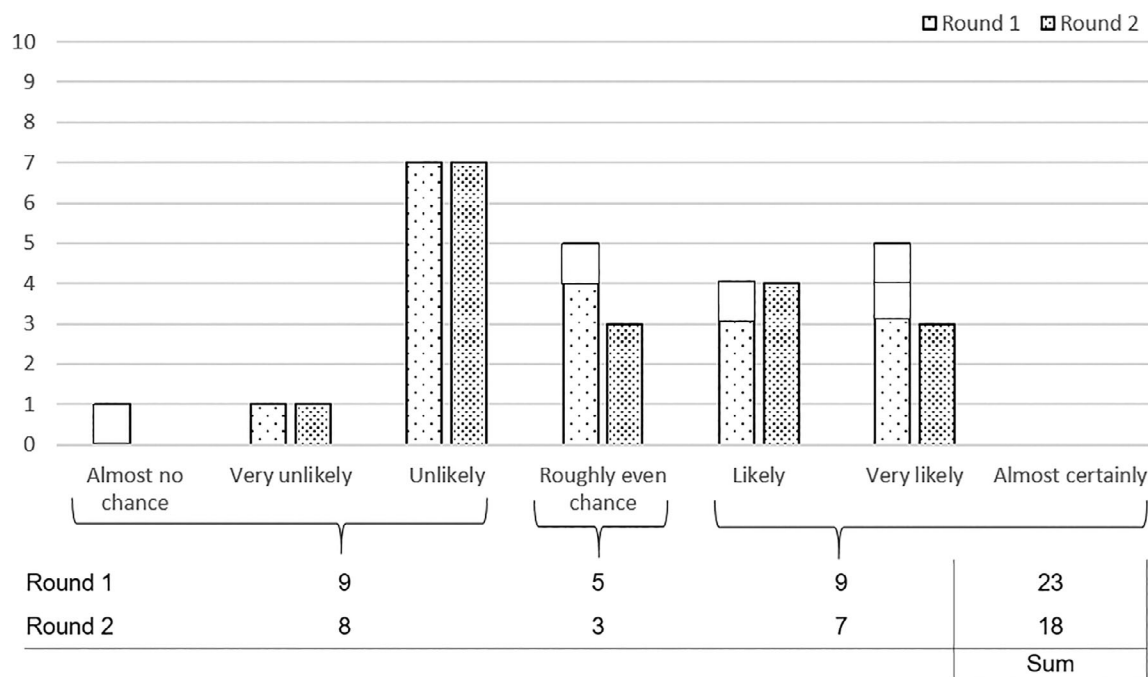


FIGURE 3 Absolute frequencies for the question: ‘With what probability will small and medium-sized enterprises (SMEs) commit themselves to a sustainability certification to assess and evaluate their level of sustainability?’

Market success through *competitive advantage* was mentioned three times and could also occur through *additional margins* and *customer loyalty*. Competitive advantage for SMEs through corporate social responsibility is of major interest in research (Morsing & Perrini, 2009) and Pintér et al. (2012) describe only extrinsic motivation such as competitiveness as real motivation.

Communication and *marketing* can be subordinated under both legitimisation and market success because both categories depend on the transmission of (advertising) information. Genç (2017) describes the communication of sustainability as a possibility to legitimise in front of decision-makers and/or the public. However, the aspect of legitimisation through marketing and strong communication is weakened by the observations of Oelze and Habisch (2018): SMEs tend to see the marketing of efforts in responsible supply chain management as less important than multi-national companies and that they ‘neglect an effective communication to stakeholders’ (p. 749). As a result, less competitive advantage is gained. While the qualitative results from this study do not reveal the importance of the different advantages for SMEs, they contribute to the assumption that the adoption of green practices (here broadened to sustainability practices) in SMEs is always multi-causal (Rekik & Bergeron, 2017).

Alongside the positive factors, disadvantages and risks are seen in needed *resources* (*financial, time, manpower*) (five times) for much *bureaucracy*—not fitting the lower level of bureaucracy in SMEs reported by Meredith (2000). The shortage of SMEs’ resources with regard to sustainability management is also a present topic in literature (Arena & Azzone, 2012; Caldera et al., 2019; Grothe & Marke, 2012). SMEs are often limited in resources such as human and financial capital

(Hillary, 2004; Kannan & Boie, 2003) and face higher capital and transaction costs (Thakkar et al., 2009). Also described as problematic was the *complexity of sustainability* (three times) and the corresponding *lack of knowledge*. When it comes to sustainable development SMEs are directly dependent on their owners and their attitudes towards sustainability (Jansson et al., 2017). However, owner-managers (i.e., SMEs) often lack the required skills and knowledge to implement an environmental or sustainable management system (Grothe & Marke, 2012; Hörisch et al., 2015; Perez-Sanchez et al., 2003; Schaltegger et al., 2012) and information about what and how to implement is missing (Grothe & Marke, 2012; Hillary, 2004). Due to the lack of workforces specialising in sustainability management, strategic and operational management is complicated (Grothe & Marke, 2012). Hörisch et al. (2015) found that the possession of knowledge is ‘a key difference between SMEs and large companies as well as an important mediator to promote sustainability management’ (p. 765). In summary, a variety of advantages and disadvantages exist and it remains an owner’s consideration whether to engage in sustainability certification. As one participant put it:

SMEs will have to evaluate advantages and disadvantages of sustainability certification. Advantages of certification (systematic approach to sustainability, external verification) will have to be balanced against disadvantages (extra effort, extra costs).

In addition to advantages and disadvantages, the experts also mentioned requirements and conditions for certification. One requirement is a realistic framework for certification regarding *finances, effectiveness, sector-specificity, support, transparency* and *trustworthiness*. A

solution for financing coincides with the problem of resource shortage, as discussed earlier. Considering that sustainability assessment and certification might lead to cost reductions due to internal improvement (Jones & Mucha, 2014), costs for certification could be offset after some time. However, this requires enough investment capital in advance. A proposed solution by one expert was:

Maybe the certification process could be cost neutral and/or subsidized at the beginning to ensure adoption and ongoing performance improvement of the business through the certification process.

This could involve funding by official structures and could be a hint for policymakers to support sustainable development in SMEs more strongly.

Support is connected to the possible lack of knowledge in SMEs regarding sustainability and is mentioned by Hillary (2000). For the existing sustainability certification B-Corp, deficits of sector-specificity and support for SMEs are discussed by Carvalho et al. (2021). If direct support is not possible, another way of a support system battling a lack of knowledge is through a network between different SMEs because 'the network becomes the place where through collaborations and partnerships, an SME can start developing awareness and a practical approach toward sustainability' (Corazza et al., 2021, p. 3). Contributing to the need for support while compensating for a lack of resources and knowledge, the findings of Journeault et al. (2021) emphasise the importance of collaboration of SMEs with external stakeholders. They can take on the role that usually internal agents in larger enterprises can supply, such as trainer, analyst, coordinator, specialist and financial provider. A sustainability management tool integrating some sort of network character with external stakeholder support could thus be an alternative solution for SMEs. The aspects *transparency* and *trustworthiness* are discussed together with the matching qualitative results of the next question.

Another requirement for certification is visible benefits, especially *added value*, but also *positive external effects* such as *marketing*. Increased application of sustainability tools through the promotion of benefits is also addressed by Johnson (2015). Blackman and Rivera (2011) argue that '[w]idespread dissemination [marketing of the certification results] via websites and academic publication maximizes the benefit of evaluation' (p. 1183). Although this is related to the consumer perspective, it can also have a positive external effect on companies undergoing certification. However, whether marketing a sustainability certification is possible remains uncertain, when taking the findings of Grunert et al. (2014) into account, which imply low relevance of sustainability labels concerning consumer choices.

The advantages and disadvantages mentioned in the qualitative results go towards explaining why there is such a variation in predictability when it comes to food manufacturing SMEs committing to sustainability certification (including sustainability assessment). The theoretical advantages of internal improvement, legitimisation and market success (Windolph et al., 2014) are contrasted by practical impediments such as SMEs tending to lack resources (Grothe & Marke, 2012; Hillary, 2004). Thus, a procedure deemed to be

TABLE 3 Code system overview for the question: 'With what probability will SMEs commit themselves to a sustainability certification to assess and evaluate their level of sustainability?'

Code list—Commitment to sustainability certification	
Codes	Frequency
Advantages and motivation	
Internal improvement	
<i>Performance evaluation</i>	3
<i>Internal company process</i>	3
<i>Systematic approach</i>	3
<i>Decreasing other reporting</i>	1
Legitimation	
<i>External verification</i>	1
<i>Credibility</i>	1
<i>Communication</i>	2
<i>Marketing</i>	1
Market success	
<i>Competitive advantage</i>	3
<i>Additional margin</i>	1
<i>Supports customer loyalty</i>	1
<i>Communication</i>	2
<i>Marketing</i>	1
Disadvantages and risks	
Resources	5
Bureaucratic	3
Complex	3
Lack of knowledge	2
Consumer confusion	1
Requirements and preconditions	
Realistic framework	
<i>Costs</i>	3
<i>Effectiveness</i>	4
<i>Sector-specific</i>	1
<i>Support</i>	1
<i>Transparent</i>	1
<i>Trustworthy</i>	2
Visible benefits	
<i>Added value</i>	6
<i>Positive external effect</i>	3
External pressure	
<i>Competitors</i>	3
<i>Customers</i>	3
<i>Force</i>	1
Internal conditions	
<i>Attitude</i>	1
<i>Experience</i>	1

bureaucratic with complex content such as sustainability assessment and certification seems not feasible. The rather reluctant estimation

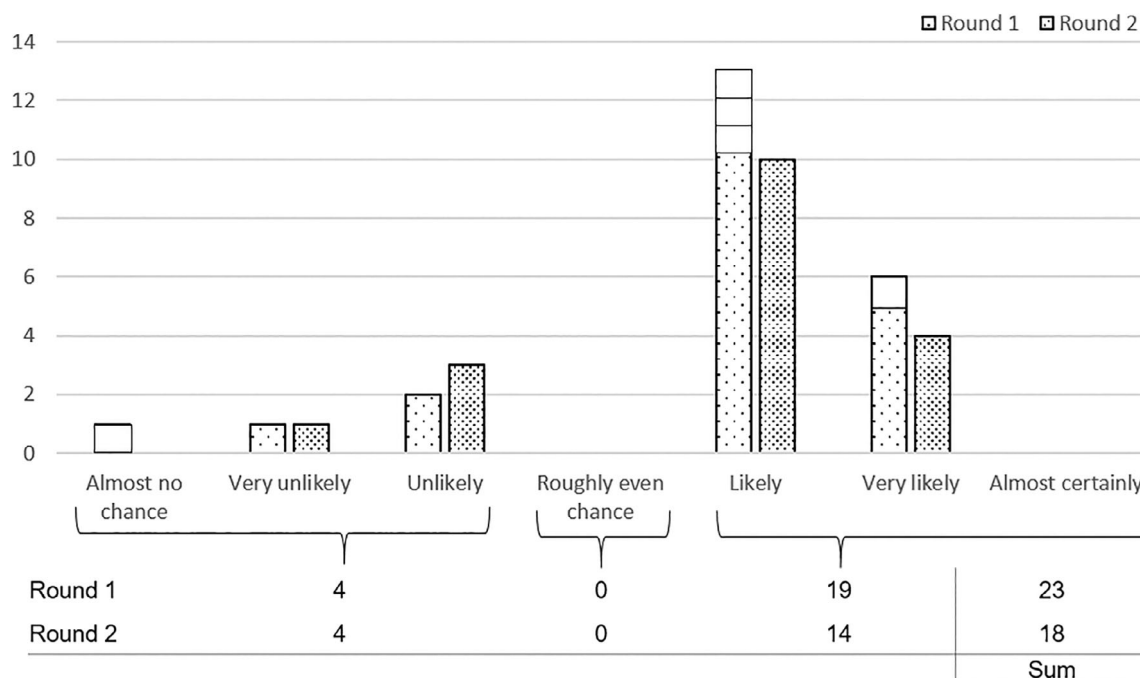


FIGURE 4 Absolute frequencies for the question: ‘With what probability can an assessment of sustainability in an SME of the food industry be credible?’

of the experts also indicates that, for a sustainability management tool for SMEs, the conventional components and strategies have to be altered to new concepts suiting the needs of SMEs.

4.2 | Question: ‘With what probability can an assessment of sustainability in an SME of the food industry be credible?’

Communication of business sustainability is important (Genç, 2017) and addressees of sustainability assessment expect (amongst other aspects) trustworthy and accountable results (Silva et al., 2019). Additionally, as argued by Graafland (2018), if SMEs engage in activities for sustainable development, they need credibility in order to withstand the increased attention created by the company's sustainability engagement. Due to the high value of credibility, we asked the participants about the estimated credibility of sustainability assessment concerning food manufacturing SMEs. An assessment of sustainability in an SME of the food industry was predicted to be likely credible by 19 participants in R1 and 14 participants in R2. The rest of the participants, four in both rounds, predicted credibility to be unlikely (Figure 4).

The experts mentioned conditions and difficulties for a credible assessment. The conditions contain four main areas: company conditions, process conditions, assessment characteristics and assessment communication (Table 4). Company conditions are not influenced by a tool itself and, therefore, this aspect is not discussed further here.

The *assessment and certification process* as well as the process of *assessment set up* is one determinant:

It is very important to be extremely thoughtful, patient, wise and almost philosophical when setting up such a framework.

This statement is supported by de Olde et al. (2017) who claim that the process of developing an assessment is even more important than the final version. Additionally, a thorough process contributes to *transparency*, which was mentioned by nine participants as the most prominent assessment characteristic needed for a credible assessment.

As long as you are transparent about what you measure and base the relevance and the measuring points by something credible like the SDGs.

According to Pintér et al. (2012), transparency is one of the principles of sustainability assessment and measurement. Hereunder, the researchers name two important issues: public understanding of the assessment process (mentioned by the experts, Table 4) and the public assurance of assessment results. Transparency is also used as an aspect to compare sustainability frameworks (de Olde et al., 2016) and it is an important factor for the communication of assessment results (Silva et al., 2019) and influences the perception of customers (Kang & Hustvedt, 2014). Dando and Swift (2003) argue that, while important, a high level of transparency is not

TABLE 4 Code system overview for the question: 'With what probability can an assessment of sustainability in an SME of the food industry be credible?'

Code list—Credible assessment	
Codes	Frequency
Conditions	
Company conditions	
Reasons and motivation	1
Controlled by the topmanagement	1
Type of production	1
Value chain support	1
Process	
Assessment process	1
Certification process	1
Process of assessment set up	2
Assessment characteristics	
Transparency	9
Third-party certification	1
Simplicity	3
Assessment communication	
Reaching consumer	2
Communication	1
Published	1
No fixed figures	1
Difficulties	
Hard to assess	2
Complexity	1
Comprehensiveness	1
Prioritise	1
Accuracy	1
Overall level	1

enough for credible assessment but needs to be complimented with other factors such as assurance. One possibility of assurance was alluded to by the experts: *Third-party-certification* was another needed assessment characteristic mentioned. Addressees of sustainability assessment expect external verification (Silva et al., 2019) and Hatanaka et al. (2005) perceive third-party-certification as important for being objective but argue that for SMEs this type of certification poses a problem because of high costs. It is not a realistic concept '[w]ithout financial, technical, or educational assistance', the authors argue (p. 366).

Additionally, *simplicity* plays an important role as an assessment characteristic. Furthermore, connections to *science* and existing concepts (SDGs) and *fixed indicators* were raised. Supporting these demanded assessment characteristics, Moldavska and Welo (2015) point out that 'the challenges of sustainability assessment' are (amongst others) 'too complicated' and 'lacking reliability of the results' (p. 624). Linking an assessment to already existing concepts

contributes to understanding and relatability. However, in cases relating to SDGs, Heras-Saizarbitoria et al. (2021) remark that the way SDGs are often operationalised is more to take advantage of the colourful items and vaguely framed goals rather than to create credibility. Therefore, a connection to science seems a good option (Harris, 2007; Sala et al., 2015), however, understanding by the stakeholders needs to be assured.

Communication to consumers was seen as relevant for credible assessment as well as *published evaluation*. These arguments point in the direction of sustainability reporting. Yet, this practice is not common amongst SMEs (Steinhöfel et al., 2019). Additionally, communication in the form of reporting has also been used in an irresponsible way (Moneva et al., 2006), thus contradicting the aim of credibility. An expert mentioned a credibility advantage for SMEs through communication to consumers:

SME's have the possibility of direct contact between consumer and producer, to create trust.

The close relationship between a small enterprise and a customer is also pointed out by Herzig et al. (2003). Direct communication about efforts in sustainable development and direct contact create a high level of credibility since it creates a first-hand experience (Rieh, 2015).

Perceived as a difficulty for credible assessment was the circumstance that sustainability is *hard to assess* because of its *complexity and comprehensiveness* and because *prioritising factors* is difficult. Due to these problems with sustainability, *accuracy is impossible* and an *overall level* is hard to present. These general problems related to the nature of sustainability are reflected in observations by Moldavska and Welo (2015) that no tool has been invented yet covering all the needs emerging from the complex concept of sustainability including weighting and aggregating sufficient indicators in all three dimensions of sustainability. Chen et al. (2014) acknowledge the complexity of holistic sustainability assessment for manufacturing SMEs, however, they suggest that 'complexity needs to be hidden behind an easy-to-use interface, and the assessment results need to be easy to interpret' (p. 438). The balance between accepting as well as working with sustainability's complexity and providing credibility by transparently and understandably demonstrating an assessment process is a dilemma that needs to be considered if sustainability assessment is a part of a sustainability management tool for food manufacturing SMEs.

4.3 | Question: 'Will all four dimensions of sustainability mentioned by the FAO (environmental, social, economic and governance) be equally important for assessing sustainability in SMEs of the food industry?'

Holistic sustainability can, alongside environmental, economic and social aspects, be expanded with the dimension of management/

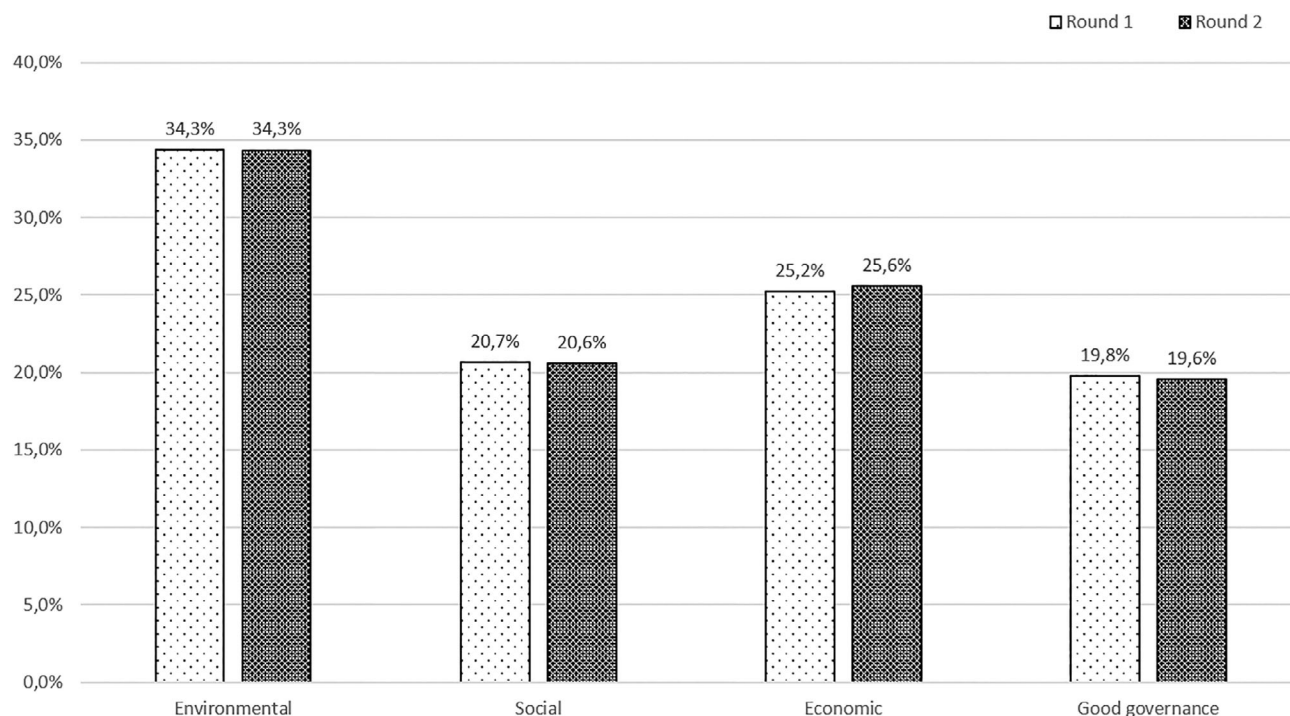


FIGURE 5 Mean statistical answers to the question: 'Will all four dimensions of sustainability mentioned by the FAO (environmental, social, economic and good governance) be equally important for assessing sustainability in small and medium-sized enterprises (SMEs) of the food industry?'

good governance (Pintér et al., 2012) as seen in the guidelines for Sustainability Assessment of Food and Agriculture systems (FAO, 2014). The participants were asked to weight the four dimensions with regard to sustainability assessment of SMEs in food manufacturing. While some participants deemed one dimension more important than others, some weighted all dimensions as equally important but none of the participants rated any dimension with 0%. This may make a case for a holistic approach in SMEs or it may be a result of question design; since the dimensions were predefined in the question and it was asked if all dimensions are equally important, this might have prevented the omission of one dimension in contrast to an open question.

The average distribution of percentages shows the environmental dimension being judged as the most important one (Figure 5). In the qualitative answers, the environmental dimension was described as *especially important* several times. Participants who rated this dimension highest stated that *sustainability hot spots in the food sector are related to environmental issues* (40%) and that the *environmental framework is unalterable* (35%). The high score of this dimension can thus be derived from the fact that food production is very closely connected to the planet's ecosystem.

For the food and agricultural sectors, the protection of the environment is essential to ensure that food continue to be produced and sold with good levels of quality, nutrition and within planetary boundaries (40%).

However, next to the argument of nature's essentialism for food production, the environmental dimension was rated high because:

Within the public discussion environmental issues are the most popular ones. Plus they are often easy to measure and therefore success is easy to visualize (65%)/the consumer's focus is on that dimension (40%).

This argument hints in the direction of competitive advantage through the communication of assessment results or reporting and is supported by the statement of Shnayder et al. (2015), who 'conclude that firms [of the packaged food industry] can better distinguish themselves from competitors by focusing more on Planet-based behaviour' (p. 21). The role of environmental practices as a flagship is also described by Pintér et al. (2012) who state that '[m]anaging non-market issues, such as social and environmental performance, is important only as long as business can demonstrate how voluntary social and environmental management contributes to competitiveness and economic success' (p. 22). In general, the relatively higher rating of the environmental dimension coincides with the notion that often sustainability is treated as environmental sustainability by SMEs (Broccardo & Zicari, 2020; Klewitz & Hansen, 2014) or in sustainability assessment (Ness et al., 2007; Schader et al., 2016).

Sustainability and *profit* in the economic dimension were described as *necessary* and *very important*, for the *continued existence* of a *company* (15%) and of *industry* (45%). The economic dimension is partly seen as a base for the existence of sustainable practices:

Without economic profit, the other three cannot be implemented (50%).

From a sustainable supply chain management perspective put forward by Carter and Rogers (2008), environmental and social activities cannot be uncoupled from a company's strategical and financial framework. Yet, the statement was made that *economic issues tend not to be assigned to sustainability management* (10%) and that *economic comes second* (25%) (after environmental [40%]). Overemphasising economic aspects was also described as a threat to sustainable development:

While obviously the economic dimension is important, it should not be the absolute priority, otherwise we revert back to unsustainable practice (10%).

It is a 'chicken-and-egg' problem; does a business's profit depend on a functioning environment or does environmental conservation depend on functioning businesses?

The social dimension was referred to as *very important* but, in general, it was less commented on. Like the economic dimension, it was said to *come second* (25% R1 to 20% R2, compared to 40% for the environmental dimension). This subordination of the social to the environmental dimension is observed frequently (Beske et al., 2014).

One participant claimed social standards as *already being high* in the study region Denmark and Germany. This remark refers to local food production and neglects a food supply chain perspective that relies on ingredients sourced in regions without high social standards. In Germany, food and feed with a volume of nearly 50 billion Euros were imported in 2020 (Statista, 2021), and therefore not under the control of national social standards. However, the participant changed from 20% in R1 to 25% in R2 because:

Social standards deserve increased attention - the high proportion of manual labor tempts unpleasant business models.

Here, the participant relates manual labour to the vulnerability of workers in low-paid jobs. However, this is not only a problem in countries with low social standards; it is happening in the German meat industry, for example, too (Birke & Bluhm, 2020).

For the dimension of good governance, the qualitative answers described this dimension as an *enabler* (15%) and the *key to successful sustainability management* (30%) and that it *needs to be the base* (35%). This is supported by the conclusion of Azapagic (2003) that '[b]uilding a sustainable business [...] requires strategic thinking and a systems approach' (Azapagic, 2003, p. 315).

Comments on the division between the different dimensions were that it is *depending on the perspective (company/society)* and *on the business model of an SME*. One participant, rating every dimension with 25%, answered:

[t]hese aspects of sustainability are all mandatory. You cannot compromise any of them. So they are equally important.

Another participant, distributing percentages uneven in R1, changed to 25% for each dimension with the statement:

After reading the report, I see how all of the dimensions [go] hand in hand and needs to be considerate when working with sustainability.

In summary, four participants rated all dimensions equally after R2, other participants weighted the dimensions unequally. The results demonstrate that different definitions of and perspectives on sustainability can influence the estimated importance of the different dimensions of sustainability. Although there is no weighting to be drawn from the results, the implication for the integration of all four dimensions into a sustainability management tool for a food manufacturing SME can be derived. This is underpinned by the view that sustainability dimensions are interlinked (Gray & Milne, 2007).

4.4 | Summarising the discussed findings in a framework

In this section, important aspects of a sustainability management tool for food manufacturing SMEs are presented (Figure 6). All these aspects should be considered for a sustainability management tool to increase the likelihood of implementation. For practitioners and researchers working with and developing sustainability management tools for food manufacturing SMEs, it is important to note that there are also internal/company conditions and external pressure that have an impact on the use of a tool. Although company conditions cannot be influenced directly, it is important to keep that aspect in mind (Dasanayaka et al., 2022) and to leave room for flexible adaption of the tool.

Since the need was expressed by the experts to communicate in a transparent and credible way, sustainability assessment alone is not likely to bring the visible benefits of added value about. Here, an integrated approach is recommended (Maas et al., 2016), which includes reporting and possibly certification of sustainability performance to communicate outwards. This way, not only internal improvement but also legitimisation and market success can follow the application of a sustainability management tool.

The demanded credibility was estimated to be likely created, depending on company conditions, process conditions, assessment characteristics and assessment communication. Considering these categories can help to engage in a structured development process of a sustainability tool. However, the discussion of these different aspects reveals difficulties that create doubt if total credibility can be achieved. The acknowledgement of the immense difficulty to capture and picture sustainability in a credible way can lead to two conclusions: (1) Since there is not 'the one way' to assess and evaluate sustainability, transparency of the used methods and procedures is key to credibility; (2) Although assessment and certification of sustainability can add to a company's (internal and external) success, it should not be seen as the ultimate precondition to sustainable development.

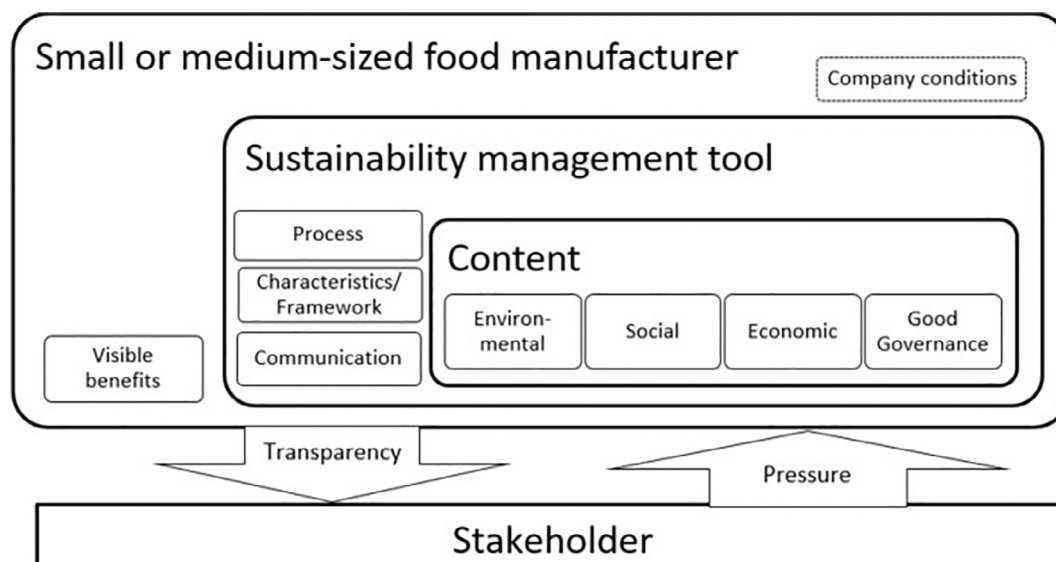


FIGURE 6 Aspects to be considered for a sustainability management tool for food manufacturing small and medium-sized enterprises (SMEs)

While asked in the context of food production, the antecedent observations are not exclusively related to the food industry but can support sustainability tool development for SMEs in other sectors, too. This is different from the last sub-question this study focused on concerning holistic assessment. Here, the experts' answers have to be seen in the context of food production. Despite a higher than average rating of the environmental dimension, no direct weighting advice can be drawn from the results. Yet, important arguments were put forward for all four dimensions (governance, environmental, economic and social), thus hinting at the importance of a holistic assessment not only for big, but also for small and medium-sized, enterprises.

5 | CONCLUSION

The purpose of the present study was to shed light on which aspects a sustainability management tool, including possible components such as assessment, reporting and certification, for food manufacturing SMEs should entail. Overall, it can be stated that for SMEs in general, thorough consideration according to the special characteristics of smaller company size is needed. Yet, for food manufacturing SMEs this does not mean neglecting a holistic perspective. Rather, it emphasises paying attention to the required framework aspects mentioned in this paper, with special attention being given to credibility and a transparent process to increase the benefits for an SME.

This study adds to groundwork for further research and the development of sustainability and sustainability management tools and frameworks for SMEs in general, but also specifically for SMEs in the food sector. First, the study delivers evidence that for food manufacturing SMEs, despite their size and unique characteristics, a holistic perspective on sustainability is inevitable. Holistic perspectives have been stressed and demanded by other researchers and studies before (Chen et al., 2014; Moldavska & Welo, 2019; Perez-

Sanchez et al., 2003), yet the present study has shed light on that aspect regarding SMEs in the food sector. Second, it supports the need for integrative management tools (Maas et al., 2016) covering both evaluation and credible communication.

Third, the findings reveal important aspects of an SME's sustainability management tool and conditions for its credibility. Credibility is crucial for communication, which is becoming increasingly important as consumer awareness of sustainable business activities rises (Lerro et al., 2018) and as sustainability reporting can increase visibility, legitimisation and reputation (Gallego-Álvarez & Pucheta-Martínez, 2021).

Fourth, it supports literature on the advantages and disadvantages for SMEs to engage in activities for sustainable development. According to Dasanayaka et al. (2022), this has been underrepresented from a qualitative perspective so far.

The main implication for practitioners and researchers adapting or developing a sustainability management tool is the amount of attention that needs to be paid to holistic (and thus comprehensive) content and the integration of both evaluation and communication. This is a continuous balancing act as, on the one hand, a transparent and credible process is desired, but on the other hand, considering SMEs' need concerning restricted resources, for example, is important.

An identified limitation of this study is one that is a general problem in the field of expert studies: despite thorough screening to assess the suitability of experts, it remains uncertain. As found by Tichy (2004), procedures like self-rating of expertise by experts themselves are questionable in terms of solving this problem. However, since top-experts tend to have an overoptimistic view of their specific subject areas (Tichy, 2004), the inclusion of different expert-levels seems sensible to mitigate against this. Regardless of the problems with expert foresights and estimations, further (quantitative) research could support the tentative results from the Delphi-study with more representative results. Also, the interplay of sustainability assessment, reporting and certification of integrated approaches for SMEs could

be subject of further explorations. Furthermore, the conclusions from that study can be used in the development of a sustainability framework or tool for SMEs, accompanied by description and evaluation thereof to derive advice from practice.

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