

Sustainable performance management in the EU SME sector. A review and analysis of concepts and methods of strategic management accounting

Zrównoważone zarządzanie dokonaniaми w europejskim sektorze MŚP. Przegląd i analiza koncepcji i metod strategicznej rachunkowości zarządczej

BRIAN JONES*, ALBANA RASHA**,
JOANNA DYCZKOWSKA***, TOMASZ DYCZKOWSKI****

Received: 22.06.2023 – Revised: 15.09.2023 – Accepted: 19.09.2023

Abstract


Purpose: The paper's main objective is to structure the knowledge of the existing regulatory frameworks, projects and actions that support sustainable performance management (SPM) in small and medium-sized enterprises (SMEs) against the backdrop of the growing significance of the circular economy. The paper will also evidence how strategic management accounting (SMA) assists this process, what individual metrics, dashboards or scorecard concepts have been proposed and how their use may be assessed.


Methodology/approach: The research methods include (1) a descriptive systematic analysis of the policies established by the policymakers and regulators in the EU, (2) a comparative analysis of various organisations' initiatives, actions, delivered toolkits and their outputs, and (3) a literature review of the essential works and research studies on sustainable business models (SBMs), circular business models (CBMs) and SPM in the context of SMEs.

Findings: The policies established in the EU support SPM by encouraging SMEs to be involved in sustainable business practices and indicating how to embark on a green transition. Recently, multiple initiatives have been aimed at indicating the opportunities the closed-loop economy system offers SMEs. Many toolkits have also been developed to help SMEs measure their sustainable performance. Although this measurement is vital for SMEs, the business practice falls behind the regulatory framework. Therefore, internal initiatives from the SME sector are needed to popularise the sustainability concept.

* Brian Jones, PhD, Leeds Beckett University, Leeds, UK,  <https://orcid.org/0000-0001-9173-1201>, b.t.jones@leedsbeckett.ac.uk

** Albana Rasha, PhD, Leeds Beckett University, Leeds, UK,  <https://orcid.org/0000-0001-6356-6405>, a.rasha@leedsbeckett.ac.uk

*** Dr hab. Joanna Dyczkowska, prof. UEW, Wrocław University of Economics and Business, Wrocław, Poland,  <https://orcid.org/0000-0001-9070-5116>, joanna.dyczkowska@ue.wroc.pl

**** Tomasz Dyczkowski, PhD, Wrocław University of Economics and Business, Wrocław, Poland,  <https://orcid.org/0000-0002-4335-7670>, tomasz.dyczkowski@ue.wroc.pl

Research limitations/implications: SMEs show lower levels of compliance with environmental requirements and are unaware of how their activities affect the environment. A limitation of the research is that, in many cases, SMEs are not ready to respond properly to the ESG requirements imposed by regulators. The reason may be a lack of knowledge, experience and limited funds. Therefore, future research should focus on recognizing the gaps in this area and identifying what may be impeding the development of sustainability performance management in SMEs.

Originality/value: The work presents the evolution path from the traditional business models (TBMs) through the SBMs to innovative CBMs and addresses their distinctive features. It contributes to the existing knowledge about SMA in SMEs by analysing its links with SPM.

Keywords: business models, circular economy, small and medium-sized enterprises (SMEs), strategic management accounting (SMA), sustainable performance management (SPM).

Streszczenie

Cel: Głównym celem artykułu jest uporządkowanie wiedzy na temat istniejących ram regulacyjnych, projektów i działań wspierających zrównoważone zarządzanie dokonaniaми w małych i średnich przedsiębiorstwach (MŚP) w kontekście rosnącego znaczenia gospodarki o obiegu zamkniętym, a także wykazanie, w jaki sposób strategiczna rachunkowość zarządcza wspomaga ten proces oraz jakie indywidualne wskaźniki, kokpity lub koncepcje kart wyników zostały zaproponowane i jak można ocenić ich przydatność.

Metodyka/podejście badawcze: Metody badawcze obejmują: (1) opisową systematyczną analizę polityk ustanowionych przez decydentów i organy regulacyjne w UE, (2) analizę porównawczą inicjatyw i działań różnych organizacji w celu omówienia dostarczonych przez nie narzędzi i ich rezultatów oraz (3) przegląd literatury w zakresie istotnych prac i badań dotyczących zrównoważonych modeli biznesowych (SBM), cyrkularnych modeli biznesowych (CBM) i zrównoważonego zarządzania dokonaniaми w kontekście MŚP.

Wyniki: Polityki ustanowione w UE wspierają zrównoważone zarządzanie dokonaniaми zachęcając MŚP do angażowania się w zrównoważone praktyki biznesowe i sugerując, jak rozpocząć zieloną transformację. Ostatnio wiele inicjatyw miało na celu wskazanie możliwości, jakie system gospodarki o obiegu zamkniętym oferuje MŚP. Opracowano również wiele zestawów narzędzi, które pomagają MŚP mierzyć ich zrównoważone dokonania. Chociaż pomiar ten ma kluczowe znaczenie dla MŚP, praktyka biznesowa pozostaje w tyle za ramami regulacyjnymi. Dlatego też potrzebne są wewnętrzne inicjatywy sektora MŚP, aby spopularyzować koncepcję zrównoważonego rozwoju.

Ograniczenia/implikacje badawcze: MŚP wykazują niższy poziom przestrzegania wymogów środowiskowych i nie są świadome tego, jak ich działalność wpływa na otoczenie. Ograniczeniem badań jest to, że w wielu przypadkach MŚP nie są gotowe, aby właściwie odpowiedzieć na wymogi ESG nałożone przez organy regulacyjne. Powodem może być brak wiedzy, doświadczenia oraz ograniczone fundusze. Dlatego przyszłe badania powinny skupić się na rozpoznaniu luk w tym zakresie i wskazaniu, co może hamować rozwój zarządzania dokonaniaми w obszarze zrównoważonego rozwoju w MŚP.

Originalność/wartość: Artykuł przedstawia ścieżkę ewolucji od tradycyjnych modeli biznesowych poprzez zrównoważone modele biznesowe w kierunku innowacyjnych cyrkularnych modeli biznesowych oraz odnosi się do ich charakterystycznych cech. Praca wnosi również wkład w istniejącą wiedzę na temat strategicznej rachunkowości zarządczej w MŚP, analizując jej powiązania ze zrównoważonym zarządzaniem dokonaniaми.

Słowa kluczowe: modele biznesowe, ekonomia cyrkularna, małe i średnie przedsiębiorstwa, strategiczna rachunkowość zarządcza, zrównoważone zarządzanie dokonaniaми.

Introduction

The context for this paper is sustainable performance management (SPM) in small and medium-sized enterprises (SMEs) with a special emphasis on developing business models in the circular economy, as well as environmental, social and governance (ESG) performance measurement as a key concept of strategic management accounting (SMA).

The paper's main objective is to structure the knowledge of the existing regulatory frameworks, projects and actions that support SPM in SMEs against the backdrop of the growing significance of the circular economy. It will also provide evidence of how SMA assists this process, what individual metrics, dashboard or scorecard concepts have been proposed and how their use may be assessed. We claim that this area is still under development, and much has to be done to facilitate SMEs to implement the required changes into business practice. SMEs' future knowledge, skills and competencies will be shaped and defined by issues pertaining to new business models and ESG performance measurement in the circular economy. Therefore, SMEs must know how to react to upcoming changes and be equipped with the information they need to operate successfully in a dynamic environment. Meeting sustainability challenges is critical to their future and will be something for which they must effectively prepare. One way to do this is to equip them with the appropriate management knowledge on how to create their business models, bearing in mind the assumptions of the circular economy. The second important issue is to support SMEs with the tools that enable reliable and balanced measurement of ESG performance.

In this study, we formulated the following research questions that address the scope of our investigation.

- RQ1: How have policymakers and regulators at the European level underpinned the sustainable transition of SMEs?
- RQ2: How have consultant and non-governmental organisations' initiatives and other actions supported the sustainable transition of SMEs from the practice-oriented perspective?
- RQ3: What challenges and opportunities are related to the development of circular business models (CBMs) in SMEs?
- RQ4: What is the role of SMA in SPM in SMEs?

To answer the research questions, we used three research methods, including a systematic descriptive analysis of the policies established by policymakers and regulators in the EU over the last 15 years and a comparative analysis of various organisations' initiatives, actions, and delivered toolkits. We also conducted a literature review of the essential works and research studies on sustainable business models (SBMs), circular business models (CBMs) and SPM in the context of SMEs.

Our study contributes to the literature threefold. First, it analyses the possible impacts of regulations on SMEs and compares the outputs of actions and initiatives dedicated to the sustainable development of SMEs proposed by various European

projects. Second, it reviews and discusses the concepts of sustainability and CBMs that can be used to articulate the SMEs' business directions in the complex, dynamic and challenging policy environment. Third, the study contributes to the existing body of knowledge on SMA in SMEs by examining the links with SPM.

The paper is structured as follows. The next section draws upon regulatory frameworks, actions and initiatives directed at the improvement of SPM in SMEs. The third section presents the closed-loop economic system – the circular economy – and discusses the challenges and opportunities for SMEs related to the transition from linear to CBMs. The fourth section presents the goals and scope of SMA in sustainable performance measurement. It also reviews the management accounting toolbox (ratios, dashboards and scorecards) conceptualised in the literature and developed by business practice. The final section presents the concluding remarks.

2. Regulatory frameworks, actions and initiatives directed at improving SPM in SMEs

The distinctive feature of our study is its focus on SPM in SMEs, which is critical to the success of the sustainable transition in the EU. SMEs, similarly to large organisations, must face the challenges of moving towards a resource-efficient circular economy. This requires formulating a new strategy built on sustainability premises, revamping existing business models or developing new ones, constituting measurement frames for sustainable actions, and setting clear, time-bound, and sustainable targets. SME owners or managerial staff need to know how to reach successful green and social transition. Regulatory frameworks, actions and initiatives developed by policymakers, regulators and consultant firms or non-governmental organisations may set directions and create solutions (toolkits) that will constitute a baseline for further adaptation by decision-makers in SMEs. The role of sustainable performance managers in this process seems to be inevitable, which will be addressed in the further sections of this paper.

This paper builds on an established body of work by policymakers (*the Small Business Act, EUROPE 2020 – A Strategy for Smart, Sustainable and Inclusive Growth, the Green Action Plan (GAP) for SMEs, the European Green Deal, and An SME Strategy for a Sustainable and Digital Europe*), regulators (*the Corporate Sustainability Reporting Directive, European Sustainability Reporting Standards, and Nordic Sustainability Reporting Standard*), consultant firms and non-governmental organisations (*the Nordic Circular Economic Playbook, the Competence Centre for Circular Economy* and other projects and sustainable management tools).

The policies established by the major policymakers in the EU affect the SPM in SMEs mainly indirectly, although in a considerable way, bearing in mind that the economy acts as a system of interconnected vessels. Therefore, it is important

to shed light on policies and actions that shape the small business environment in the EU and support SMEs' transition to become sustainable organisations.

The Small Business Act for European SMEs is a non-binding document endorsed by the Council of the EU in 2008. It aims to strengthen SMEs' sustainable growth and competitiveness. At the heart of the Small Business Act was the conviction that achieving the best possible conditions and solutions for SMEs depends on society's recognition of entrepreneurs and the creation of an SME-friendly environment. To achieve that, there is a need to change the perception of small businesses' role in the economy. Therefore, as the Act states, "[...] entrepreneurship and the associated willingness to take risks should be applauded by political leaders and the media, and supported by administrations. Being SME-friendly should become mainstream policy [...]" (EC, 2008, p. 3).

In 2010, the European Council approved *Europe 2020 – A Strategy for Smart, Sustainable and Inclusive Growth*. It included three priorities: (1) smart growth directed at developing an economy based on knowledge and innovation; (2) sustainable growth to promote a more resource-efficient, greener and more competitive economy; and (3) inclusive growth focused on fostering a high-employment economy delivering social and territorial cohesion (EC, 2010). These priorities could not be delivered without the active involvement of SMEs in building a resource-efficient, sustainable and competitive economy. SMEs constitute a significant link in the EU-scale supply chain. They can develop and use green technologies and thus contribute to a low-carbon economy. The purpose of the Europe 2020 Strategy was to decrease greenhouse gas emissions by 20% from the 1990 levels by generating 20% of energy from renewables and propelling a 20% increase in energy efficiency by 2020.

The Green Action Plan (GAP) for SMEs, the next initiative of the European Commission, was adopted in July 2014, simultaneously with the Circular Economy Package. It included SME-oriented actions offered at the European level following the policies established by the two previous documents (i.e. the Small Business Act and the Europe 2020 Strategy). The actions of the GAP were directed at grasping business opportunities from SMEs' green transition. First, the focus was to enhance resource efficiency in SMEs, which was supposed to translate into productivity gains. Second, it aimed to promote green entrepreneurship and encourage companies to deliver green products and services to the market. Third, the GAP strongly emphasised opportunities for SMEs resulting from a greener value chain and circular economy. It was pointed out that remanufacturing, repairing, recycling, and eco-designing might drive economic growth and job creation in the SME sector. Fourth, it addressed the fact that European SMEs will need a supportive framework and international cooperation to integrate into global value chains with their green technologies, products and services. Finally, the GAP will have to be implemented thoroughly and progressively with the help of proper governance from the EU Member State administration to spread its impact all over the EU (EC, 2014).

The European Green Deal, which was launched in December 2019, includes a set of deeply transformative policies that refer to the EU's climate ambitions (reaching

climate neutrality in the EU by 2050), decarbonising the energy system, mobilising industry for a clean and circular economy, the shift to sustainable and smart mobility, the development of an environmentally friendly food system, and preserving and restoring ecosystems and biodiversity. Although the European Green Deal does not directly reflect on the SME sector, it will be affected. For instance, sectors related to electronics, ICT, textiles, plastics, packaging, and building and construction are highly populated by SMEs. In the New Circular Economy Action Plan launched in March 2020, several action plans are directed at these sectors. The challenges for SMEs to respond appropriately to all these environmental initiatives are quite well known. They include a lack of awareness, problems with accessing new value chains, a lack of finance, staffing shortages, and the need to introduce new business models (Smit, 2020).

In March 2020, the European Commission adopted *An SME Strategy for a Sustainable and Digital Europe*. It aims to help SMEs adapt to climate-neutral challenges, promoting digitalisation, reducing the regulatory burden, and improving market access and financing potential. The strategy intends to expand the number of SMEs involved in sustainable business practices and using digital technologies, making Europe more inviting to start a small business and causing it to grow (EC, 2020).

The EC monitors and assesses progress in implementing the SME strategy and the Small Business Act, using tools such as the SME performance review. It consists of an annual report on European SMEs, as well as SME country fact sheets (EC, 2023).

The policies and actions established by the policymakers in the EU influence how and in what direction SMEs should proceed to become sustainable organisations. However, another vital issue is sustainability reporting, which refers to sharing the results of sustainable management with stakeholders and reporting on economic, social and environmental impacts.

From the perspective of accountants and preparers of corporate reports, a new EU regulation that imposes mandatory sustainability reporting requirements is of significant importance. This regulation applies not only to large undertakings (that may be either an EU company or an EU subsidiary of a non-EU company) but also to SMEs listed on EU-regulated markets. It brings new challenges but also opportunities for the SME sector.

The new Directive (EU) 2022/2464 (Corporate Sustainability Reporting Directive – CSRD) was adopted in November 2022 and entered into force in January 2023, replacing the previous Directive 2014/95/EU (Non-Financial Reporting Directive – NFRD). In contrast to the NFRD, the CSRD introduces mandatory European Sustainability Reporting Standards – ESRS (KPMG, 2022). The EC will adopt standards for large undertakings and separate proportionate standards for SMEs. The SMEs listed on regulated markets would be required to use them, whereas non-listed SMEs can decide whether to apply them voluntarily. The requirements for listed SMEs will be applicable three years after the application of the ESRS by eligible large companies. Thus, in the case of listed SMEs, the CSRD will apply to fiscal years starting on or after 1 January 2026, which means reporting in 2027

on 2026 data. This time lag is explained by the relative economic difficulties SMEs might have faced during the COVID-19 pandemic. The proportionate standards should enable any SME to make disclosures cost-efficiently, responding to business partners' needs in the value chain (EC, 2021).

Initiatives toward creating sustainability reporting standards were successfully implemented by the Nordic Accountant Federation (NAF). In 2020, Christine Lundberg Larsen, former CEO of *Regnskap Norge*, founded the NAF, which comprises three accounting organisations in Sweden, Finland and Norway. They jointly started the Nordic Sustainability Reporting Standard project for SMEs, funded by Nordic Innovation. The focus areas for this project include the following themes: user-centric value creation, climate risk mitigation in the Nordic context, stakeholder ecosystem, SBM innovation, problem-shifting and greenwashing, and sustainability transitions in a systemic perspective (Nordic Accountant Federation, 2021).

Appendix 1 presents projects and tools to help SMEs with their green transition towards a circular economy developed by consultant firms and non-governmental organisations (or other institutions). All these initiatives were undertaken to help SMEs harness the opportunities offered by the closed-loop economy system. Although this may be an interesting prospect for SMEs, it is also new and uncharted territory which must be explored and further tested. The comparative analysis of initiatives allowed some observations.

It may be concluded that some solutions differ in what they offer SMEs. Some initiatives focus on building educational value. They create competence centres and provide training courses or playbooks. Others offer assistance by advising and formulating recommendations. There are also diagnostic self-assessment tools which help SMEs determine their current status, for example, within resource efficiency. Some solutions provide tools for measuring environmental impact or presenting it in an accessible and intuitive dashboard format. However, these tools focus mostly on one aspect of ESG – the environmental dimension. Therefore, the involvement of non-governmental organisations (or other institutions) to provide input on social and governance dimensions would be welcomed since this can help SMEs successfully implement circular economy aspects without ignoring human and managerial issues.

3. The circular economy and SMEs: challenges and opportunities

The circular economy brings several significant opportunities for SMEs (Geissdoerfer et al., 2020). Above all, it allows them to become more efficient regarding value creation and value realisation. In practice, SMEs can apply the 3Rs principle (*reuse, repair and recycle*), which has been extended to the 4Rs (including *refurbish*), then to the 6Rs (adding *rethink* and *remanufacture*), and the 9Rs (adding *repurpose, recover, and reduce*) in the literature (Salvioni et al., 2022).

Gennari (2022) stated that a circular economy can solve the problems of resource scarcity and waste, both upstream and downstream, in the value chain. Upstream, there is a need to manage resources more efficiently, whereas downstream, it is necessary to ensure that the output is recovered and reintroduced into the economic system (Gennari, 2022, p. 2). The evidence for the circular economy and its relevance and appropriateness to large businesses has been well documented (Bocken et al., 2017; Parida et al., 2019; Marco-Fondevila et al., 2021; Leclerc, Badami, 2022).

The problem to be addressed is how best to advance SMEs' engagement in the transition from a linear to a circular economy. Much light has been shed on the considerable impact of the SME sector on the environment and related policy challenges (EC, 2019; EC, 2020). SMEs are responsible for more than 60% of all enterprise greenhouse gas (GHG) emissions (EC, 2022a, p. 91). The Ipsos European Affairs survey¹ conducted between 8 November and 10 December 2021 provided evidence that 72% of SMEs across the EU27 do not have a concrete strategy to decrease their carbon footprint and become climate neutral, although about a quarter said they were planning to define such a strategy (EC, 2022b, p. 5). Nine per cent of SMEs across the EU27 did not take any actions to be more resource-efficient. Only 19% use predominantly renewable energy, 24% sell residues and waste to another company, 26% design products that are easier to maintain, repair or reuse, and 33% have switched to suppliers of greener materials. The situation is slightly better in terms of minimising waste (64%), saving energy (61%), saving materials (57%), recycling by reusing material or waste within the company (47%), and saving water (46%) (EC, 2022b, p. 12). Though an individual SME's environmental impact on the economy may be insignificant, the cumulative impact of the whole SME sector is considerable and remarkable.

In this context, SMEs should change their approach to business and adopt integrated thinking (Quarchioni et al., 2021), which brings benefits and is an essential part of the circular economy (Albats et al., 2021). However, a complete transition from linear to innovative CBMs may be a long journey for SMEs. It will require examining partnerships, networks and stakeholders to ensure they are working with, rather than against themselves, in alignment with their new ESG sustainability values. Moreover, a need to change the SME culture, reshape the financial ecosystem and acquire non-financial resources may arise. The culture of SMEs is varied, but building in as opposed to bolting on values around sustainability to their core business practice model allows for a whole integrated approach to creating sustainable value (Hong et al., 2009; Caldera et al., 2018). The financing problems related to transitioning can be resolved using public funds (Ghisetti, Montesor, 2020) or through special programs (e.g., the InvestEU Program). The difficulties with the lack of technological know-how or information may be over-

¹ The survey was carried in 27 member states of the EU as well as in Albania, North Macedonia, Montenegro, Serbia, Turkey, Iceland, Moldova, Norway and the US. More than 17,500 enterprise were interviewed via telephone on behalf of the EC. The number of interviews conducted with SMEs in the EU was 13,343.

come by networking and enhanced learning (Rizos et al., 2016; Vihma, Moora, 2020).

SMEs have a practical and user-based approach to building their linear business models, which can be used in the development of SBMs and the further transition to CBMs. First, SMEs should understand their needs and assess their current engagement level with sustainability issues and ESG performance measurement and management. Second, they need to know their current capabilities since this will allow the business model to be utilised to create new know-how around sustainability, circularity and the associated value chain. As Pizzi et al. (2021) remarked, integrating sustainability into the business model requires moving beyond the pursuit of economic performance and preserving resources for the sake of the environment. The next transition level entails the organisations rethinking their value creation process and transforming waste generated through business activity into wealth (Lacy and Rutqvist, 2017). In such a way, engaging in developing innovative CBMs may change SMEs' mindset, which will have long-lasting consequences for businesses, people, and the planet.

The academic literature has extensively discussed SBMs (Høgevold et al., 2014; Bocken et al., 2014; Geissdoerfer et al., 2016; Baldassarre et al., 2017; Evans et al., 2017; Ritala et al., 2018; Comin et al., 2020). However, this discussion has primarily focused on large organisations rather than SMEs. Nevertheless, SBMs are of great importance to firms regardless of their size or activity type (Preghenella, Battistella, 2021). Therefore, in the face of changes imposed by EU policymakers and in response to evolving expectations, there is a need to help SMEs develop long-term SBMs that are suited to the various challenges they encounter in the market (Turner, 2009).

SBMs should capture ESG activities, which SMEs perform as part of their value creation to achieve future sustainable business goals (Bocken et al., 2013). Stakeholder awareness of the organisation's sustainability goals and ESG activities is integral to developing the SBMs. Through their engagement, they can help map the strategy, shape plans, and develop the SBMs (Comin et al., 2020; Fobbe, Hilletoft, 2021). However, research has shown that most organisations lag behind in implementing SBMs, and even fewer have integrated stakeholder interaction into SBMs (Fobbe, Hilletoft, 2021). The situation is equally unsatisfactory when it comes to implementing circular, collaborative or network business models (Bocken, 2021; Ritala et al., 2018; Urbinati et al., 2020).

SMEs are embedded in their local communities and are often close to their stakeholders (UN Global Compact, 2022). As such, they have the support of their customers and business supply chains to deliver strategies that are friendly to and supportive of sustainability. Therefore, it is crucial for SMEs to consider various practices in the upstream supply chain that will help successfully implement SBMs. Macchion et al. (2023) structured all these practices into four levels, including (1) the selection and evaluation of suppliers, (2) monitoring suppliers, (3) collaborating with suppliers, and (4) integrating with suppliers. The last level is the most developed form of how an SME can contribute to joint sustainability development, benefitting itself and all supply chain partners. Such integration

relies on the close alignment of sustainable objectives, programs, and activities. It is possible when an organisation and its supply chain partners share the same corporate values, create strategic sustainability partnerships, work on joint sustainability projects, and have IT systems integrated to monitor sustainable performance within the supply chain (Akamp, Müller, 2013; Macchion et al., 2023). According to research studies, long-term collaboration with supply partners fosters the improvement of the sustainable profile of the supply chain (Chen et al., 2017). In this vein, Lewis et al. (2014), who investigated the relationship between collaboration and sustainability in SMEs, evidenced that collaborative relationships can provide opportunities to overcome difficulties in introducing environmental initiatives and thus eliminate the complexity of sustainable supply chain implementation.

Figure 1 presents the evolution path from the traditional business models (TBMs) through SBMs to innovative CBMs. It illustrates how these business models sit and fit together to create and capture added value through their different approaches. Later in this section, definitions of TBMs, SBMs and CBMs are presented along with their distinguishing features.

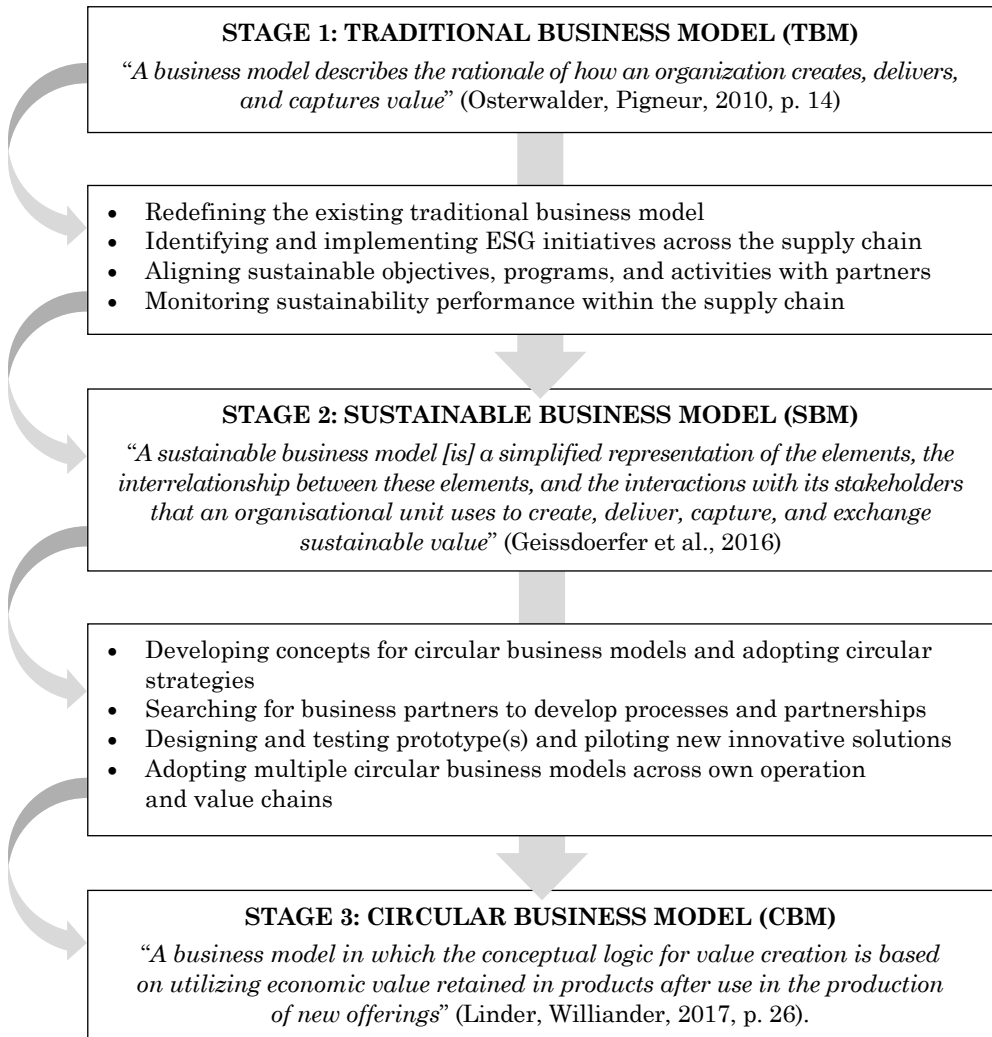
The TBM has been viewed as being separate from sustainability. Under this approach, sustainability was seen as something discrete and removed from an integrative perspective of the business model (Geissdoerfer et al., 2020). However, TBMs can and should be enhanced by integrating a sustainable perspective as a foundational component. With an innovative, sustainable perspective, SMEs can further shape their SBMs to incorporate circular economy aspects as the next step (Pieroni et al., 2019) and create CBMs that close the material loops. This will need several innovations to link various CBMs, including (1) replacing standard production inputs with bio-based, renewable, or recovered materials (*circular supply model*), (2) incorporating the production of secondary raw materials from waste streams (*resource recovery model*), (3) extending product and asset life-cycle to ensure they remain economically useful (*product life extension model*), (4) combining a physical product with a service component (*product as a service model*), and (5) sharing products and assets that have a low ownership or use rate (*sharing platforms model*) (Andalusia Technology Park (PTA), 2020).

The feature that distinguishes CBM from SBM is that CBM is developed to slow, close or narrow resource loops in an economically profitable manner. Thus, it involves green and economic sustainability (Bocken et al., 2018). By contrast, social sustainability plays a prominent role in SBM, which is not the case in CBM (Geissdoerfer et al., 2017; Guldmann and Huulgaard, 2019).

The practices of the models shown in Figure 1 require SME owners and managers to proactively consider the inter-relationship between stakeholders, the dynamic market environment and an unknown and uncertain future. Engagement with and movement through the model is an empowering and continual learning process. It is an act that rewards SMEs with new competitive opportunities for doing business. The most apparent benefits are related to cost savings, which can be reached by minimising inputs and waste production (through process optimisation, product redesign and using recycled materials), reducing energy consumption

(through the application of energy-efficient technologies), decreasing the volume of packages and relying on local instead of global suppliers (OECD, 2019). However, in order to confirm these benefits and monitor the impacts of new circular strategies, an enterprise should implement SPM with its toolbox.

Figure 1. The journey from traditional business models to innovative circular business models



Source: authors' own elaboration based on Geissdoerfer et al. (2016); Linder, Williander (2017); Osterwalder, Pigneur (2010), and Nordic Innovation (2021).

4. The sustainable performance management toolbox

Even though no comparable global data exists on SPM, studies on individual countries evidence that SMEs have a long way to go towards SPM. Although a vast majority of SMEs have developed some performance management systems, and a significant share feels the demand of stakeholder for non-financial information, performance management systems hardly ever results in something more than a short narrative summary in annual reports (Krechovska, Prochazkova, 2014). The SME sector demonstrates lower compliance with environmental requirements and, usually, limited knowledge of their environmental and social impacts than large enterprises. This may be seen as an opportunity to introduce SMA methodology since it may lead to a more significant rise in operational efficiency in those organisations than in larger ones. Such SMA will, on the one hand, focus on long-term cost reduction related to waste treatment, environmental management, materials and processing, which do not transform into final products, as well as health and safety. On the other hand, it emphasises the influence of staff training and education, as well as product responsibility initiatives, on sales revenue (Laurinkeviciute, Stasiskiene, 2011). It is also important to note that to generate more immediate economic effects of SPM, SMEs must prioritise environmental aspects in their development decisions rather than social ones. The latter is already well integrated with performance due to the closer links with internal and external stakeholders that stem from the local environment (Dey et al., 2021).

SMEs may start developing their SMA framework in the service of SPM, directing attention to the main tasks within environmental management accounting, which includes understanding environmental costs, minimising waste (management) costs, allocating capital to invest in the development and maintenance of products over their life-cycle to reduce waste, sharing data across business functions to support a strategic approach to environmental management, and performance evaluation (Bartolomeo et al., 2000). This approach improves traditional, financially-oriented cost-benefit analysis by setting four criteria, including financial return (maximised) and external benefits (maximised) on the one hand, and energy consumption (minimised) and environmental impact (minimised) on the other (Ding, 2005). Moreover, focusing on SMEs' environmental impact helps to broaden the view on life-cycle efficiency analysis. This approach should combine life-cycle costing methodology with life-cycle inventory (material and energy monitoring) and life-cycle impact management (emission and waste management), all of which contribute to calculating the appropriate Total Cost of Ownership of a product or technology (Rudenauer et al., 2005).

However, Mook (2020) argues that the current focus on SDGs can be considered the fourth iteration of integrated social accounting. It evolved from corporate social responsibility via the triple bottom line and standardised reporting to contemporary efforts to standardise sustainability goals. The main challenge of integrated social accounting is calculating the value created or destroyed by the company, measured by the difference that an organisation makes economically, socially, and environmentally (Mook, 2019).

SMA can take advantage of many approaches to develop ratios, dashboards and scorecards, which could incorporate environmental and social elements into performance measurement. Among individual ratios, the most notable is Social Value Added, which links revenue from customers who acknowledge the company's environmental or health and safety-related activities in their purchase choices with the costs of social projects, including labour costs and donations to social projects (Krizov, Allenby, 2004). Another individual metric is the economic net present value (ENPV), which is used in environmental studies to value the benefits and costs of projects (Knote et al., 2020) and evaluate investment projects, especially when the company applies for EU funding. More frequently, an attempt was made to create a sustainable dashboard (Traverso et al., 2012; Morana, Gonzalez-Feliu, 2015; Skorka, 2017; Shields, Shelleman, 2020).

Kocmanova and Simberova (2014) analysed which factors from the ESG framework are the best determinants of the business performance of manufacturing companies. The goal was to determine a perfect set of key performance indicators (KPIs) to be included in the ESG dashboard (see Table 1).

Table 1. ESG KPIs closely linked to business performance

Perspective	Environmental	Social	Corporate Governance
KPIs	<ol style="list-style-type: none"> 1. Environmental investments to sales 2. Environmental non-investment expenditure to sales 3. Total emissions to sales 4. Total emission of greenhouse gases to sales 5. Energy consumption to sales 6. Share of renewable energy use 7. Material consumption to operating costs 8. Share of recycled materials used 9. Water consumption to sales 10. Total (hazardous) waste to sales 	<ol style="list-style-type: none"> 1. Value of donations to sales 2. Allowances to municipalities for sales 3. Discrimination cases to total staff 4. Share of female employees 5. Share of employees who terminated their contracts 6. Training time per employee 7. Occupational illnesses per employee 8. Number of deaths per employee 9. Share of retained consumers 10. Total number of complaints per product sold 	<ol style="list-style-type: none"> 1. Information on company objectives (0/1) 2. Information on financial results (0/1) 3. Information on control activities (0/1) 4. Cash flow to total capital 5. (Integrated) Environmental and social report (0/1) 6. Board remuneration to total labour cost 7. Number of independent members in top management 8. Gender share in the management 9. Number of legal disputes 10. Value of fines and penalties

Source: authors' own presentation based on Kocmanova and Simberova (2014).

The selection of KPIs for a sustainable dashboard will always reflect the individual features of an SME. More importantly, however, KPIs should derive from a company's purpose and its internal capabilities, as well as stakeholders' expectations. The next step is to operationalise the measurement of KPIs so that it is possible to determine their current state and define short- or long-term targets (Bhattacharya, Zaman, 2023).

Another approach to a comprehensive, multidimensional measurement of sustainable performance is a scorecard, in particular, the Balanced Scorecard (BSC). There are three paths an SME may take. The first is adding metrics to the original BSC; the second is adding new dimensions; the third is conceptualising a Sustainable Balanced Scorecard (SBSC).

Regarding the first approach, which is based on supplementing the original BSC with some ESG metrics, White (2005) suggests that it is helpful to map them on a BSC canvas to see their interaction with a company's strategies and the possibility of building a competitive edge on the market. This way, the SPM is not a goal in itself, but it serves as a means to achieve business goals understood as short-term profitability and long-term viability. Hubbard (2009) adds to the original BSC social and environmental dimensions. The social dimension includes ratios such as employee satisfaction, suppliers' social performance, community relationships, philanthropic investments to revenue and community open days. The environmental dimension features indicators such as unit material, energy and water use, emissions and waste per unit of output, and greenhouse gas emissions. It is further conceptualised that in each of the six dimensions of the scorecard, the organisation can evaluate its performance against their past performance or industry average and calculate the overall Organisational Sustainable Performance Index (OSPI).

Regarding the use of SBSC, the research studies have examined the determinants of its use (Lämsiluoto, Järvenpää, 2010; Schaltegger et al., 2015), approaches to its applications (Khalid et al., 2019; Fatima, Elbanna, 2020) and outcomes generated (Tsai et al., 2020; Sislian, Jaegler, 2020). It has been evidenced that effective use of SBSC requires a prior definition of sustainable strategy, which is usually stimulated by stakeholders' interest in it. Consequently, SBSC becomes a tool to integrate sustainability into corporate strategy. In particular, the focus is on integrating environmental goals into the business strategy. Thus, a sustainability dimension, or at least non-financial indicators, is typically added to the traditional BSC framework. The results of implementing SBSC are hardly ever measured in financial terms but rather in terms of increasing stakeholder engagement (Mio et al., 2021).

Although BSCs are hardly used in the SME sector, it has been noted that managers of those companies recognise their usefulness in improving the company's reputation in the community. Interestingly, non-financial indicators, such as transformation or community projects, are used instead to communicate with external stakeholders rather than internal ones (Sewell et al., 2017).

Applying SMA tools² in the context of SPM raises questions about its usefulness and actual benefits. In particular, in the context of CSR, which has the longest and broadest record of application in the SME sector, CSR-related activities positively affect the financial value of the company both directly and indirectly via corporate reputation. The influence grows as the company grows. The mediating effect of corporate reputation also suggests that a strategic approach will generate better effects than short-term activities (Lopez-Perez et al., 2017). Meanwhile, in the context of sectoral efficiency, the more that SMEs disclose their CSR-related activities, the more they require CSR from their business partners (Stekelorum et al., 2018).

To promote best sectoral practices, metrics of disclosure quality, such as the Corporate Sustainability Index (CSI), could be applied. The CSI index comprises factors such as social activities included in business strategies, regular CSR reports, external contributors to such reports, awards for CSR reporting, environmental management systems, regular environmental reports, certification in energy and environmental design, environmental awards and financial sustainability. It has proven to be positively linked with company performance, although primarily among large companies, thus far (Gomez-Bezares et al., 2017). The maturity of SPM and related reporting can also be categorised into different levels. The lowest level involves presenting the position, that is, defining ESG-related initiatives and their status. The second level demonstrates progress in those initiatives. The last level highlights the targets in each initiative and the extent to which they have been achieved (Arvidsson, Dumay, 2022).

There are also negative impacts of SPM on SMEs. ESG disclosures can increase reporting costs since, in contrast to large companies, small businesses cannot counterbalance these costs with the related benefits. Furthermore, market participants consider only environmental disclosures relevant when it comes to SMEs. Therefore, family firms, with little external pressure, may feel more committed to measuring and disclosing the ESG triad's social component (Gjergji et al., 2021). In that sense, the key to introducing SPM in SMEs is motivation. And the motivation will remain high in the long run if companies see the benefits of their activities in customer behaviour attributed to social, environmental and financial aspects. Thus, the point is not to create a "one-size-fits-all" solution for the SME sector but to promote best practices so that other SMEs can adopt similar strategies by learning and collaborating with their stakeholders (Stewart, Gapp, 2014).

² SMA tools, include, in particular, calculating environmental costs, waste management costs and maintenance costs over the product's life-cycle, cost-benefit analysis, including environmental factors, the total cost of ownership of a product or technology, as well as non-financial KPIs, ESG dashboards or a Balanced Scorecard with an included sustainability dimension.

Concluding remarks

The objective of this study was to structure the knowledge of the existing regulatory frameworks, projects and actions that support SPM development in SMEs. We analysed this against the backdrop of the growing significance of the circular economy. The study showed how SMA assists the process of SPM development, what individual metrics, dashboards or scorecard concepts are proposed and how their use may be evaluated.

This paper makes several contributions to the literature. First, it provides a greater understanding of the connections between the macro policy agenda – the EU focus on ESG and Circular Economy – and SMEs' real practices. In this regard, it answers the first research question by indicating how the policymakers and regulators at the European level underpinned the sustainable transition of SMEs.

Second, the study indicates how consultant and non-governmental organisations supported the sustainable transition of SMEs by building competence centres, providing training courses or playbooks, advising and formulating recommendations, and developing diagnostic self-assessment tools and toolkits for measuring the environmental impact. In that way, a response to the second research question was given.

The paper also addresses the gaps in knowledge and practical application of SBMs, CBMs and SPM through a review of recent academic literature and European SME-declared sustainability practices. It also answers the third research question by indicating challenges and opportunities which may appear while developing circular business models (CBMs) in SMEs. The main challenges may be developing new circular strategies, searching for appropriate business partners, designing and testing prototype(s), piloting innovative solutions and implementing multiple circular business models across operation and value chains. Opportunities can be seen in solving the problems of resource scarcity and waste both upstream and downstream in the value chain.

In the context of the fourth research question, this paper contributes to the existing body of knowledge on SMA in SMEs by examining its links with SPM based on a literature review. Firstly, it was determined that SPM is vital for SMEs, but the business practice falls behind the regulatory framework. Therefore, internal initiatives from the SME sector are needed to popularise the sustainability concept and make it part of strategic management in this sector. Secondly, the essential role of SMA was emphasised with a focus on identifying and measuring environmental and social costs and including them in cost-benefit analyses or estimation of the total value generated by an SME. Thirdly, it was evidenced that multiple tools have been conceptualised, including individual metrics, such as the Social Value Added or extended Total Cost of Ownership, via ESG dashboards to the expanded BSC, including social or environmental dimensions or SBSC. Lastly, the existing literature proposes a few ways to capture the effectiveness of SPM. However, an emphasis on internal rather than external

benefits must prevail in the case of SMEs since that secures their long-term commitment, thus increasing the overall positive contribution of the sector to sustainable performance goals which underlie the regulatory and political agenda.

The needs of SMEs concerning the business model and management of sustainability performance can be and often are multi-faceted. This multi-faceted dimension is due to their scope of activity and degree of involvement in sustainability actions and the circular economy. Nevertheless, although most SMEs can be innovative and prosperous, they do not always understand [perceived] sustainability, SBM, CBM, and SPM as relevant aspects in their “business as usual” activity and still focus on daily operations that generate tangible results in the short term. Therefore, future research could investigate the long-term effects of SMEs’ green and social transition to disseminate good practices of those who have already embarked on the sustainable journey and collected valuable experience.

References

- Akamp M., Müller M. (2013), *Supplier management in developing countries*, “Journal of Cleaner Production”, 56, pp. 54–62, DOI: 10.1016/j.jclepro.2011.11.069.
- Albats E., Podmetina D., Vanhaverbeke W. (2021), *Open innovation in SMEs: A process view towards business model innovation*, “Journal of Small Business Management”, pp. 1–42, DOI: 10.1080/00472778.2021.1913595.
- Arvidsson S., Dumay J. (2022), *Corporate ESG reporting quantity, quality and performance: Where to now for environmental policy and practice?*, “Business Strategy and the Environment”, 31 (3), pp. 1091–1110, DOI: 10.1002/bse.2937.
- Baldassarre B., Calabretta G., Bocken N.M.P., Jaskiewicz T. (2017), *Bridging sustainable business model innovation and user-driven innovation: a process for sustainable value proposition design*, “Journal of Cleaner Production”, 147 (7), pp. 175–186, DOI: 10.1016/j.jclepro.2017.01.081.
- Bartolomeo M., Bennett M., Bouma J.J., Heydkamp P., James P., Wolters T. (2000), *Environmental management accounting in Europe: current practice and future potential*, “The European Accounting Review”, 9 (1), pp. 31–52, DOI: 10.1080/096381800407932.
- Bhattacharya C.B., Zaman M. (2023), *The What, Why and How of ESG Dashboards*, “NIM Marketing Intelligence Review”, 15 (1), pp. 32–39, DOI: 10.2478/nimmir-2023-0005.
- Bocken N.M.P. (2021), *Sustainable business models*, [in:] Leal Filho W., Azul A.M., Brandli L., Lange Salvia A., Wall T. (eds), *Decent work and economic growth. Encyclopedia of the UN Sustainable Development Goals*, Springer International Publishing, Cham, pp. 963–975, DOI: 10.1007/978-3-319-95867-5.
- Bocken N.M.P., Short S., Rana P., Evans S. (2013), *A value mapping tool for sustainable business modelling*, “Corporate Governance”, 13 (5), pp. 482–497, DOI: 10.1108/CG-06-2013-0078.
- Bocken N.M.P., Short S.W., Rana P., Evans S. (2014), *A literature and practice review to develop sustainable business model archetypes*, “Journal of Cleaner Production”, 65, pp. 42–56, DOI: 10.1016/j.jclepro.2013.11.039.
- Bocken N.M.P., Miller K., Weissbrod I., Holgado M., Evans S. (2017), *Business model experimentation for circularity: sustainability in a large international clothing retailer*, “Economics and Policy of Energy and the Environment”, 1–2, pp. 85–122, DOI: 10.3280/EF-E2017-001006.

- Bocken N.M.P., Schuit C.S.C., Kraaijenhagen C. (2018), *Experimenting with a circular business model: Lessons from eight cases*, "Environmental Innovation and Societal Transitions", 28, pp. 79–95, DOI: 10.1016/j.eist.2018.02.00.
- Caldera H.T.S., Desha C., Dawes L. (2018), *Exploring the role of lean thinking in sustainable business practice: a systematic literature review*, "Journal of Cleaner Production", 167, pp. 1546–1565, DOI: 10.1016/j.jclepro.2017.05.126.
- Chen L., Zhao X., Tang O., Price L., Zhang S., Zhu W. (2017), *Supply chain collaboration for sustainability: A literature review and future research agenda*, "International Journal of Production Economics", 194, pp. 73–87, DOI: 10.1016/j.ijpe.2017.04.005.
- Comin L.C., Aquiar C.C., Sehnem S., Yusilza M.-Y., Cazella C.F., Julkovski D.J. (2020), *Sustainable business models: a literature review*, "Benchmarking: An International Journal", 27 (7), pp. 2028–2047, DOI: 10.1108/BIJ-12-2018-0384.
- Dey P.K., Yang G-L., Malesios Ch., De D., Evangelinos K. (2021), *Performance Management of Supply Chain Sustainability in Small and Medium-Sized Enterprises Using a Combined Structural Equation Modelling and Data Envelopment Analysis*, "Computational Economics", 58 (3), pp. 573–613, DOI: 10.1007/s10614-019-09948-1.
- Ding G.K.C. (2005), *Developing a multicriteria approach for the measurement of sustainable performance*, "Building Research and Information", 33 (1), pp.3–16, DOI: 10.1080/0961-321042000322618.
- Evans S., Vladimirova D., Holgado M., Van Fossen K., Yang M., Silva E.A. and Barlow C.Y. (2017), *Business model innovation for sustainability: towards a unified perspective for creation of sustainable business models*, "Business Strategy and the Environment", 26 (5), pp. 597–608, DOI: 10.1002/bse.1939.
- Fatima T., Elbanna S. (2020), *Balanced scorecard in the hospitality and tourism industry: Past, present and future*, "International Journal of Hospitality Management", 91 (4), 102656, DOI: 10.1016/j.ijhm.2020.102656.
- Fobbe L., Hilletoft P. (2021), *The role of stakeholder interaction in sustainable business models. A systematic literature review*, "Journal of Cleaner Production", 327, 129510, DOI: 10.1016/j.jclepro.2021.129510.
- Geissdoerfer M., Bocken N.M., Hultink E.J. (2016), *Design thinking to enhance the sustainable business modelling process—a workshop based on a value mapping process*, "Journal of Cleaner Production", 135, pp. 1218–1232, DOI: 10.1016/j.jclepro.2016.07.020.
- Geissdoerfer M., Savaget P., Bocken, N.M.P., Hultink E.J. (2017), *The circular economy—A new sustainability paradigm?*, "Journal of Cleaner Production", 143, pp. 757–768, DOI: 10.1016/j.jclepro.2016.12.048.
- Geissdoerfer M., Pieroni, M.P.P., Pigosso D.C.A., Soufani K. (2020), *Circular business models: A review*, "Journal of Cleaner Production", 277, 123741, DOI: 10.1016/j.jclepro.2020.123741.
- Gennari F. (2022), *The transition towards a circular economy. A framework for SMEs*, "Journal of Management and Governance", 11 September, pp. 1–35, DOI: 10.1007/s109-97-022-09653-6.
- Ghisetti C., Montresor S. (2020), *On the adoption of circular economy practices by small and medium-sized enterprises (SMEs): Does "financing-as-usual" still matter?* "Journal of Evolutionary Economics", 30 (2), pp. 559–586, DOI: 10.1007/s00191-019-00651-w.
- Gjergji R., Vena L., Sciascia S., Cortesi A. (2021), *The effects of environmental, social and governance disclosure on the cost of capital in small and medium enterprises: The role of family business status*, "Business Strategy and the Environment", 30 (1), pp. 683–693, DOI: 10.1002/bse.2647.
- Gomez-Bezares F., Przychodzen W., Przychodzen J. (2017), *Bridging the gap: How sustainable development can help companies create shareholder value and improve financial performance*, "Business Ethics: A European Review", 26 (1), pp. 1–17, DOI: 10.1111/beer.1-2135.

- Guldmann E., Huulgaard R.D. (2019), *Circular business model innovation for sustainable development*, [in:] Bocken, N., Ritala, P., Albareda, L., Verburg, R. (eds), *Innovation for Sustainability Business Transformations Towards a Better World*, Palgrave Studies in Sustainable Business In Association with Future Earth, Palgrave Macmillan, Cham, pp. 77–95, DOI: 10.1007/978-3-319-97385-2_5.
- Hong P., Kwon H.-B., Roh J.J. (2009), *implementation of strategic green orientation in supply chain: an empirical study of manufacturing firms*, “European Journal of Innovation Management”, 12 (4), pp. 512–532, DOI: 10.1108/14601060910996945.
- Høgevold N.M., Svensson G., Wagner B., Petzer D.J., Klopper H.B., Varela J.C.S., Padin C. and Ferro C. (2014), *Sustainable business models: corporate reasons, economic effects, social boundaries, environmental actions and organisational challenges in sustainable business practices*, “Baltic Journal of Management”, 9 (3), pp. 357–380, DOI: 10.1108/BJM-09-2013-0147.
- Hubbard G. (2009), *Measuring Organisational Performance: Beyond the Triple Bottom Line*, “Business Strategy and the Environment”, 18 (3), pp. 177–191, DOI: 10.1002/bse.564.
- Khalid S., Beattie C., Sands J., Hampson V. (2019), *Incorporating the environmental dimension into the balanced scorecard*, “Meditari Accountancy Research”, 27 (4), pp. 652–674, DOI: 10.1108/MEDAR-06-2018-0360
- Knoke T., Gosling E., Paul C. (2020), *Use and misuse of the net present value in environmental studies*, “Ecological Economics”, 174, 106664, DOI: 10.1016/j.ecolecon.2020.
- Kocmanova A., Simberova I. (2014), *Determination of environmental, social and corporate governance indicators: Framework in the measurement of sustainable performance*, “Journal of Business Economics and Management”, 15 (5), pp. 1017–1033, DOI: 10.3846/161-11699.2013.791637.
- Krechovska M., Prochazkova P.T. (2014), *Sustainability and its Integration into Corporate Governance. Focusing on Corporate Performance Management and Reporting*, “Procedia Engineering”, 69, pp. 1144–1151, DOI: 10.1016/j.proeng.2014.03.103.
- Krizov C., Allenby B. (2004), *Social Value Added: A Metric for Implementing Corporate Social Responsibility*, “Environmental Quality Management”, 14 (2), pp. 39–47, DOI: 10.1002/eqem.20036.
- Lacy P., Rutqvist J. (2017), *Waste to Wealth*, Palgrave Macmillan, Hampshire (UK).
- Laurinkeviciute A., Stasiskiene Z. (2011), *SMS for decision making of SMEs*, “Clean Technologies and Environmental Policy”, 13 (6), pp. 797–807, DOI: 10.1007/s10098-011-0349-1.
- Lämsiluoto A., Järvenpää M. (2010), *Greening the balanced scorecard*, “Business Horizons”, 53 (4), pp. 385–395, DOI: 10.1016/j.bushor.2010.03.003.
- Leclerc S.H., Badami M.G. (2022), *Material circularity in large organisations: Action-research to shift information technology (IT) material flows*, “Journal of Cleaner Production”, 348, 131333, DOI: 10.1016/j.jclepro.2022.131333.
- Lewis K.V., Cassells S., Roxas H. (2014), *SMEs and the potential for a collaborative path to environmental responsibility*, “Business Strategy and the Environment”, 24 (8), pp. 750–764, DOI: 10.1002/bse.1843.
- Linder M., Williander M. (2017), *Circular business model innovation: inherent uncertainties*, “Business Strategy and Environment”, 26 (2), pp. 182–196, DOI: 10.1002/bse.1906.
- Lopez-Perez E., Melero I., Sese J. (2017), *Management for Sustainable Development and Its Impact on Firm Value in the SME Context: Does Size Matter?*, “Business Strategy and the Environment”, 26 (7), pp. 985–999, DOI: 10.1002/bse.1961.
- Macchion L., Toscani A.C., Vinelli A. (2023), *Sustainable business models of small and medium-sized enterprises and the relationships to be established within the supply chain*

- to support these models, "Corporate Social Responsibility and Environmental Management", 30 (2), pp. 563–573, DOI: 10.1002/csr.2374.
- Marco-Fondevila M., Llana-Macarulla F., Callao-Gastón S., Jarne-Jarne J.I. (2021), *Are circular economy policies actually reaching organisations? Evidence from the largest Spanish companies*, "Journal of Cleaner Production", 285, 124858, DOI: 10.1016/j.jclepro.2020.1-24858.
- Mio Ch., Costantini A., Panfilo S. (2021), *Performance measurement tools for sustainable business: A systematic literature review on the sustainability balanced scorecard use*, "Corporate Social Responsibility and Environmental Management", 29 (2), pp. 367–384, DOI: 10.1002/csr.2206.
- Mook L. (2019), *The Sustainable Development Goals: A Tipping Point for Impact Measurement?*, "Canadian Journal of Nonprofit and Social Economy Research", 10 (2), pp. 81–87, DOI: 10.29173/cjnser.2019v10n2a343
- Mook L. (2020), *Performance Management, Impact Measurement, and the Sustainable Development Goals: The Fourth Wave of Integrated Social Accounting*, "Canadian Journal of Nonprofit and Social Economy Research", 11 (2), pp. 20–34, DOI: 10.29173/cjnser.20-20v11n2a353.
- Morana J., Gonzalez-Feliu J. (2015), *A sustainable urban logistics dashboard from the perspective of a group of operational managers*, "Management Research Review", 38 (10) pp. 1068–1085, DOI: 10.1108/MRR-11-2014-0260.
- Osterwalder A., Pigneur Y. (2010), *Business model generation: A handbook for visionaries, game changers, and challengers*, John Wiley & Sons, Hoboken, NJ.
- Parida V., Burström T., Visnjic I., Wincent, J. (2019), *Orchestrating industrial ecosystem in circular economy: A two-stage transformation model for large manufacturing companies*, "Journal of Business Research", 101, pp. 715–725, DOI: 10.1016/j.jbusres.2019.01.006.
- Pieroni M.P.P., McAloone T.C., Pigosso D.C.A. (2019), *Business model innovation for circular economy and sustainability: A review of approaches*, "Journal of Cleaner Production", 215, pp. 198–216, DOI: 10.1016/j.jclepro.2019.01.036.
- Pizzi S., Corbo L., Caputo A. (2021), *Fintech and SMEs sustainable business models: Reflections and considerations for a circular economy*, "Journal of Cleaner Production", 281, 125217, DOI: 10.1016/j.jclepro.2020.125217.
- Preghenella N., Battistella C. (2021), *Exploring business models for sustainability: A bibliographic investigation of the literature and future research directions*, "Business Strategy and the Environment", 30 (5), pp. 2505–2522, DOI: 10.1002/bse.2760.
- Quarchioni S., Ruggiero P., Damiano R. (2021), *Flows of information and meaning: a vocabulary approach to integrated thinking and reporting*, "Meditari Accountancy Research", 29 (4), pp. 740–774, DOI: 10.1108/MEDAR-01-2020-0677.
- Ritala P., Huotari P., Bocken N., Albareda L., Puumalainen K. (2018), *Sustainable business model adoption among S&P 500 firms: a longitudinal content analysis study*, "Journal of Cleaner Production", 170, pp. 216–226, DOI: 10.1016/j.jclepro.2017.09.159.
- Rizos V., Behrens A., van der Gaast W., Hofman E., Ioannou A., Kafyeke T., Flamos A., Rinaldi R., Papadelis S., Hirschnitz-Garbers M., Topi C. (2016), *Implementation of circular economy business models by small and medium-sized enterprises (SMEs): Barriers and enablers*, "Sustainability", 8 (11), 1212, DOI: 10.3390/su8111212.
- Rudenauer I., Gensch C-O., Griesshammer R., Bunke D. (2005), *Integrated Environmental and Economic Assessment of Products and Processes. A Method for Eco-efficiency Analysis*, "Journal of Industrial Ecology", 9 (4), pp. 105–116.

- Salvioni D.M., Bosetti L., Fornasari T. (2022), *Implementing and monitoring circular business models: An analysis of Italian SMEs*, "Sustainability", 14 (1), 270, DOI: 10.3390/su14010270.
- Sewell W., Mason R.B., Venter P. (2017), *Socio-economic developmental strategies as retail performance indicators: A balanced scorecard approach*, "Development Southern Africa", 34 (3), pp. 365–382, DOI: 10.1080/0376835X.2017.1308857.
- Schaltegger S., Burritt R., Zvezdov D., Hörisch J., Tingey-Holyoak J. (2015), *Management roles and sustainability information. Exploring corporate practice*, "Australian Accounting Review", 25 (4), pp. 328–345, DOI: 10.1111/auar.12102.
- Shields J., Shelleman J. (2020), *SME sustainability dashboards: An aid to manage and report performance*, "Journal of Small Business Strategy", 30 (2), pp. 106–114.
- Sislian L., Jaegler A. (2020), *ERP implementation effects on sustainable maritime balanced scorecard: Evidence from major European ports*, "Supply Chain Forum: An International Journal", 21 (4), pp. 237–245, DOI: 10.1080/16258312.2020.1754116.
- Skorka A. (2017), *Successful dashboard implementation in practice: How to overcome implementation barriers and ensure long-term sustainability*, "International Journal of Market Research", 59(2), pp. 239–262, DOI: 10.2501/IJMR-2017-017.
- Smit S.J. (2020), *SME focus – Long-term strategy for the European industrial future*, Study for the Committee on Industry, Research and Energy (ITRE), Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg.
- Stekelorum R., Laguir I., Elbaz J. (2018), *CSR disclosure and sustainable supplier management: a small to medium-sized enterprises perspective*, "Applied Economics", 50 (46), pp. 5017–5030, DOI: 10.1080/00036846.2018.1466990.
- Stewart H., Gapp R. (2014), *Achieving Effective Sustainable Management: A Small-Medium Enterprise Case Study*, "Corporate Social Responsibility and Environmental Management", 21 (1), pp. 52–64, DOI: 10.1002/csr.1305.
- Traverso M., Finkbeiner M., Jørgensen A., Schneider L. (2012), *Life cycle sustainability dashboard*, "Journal of Industrial Ecology", 16 (5), pp. 680–688, DOI:10.1111/j.1530-9290.2012.00497.x.
- Tsai F.M., Bui T.D., Tseng M.L., Wu K.J., Chiu A.S. (2020), *A performance assessment approach for integrated solid waste management using a sustainable balanced scorecard approach*, "Journal of Cleaner Production", 251 (2), 119740, DOI: 10.1016/j.jclepro.2019.119740.
- Turner M. (2009), *Going green? Start with sourcing*, "Supply Chain Management Review", 13 (2), pp. 14–21.
- Urbinati A., Rosa P., Sassanelli C., Chiaroni D., Terzi S., (2020), *Circular business models in the European manufacturing industry: a multiple case study analysis*, "Journal of Cleaner Production", 274, 122964, DOI: 10.1016/j.jclepro.2020.122964.
- Vihma M., Moora H. (2020), *Potential of circular design in Estonian SMEs and their capacity to push it*, "Environmental and Climate Technologies", 24 (3), pp. 94–103, DOI: 10.2478/rtuuct-2020-0088.
- White G.B. (2005), *How to Report a Company's Sustainability Activities*, "Management Accounting Quarterly", 7 (1), pp. 36–43.

Internet sources

- Andalusia Technology Park (PTA) (2020), *Handbook about circular economy opportunities for SMEs and companies*, Recycling Business Models (RBM) (H2020) project, https://www.pta.es/wp-content/uploads/2020/09/RBM_Handbook.pdf (accessed 15.06.2023).
- EC (2008), “*Think Small First*”. A “*Small Business Act*” for Europe, Communication from the Commission to the Council, the European Parliament and Social Committee and the Committee of the Regions, Brussels, 25 June 2008, <https://eur-lex.europa.eu/EN/legal-content/summary/a-small-business-act-for-european-smes.html> (accessed 11.06.2023).
- EC (2010), EUROPE 2020 – A Strategy for Smart, Sustainable and Inclusive Growth, Communication from the Commission, Brussels, 3 March 2010, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF> (accessed 11.06.2023)
- EC (2014), Green Action Plan for SMEs: Turning environmental challenges into business opportunities, Press release, Brussels, 2 July 2014, https://ec.europa.eu/commission/presscorner/detail/pl/IP_14_766 (accessed 10 June, 2023).
- EC (2019), A European Green Deal. COM(2019) 640 final, Brussels, 11.12.2019, EUR-Lex – 52019DC0640 – EN – EUR-Lex (europa.eu) (accessed 12.03.2023).
- EC (2020), An SME Strategy for a sustainable and digital Europe, COM(2020) 103 final, Brussels, 10.3.2020, SME Strategy (europa.eu) (accessed 12.03.2023).
- EC (2021), Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0189> (accessed 11.06.2023).
- EC (2022a), Annual Report on European SMEs 2021/22. SMEs and environmental sustainability. Background document, April 2022, https://single-market-economy.ec.europa.eu/smes/sme-strategy/sme-performance-review_en (accessed 11.03.2023).
- EC (2022b), Flash Eurobarometer 498. SMEs, green markets and resource efficiency. The report, March 2022, <https://europa.eu/eurobarometer/surveys/detail/2287> (accessed 11.03.2023).
- EC (2023), SME Performance Review, https://single-market-economy.ec.europa.eu/smes/sme-strategy/sme-performance-review_en#paragraph_885 (accessed 11.03.2023).
- KPMG (2022), *Get ready for the European Sustainability Reporting Standards. Understanding the first set of ESRs*, November 2022, Get ready for European Sustainability Reporting Standards (kpmg.com) (accessed 12.03.2023).
- Nordic Accountant Federation (2021), *Nordic Sustainability Reporting Standard*, <https://www.nsr.eu/> (accessed 12.03.2023).
- Nordic Innovation (2021), *Nordic Circular Economy Playbook*, <https://pub.nordicinnovation.org/Nordic-Circular-Economy-Playbook/us2021-play.pdf> (accessed 15.06.2023).
- UN Global Compact (2022), *SME Engagement Strategy 2021–2023*, <https://unglobalcompact.org/library/6049> (accessed 16.06. 2023).

Appendix 1. Projects and tools for SMEs to help with their green transition

Name	GREENECONET: The best practice platform to support the transition towards a green economy
Webpage/link	http://www.greeneconet.eu/ (currently not active)
Description	The project developed the first European-based platform to support SMEs in greening their business and helping them take part in a transition towards a green economy.
Outputs	Rizos V. et al. (2015), The circular economy: Barriers and opportunities for SMEs, CEPS Working Document, No. 412 Rizos V. et al. (2016), <i>Implementation of circular economy business models by small and medium-sized enterprises (SMEs): Barriers and enablers</i> , Sustainability, 8, 1212.
Name	Nordic Circular Economic Playbook
Webpage/link	https://www.nordicinnovation.org/nordic-circular-economy-playbook
Description	Nordic Innovation, an agency for the Nordic governments promoting sustainable development by supporting entrepreneurship, innovation and competitiveness among Nordic companies, developed a circular playbook to help manufacturing companies and individuals start the circular journey. The playbook is complemented by a set of tools, including a business model development toolkit, business model canvas, value case tool, capability maturity assessment, technology maturity assessment, culture gap analysis, ecosystem partner identification, funding requirement analysis, and roadmap development.
Output	Nordic Circular Economy Playbook Toolkit (https://www.nordicinnovation.org/tools/nordic-circular-economy-playbook-toolkit)
Name	Competence Centre for Circular Economy
Webpage/link	https://www.kiertotalousosaamiskeskus.fi/en/about-the-project/
Description	The project's purpose is to develop a shared digital platform which will respond to the needs of Finnish companies in the adoption of circular economy business models. The solution may be welcomed particularly by SMEs whose resources for transforming their business may be scarce. The project is run by Haaga-Helia University of Applied Sciences in cooperation with Jyväskylä UAS and Novia UAS.
Output	The development of Circular Economy business models and the pilot of the web service – June–December 2022 (https://www.kiertotalousosaamiskeskus.fi/en/about-circular-economy/) The launch of the competence centre and providing its services at a national level – January–June 2023.
Name	Boosting the circular economy among SMEs
Webpage/link	Environmental Compliance Assistance Programme for SMEs – Environment – European Commission (europa.eu)
Description	Pilot project launched by the EC in the context of the Circular Economy Package to assist SMEs in the transition to a more circular economy. DG Environment implemented this pilot project between June 2017 and

	February 2019 to explore what route is most effective and efficient to boost the transition of SMEs. The project delivered three support activities, including (1) training 28 SME support organisations on how to set up and/or expand their support programs on the subject of the circular economy; (2) helping 13 highly promising Green Solution Providers (GSPs) to scale-up across Europe; (3) advising five regional authorities on how they can boost the transition towards a circular economy.
Output	KPMG (2019), Accelerating towards a circular economy, Final report for European Commission project: Boosting circular economy among SMEs in Europe, February 2019. KPMG (2019), Boosting the transition, Impact assessment for the project: Boosting the circular economy among SMEs February 2019.
Name	I-GO Self-Assessment tool
Webpage/link	https://www.igosolution.org/
Description	The I-GO initiative helps SMEs access tailored resource efficiency knowledge and support services most relevant to their activity, location and business needs. The tool aims to transform resource efficiency knowledge and support services into concrete business improvement actions in the areas of energy and waste management for increased resilience, productivity and competitiveness. The I-GO initiative has been developed by the Green Industry Platform of the Green Growth Knowledge Partnership (GGKP) in collaboration with the Partnership for Action on Green Economy.
Output	SME Support Center (https://www.greenindustryplatform.org/sme-support-centre) I-GO Assistant (https://igosolution.org/form/i-go-questionnaire) I-GO Network (https://igosolution.org/i-go-network)
Name	OECD Sustainable Manufacturing Toolkit
Webpage/link	https://www.oecd.org/innovation/green/toolkit/48704993.pdf
Description	The OECD Sustainable Manufacturing Toolkit includes a set of internationally applicable, common and comparable measures of the environmental performance in manufacturing facilities in any business size, sector or country.
Output	Start-up Guide (https://www.oecd.org/innovation/green/toolkit/48704993.pdf) Web Portal (https://www.oecd.org/innovation/green/toolkit/)
Name	The SME Climate Hub
Webpage/link	https://smeclimatehub.org/
Description	The SME Climate Hub was launched by the International Chamber of Commerce (ICC), the Race to Zero initiative of the UNFCCC and other organisations. It offers tools to estimate an SME's carbon footprint and create a climate report summarising an SME's annual GHG emissions, including the actions they are taking and the impact of their emissions reduction effort. The SME Climate Hub delivers a free online training course to help SMEs reduce their carbon emissions and join the collective race to net zero. Within the resources of SME Climate Hub, there is

	a 1.5°C Business Playbook developed by the Exponential Roadmap Initiative for CEOs, board members, managers and employees who want to prepare for the fastest economic transition in history – and help drive it.
Output	The Business Carbon Calculator (https://smeclimatehub.org/start-measuring/) The SME Climate Hub reporting (https://smeclimatehub.org/report-your-progress/) Climate Fit (https://smeclimatehub.org/climate-fit/) 1.5°C Business Playbook (https://exponentialroadmap.org/business-playbook/)
Name	SME360X
Webpage/link	https://gistimpact.com/sme360x/
Description	SME360X is a user-friendly platform designed to help supply chain leaders, financial institutions, trade bodies, and banks evaluate environmental performance and impacts across the value chain and networks.
Output	A tool for data collection aligned with regulations and standards. A powerful and intuitive dashboard that translates sustainability data into measurable monetary impact. A rigorous economic model that delivers estimations where sustainability data is missing or not tracked. Provides certifications to SMEs when they complete their first environmental impact assessment. Aggregated view on SME-reported data.
Name	Moody's Analytics ESG Score Predictor
Webpage/link	https://www.economy.com/products/esg/esg-score-predictor
Description	Moody's Analytics ESG Score Predictor provides estimates of environmental, social, governance, carbon emissions footprint, transition and physical risk management scores for SMEs.
Output	ESG Score Predictor – a tool aimed at enabling real-time ESG assessments and monitoring risk across global supply chains.
Name	SME Carbon Footprint Calculator
Webpage/link	https://www.carbontrust.com/our-work-and-impact/guides-reports-and-tools/sme-carbon-footprint-calculator
Description	The Carbon Footprint Calculator has been developed to help UK-based SMEs measure their corporate emission footprint following GHG Protocol Guidance, including direct emissions from fuel and processes and those emissions from purchased electricity for the assets they operate.
Output	Carbon Footprint Calculator (https://gbfcalc.azurewebsites.net/gbf)

Source: authors' own presentation.

