

VARNA FREE UNIVERSITY
CHERNORIZETS HRABAR
FACULTY OF SOCIAL, BUSINESS AND COMPUTER SCIENCES
DEPARTMENT OF ADMINISTRATION AND MANAGEMENT

ANDREAN JOE

**CHALLENGES FACING LEADERS
IN HUMAN RESOURCE MANAGEMENT
IN THE ERA OF CIRCULAR ECONOMY**

ABSTRACT OF DISSERTATION

For the PhD Degree in 3.7 Administration and Management
PhD Program: Organization and Management outside the Sphere of Material Production

Scientific Adviser:
Prof. PhD Snezhanka Ovcharova

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The dissertation comprises 211 pages and includes a List of Figures, List of Tables, List of Abbreviations, Introduction, a presentation in three chapters, Conclusion outlining the scientific contributions, List of Publications related to the dissertation, Declaration of Originality and List of Reference Literature.

The main text contains 26 tables and 35 figures. Each chapter is divided into separate sections, with summaries and conclusions provided at the end of each chapter. The List of Reference Literature comprises 102 sources in Bulgarian, English, and German, including electronic resources.

The dissertation was discussed in the Department of Administration and Management at the Faculty of social, business and computer sciences with Chernorizets Hrabar Varna Free University, Varna and referred for defense before the scientific jury appointed by an Order of the Rector of Chernorizets Hrabar Varna Free University.

The defense of the dissertation before the Scientific Jury will be held on 12.11.2026 at 10:00, in the Conference Room of Chernorizets Hrabar Varna Free University at a hearing of the Scientific Jury. The materials related to the defense are available to all interested parties at the office of the Department of Administration and Management, as well as on the university's website.

I. GENERAL CHARACTERISTICS OF THE DISSERTATION

INTRODUCTION

Topicality and Relevance of the Research

The significance and topical relevance of the subject are determined by the need for changes that, in recent years, have increasingly affected the way enterprises manage their materials and raw materials, human resources, and organizational processes. The transition to a circular economy is gradually becoming not only an environmental necessity but also an economic and managerial issue related to the sustainability and long-term competitiveness of small and medium-sized enterprises (SME). The circular economy has become a significant component of the European Union's strategic framework for sustainable development. The *2020 Circular Economy Action Plan* and the *European Green Deal* established specific objectives for reducing dependence on resources and significantly increasing the circular use of materials.¹

Changes in the European Union's regulatory framework also have a particularly significant impact on SME business activities. With the adoption of the Corporate Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting Standards (ESRS), companies are facing increasingly stringent requirements related to transparency, ESG reporting, and sustainable management. Although these regulations were initially aimed primarily at large enterprises, their impact is gradually extending to SMEs through supply chains, contractual relationships, partnerships, and growing market requirements. The introduction of the VSME - a voluntary sustainability reporting standard for non-listed micro, small and medium-sized enterprises - further demonstrates that sustainability is now becoming increasingly relevant to SMEs as well. These enterprises often lack sufficiently developed managerial structures, dedicated human resource management (HRM) departments, adequate expert capacity, and internal ESG management systems.²

At the same time, SMEs constitute the backbone of the economy in the European Union. They account for more than 99% of all enterprises and approximately 53% of employment in Germany, while facing a range of challenges related to shortages of skilled personnel, gaps in sustainability knowledge, limited financial resources, market uncertainty, and the need to adapt to new market and regulatory conditions. These enterprises, among which the sectors examined in this study play a significant role, require integrated management solutions that combine economic efficiency with environmental and social responsibility.

The object of the research is human resource management and organizational processes in the context of the transition towards a circular economy within SMEs in Germany³, specifically in the sectors of real estate management, financial advisory services, and skilled crafts and trades sector. This encompasses the processes and interactions between leaders and employees, adapted to the principles of sustainable development and the requirements of the circular economy.

The subject of the research comprises the specific challenges and competencies required for the effective management of human resources in the context of a circular economy, with a particular focus on the development of leadership strategies, organizational culture, ESG-oriented practices, and integrated models aimed at strengthening the sustainability and management standards of enterprises

Research Problem

The research problem arises from the limited number of scholarly studies and the relatively limited practical application of integrated HRM models within SMEs in the context of the transition towards a circular economy. A large part of existing studies approach the circular economy primarily from the perspective of technologies, material flows, and business models. In contrast, the human factors-including employee

¹ European Commission. (2020). <https://eur.europa.eu/legal-content/de/txt/?uri=celex:52020dc0098>. Brussels 11.03.2020. [EUR-Lex - 52020DC0098 - DE - EUR-Lex](#) . Accessed in May 2026.

² European Union. Richtlinie. (2022). <http://data.europa.eu/eli/dir/2022/2464/oj>. Aktuelle konsolidierte Fassung von 18/03/2026. Accessed in May 2026.

³ Statistisches Bundesamt (Destatis). (2026). <https://www.destatis.de/de/themen/branchen-unternehmen/unternehmen/kleine-unternehmen-mittlere-unternehmen/aktuell-beschaeftigte.html>. Accessed in May 2026.

competencies, motivation, organizational culture, mindset, and well-being-remains comparatively underexplored. Furthermore, the relationship between HRM and ESG principles in the academic literature has been examined predominantly in the context of large enterprises, while the specific conditions and constraints faced by SMEs remain insufficiently investigated.

The problem manifests itself in several key areas. On the one hand, there is a growing mismatch between traditional HRM practices and emerging requirements related to sustainability, ESG regulations, circular business models, the development of new competencies, digitalization, and the need for greater organizational adaptability. On the other hand, a significant proportion of SMEs implement individual sustainability-oriented practices without integrating them into a comprehensive management system that connects leadership with organizational development. This creates challenges for aligning strategic objectives, organizational culture, competency development, and day-to-day operations within enterprises.

Against this background, the dissertation seeks to answer the following research question: **What specific competencies, management mechanisms, models, and leadership strategies are required to ensure the effective implementation of circular economy principles in human resource management?**

Author's Thesis

The challenges faced by leaders in managing human resources in the context of a circular economy extend beyond external economic, regulatory, or technological factors. To a significant extent, they are shaped by the internal organizational capacity of enterprises to develop knowledge, foster an ESG-oriented culture, promote sustainable leadership, and implement effective practices for attracting, motivating, and developing human capital. Effective management of the transition requires new managerial capabilities that integrate leadership vision, strategic HRM, digitalization, business partnerships, and employee well-being within an integrated framework for sustainable organizational transformation.

Aim and Tasks of the Dissertation

The aim of the present study is to develop a new integrated model for the sustainable management of human and natural capital in SMEs, designed to ensure alignment between HRM, the principles of the circular economy, and ESG reporting requirements.

To achieve this aim, the following **research objectives** have been formulated:

- (1) Conduct a review of the specialized literature on the circular economy, sustainable development, HRM and leadership, including the contemporary regulatory framework related to ESG reporting.
- (2) Analyze and compare theoretical models and management approaches applicable to HRM in the context of the transition from a linear to a circular economy.
- (3) Conduct an empirical study using a mixed-methods approach to identify the specific challenges, barriers, and risks faced by SME leaders in Germany in adapting to sustainable and ESG-oriented practices.
- (4) Identify the key competencies, organizational needs, and gaps related to leadership development, the transition towards sustainable management, employee training, and continuous employee development in the context of the circular transition.
- (5) Identify and formulate key strategies for addressing the identified challenges and to propose an integrated model for the sustainable management of human and natural capital.
- (6) Develop practical recommendations for the effective and targeted development of knowledge and organizational capacity within SMEs, aiming at sustainable management and development.

Research Methodology

The study is based on the following research methods:

Review and Analysis of the Scientific Literature

- Topics related to the circular economy, leadership in HRM, ESG orientation, organizational culture, and organizational change in SMEs.
- Sources used include peer-reviewed academic articles, monographs, specialized studies, strategic and institutional reports, reports from international organizations, and publications by relevant

industry associations in Germany.

- Selection criteria include: a direct link to the research questions; publications from the recent 10 years (prioritizing research conducted after 2018); and a focus on SMEs in the real estate management, financial advisory services, and skilled crafts and trades sectors.
- The filtering method involves a combined search across academic databases (Springer Professional, SpringerLink, Scopus, Web of Science, EBSCO, etc.) and targeted searches in Google Scholar to identify additional sources.

Synthesis of theoretical models and previous research

- Identification and synthesis of the leading conceptual frameworks for HRM on the background of the transition towards a circular economy.
- Comparison of leadership theories (transformational, sustainable, and adaptive leadership) in the context of SMEs.
- Critical analysis of the applicability of these models to the three selected sectors in Germany.

Documentary Analysis

- Analysis and review of European and German strategic, regulatory, and institutional documents related to the circular economy, ESG, Corporate Social Responsibility (CSR), and sustainability reporting, with particular relevance to HRM in the context of the circular economy.
- The findings were used to develop the theoretical framework presented in Chapter One and to define the research areas addressed in Chapter Two, in order to develop an initial template for a thematic analysis.

Empirical Study and Data Collection Method in Chapter Three

- The empirical component of the dissertation was conducted through an online survey administered via the LimeSurvey platform and targeted at representatives of SMEs in Germany.
- The scope of the study encompasses three main sectors: financial advisory services, real estate management, and skilled crafts. In addition, an “Other” category was included for enterprises that are direct partners or suppliers, or are otherwise directly connected to the three selected sectors.
- The empirical database consists of 102 fully completed questionnaires, collected between August 2025 and February 2026.

The methodological approach presented above provides a consistent and transparent basis for analyzing the challenges faced by SMEs in the context of the transition towards a circular economy. Combining theoretical and empirical analysis with a survey-based approach, quantitative analysis of closed-ended questions, and inductive qualitative analysis of open-ended responses makes it possible to examine both actual management practices and the ways in which respondents perceive and interpret barriers, needs, and opportunities for sustainable change. In this way, the methodology provides a robust analytical basis for drawing the main conclusions, formulating strategies, and developing practically applicable recommendations for the sustainable management of human and natural capital in SMEs.

From a theoretical perspective, the present study contributes to a broader understanding of the role of human resource management as a strategic mechanism in the transition towards a circular economy within SMEs. From a practical perspective, the findings provide leaders with a concrete set of tools, including a model, a formula, and a three-year action plan containing recommendations for integrating ESG principles into day-to-day management decisions and employee development.

Limitations of the research topic of the dissertation

The research topic of the dissertation is limited to:

- The challenges facing HRM in the context of the circular economy, with particular emphasis on SMEs operating in real estate management, financial advisory services, and skilled crafts in Germany.

- The period of analysis primarily covers academic research, strategic documents, empirical data, and scholarly literature from the past 5 to 10 years, with particular emphasis on publications and regulatory developments since 2018.
- The study focuses on internal management processes, leadership, competency development, organizational culture, and the social and environmental dimensions of sustainability, without examining macroeconomic and sector-specific policies in detail.
- The empirical study comprises 102 SMEs, which imposes limitations on the generalizability of the findings. The data obtained allow for the identification of analytical findings and trends within the sectors under study, without claiming full representativeness of all SMEs in Germany.

I. CONTENTS AND STRUCTURE OF THE DISSERTATION

The dissertation is structured into a List of Figures, List of Tables, List of Abbreviations, Introduction, presentation in three chapters, each comprising three to four sections, Conclusion outlining the scientific contributions, List of Reference Literature, and Declaration of Originality. The dissertation comprises a total of 211 pages. The main body of the dissertation contains 6 tables and 56 figures. The List of Reference Literature includes publications in Bulgarian, English, and German, as well as electronic resources. In total, the List of Reference Literature contains 102 sources.

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DISSERTATION SUMMARY

CHAPTER ONE. MANAGEMENT OF SMEs IN THE CONTEXT OF THE CIRCULAR ECONOMY

The transition towards a circular economy positions SME management as a key factor in sustainable development, as these enterprises are required to reconcile limited resources, economic efficiency, environmental responsibility, and adaptation to emerging market requirements. The topic is particularly significant because successful management in the context of a circular economy increasingly depends not only on technological and financial solutions, but also on leaders' ability to develop human capital and organizational culture, foster partnerships, and promote the responsible use of natural resources.

Section 1.1. Fundamental Principles of the Circular Economy and Challenges Facing SME Leaders.

The transition towards a circular economy requires SMEs to reconsider the way in which they manage resources, processes, and people. This transition is not limited solely to technological solutions or the adoption of environmentally friendly practices; rather, it entails a transformation of the enterprise's overall management system. In the context of a circular economy, SMEs should strive for more efficient resource utilization, waste reduction, the extension of product life cycles, and better alignment between economic, environmental, and social objectives.

Under contemporary conditions, management can no longer be viewed solely as the control of costs, productivity, and current efficiency, but rather as a complex process of integrating human capital, organizational knowledge, resource efficiency, and sustainable practices. Ovcharova⁴ considers cultural knowledge and capabilities to be an important resource for an organization's competitiveness, encompassing the perception of quality, the capacity to manage changes, innovative capacity, teamwork skills, and managerial style.

The transition from a linear to a circular economy represents one of the significant management transformations in the contemporary economy. It is not limited merely to changing the way enterprises handle waste, but affects the overall logic of creating, using, preserving, and restoring value. Under the linear model, economic activity is based on the sequence of *extraction–production–consumption–disposal*, whereby resources enter the economic process, pass through production and consumption, and subsequently leave the system in the form of waste.⁵

In addition, it is necessary to distinguish between two concepts that are often used in parallel: *sustainability and circular economy*. Sustainability has a broader regulatory and societal scope, as it is associated with the conservation of resources, intergenerational equity, and the balance between economic, social, and environmental objectives. The circular economy, by contrast, represents a more specific economic and managerial model focused on the recovery, reuse, and retention of materials within the value chain as long as possible.⁶

In this context, ESG may be regarded as a framework for sustainable corporate management through which sustainability is operationalized into *environmental, social, and managerial factors*. Regulation (EU) 2024/3005 on the transparency and integrity of ESG rating activities associates ESG with the assessment of an entity's profile, characteristics, risks, and impacts in relation to environmental, social and human rights, as well as managerial factors.⁷ The *environmental dimension* concerns impacts on the environment, resource efficiency, emissions, waste, and the circular use of materials. The *social and human rights dimension* encompasses the treatment of employees, working conditions, equality, inclusion, skills development, and respect for human rights. The *managerial dimension* includes transparency, accountability, ethics, management structures, and the manner in which management integrates sustainability into strategic and operational decision-making.

In this regard, the circular economy should not be understood merely as a more efficient approach to waste management. Rather, it represents a systemic approach that raises the question of how value loss can be reduced from the outset through product design, production, process organization, materials management, and

⁴ Ovcharova, Sn., (2019) *Managing creative people in an Organizational Environment*. ed. Medical University - Varna, 2019, ISBN 978-619-228-5. p. 62.

⁵ Kraft, M. H. G., Christ, O., Scherer, L. *Management der Kreislaufwirtschaft. Positionierung und Gestaltung zirkulärer Unternehmen*. Wiesbaden: Springer Gabler, 2022, ISBN 978-3-658-39225-3. p. 1–2.

⁶ Ibid., p.1

⁷ Europäische Union. (2024). <https://eur-lex.europa.eu/eli/reg/2024/3005/oj/eng?eliuri=eli:reg:2024:3005:o&locale=de&utm>. Accessed in 08.2026.

interaction with business partners. The German understanding of the circular economy (*Kreislaufwirtschaft*) has traditionally placed emphasis on waste as a resource, whereas the broader concept of the *Circular Economy* has a more systemic scope, as it seeks to prevent waste from arising in the first place within the entrepreneurial value-creation chain itself.⁸

The essence of the circular economy encompasses not only recycling, but also reuse, repair, refurbishment, the extension of product life cycles, sharing, reverse logistics, new business models, and changes in the behavior of consumers and organizations. Bocken, de Pauw, Bakker, and van der Grinten⁹ develop this logic through the concepts of *slowing, closing, and narrowing* resource loops.

The circular economy is based on several key principles that can be regarded as a management framework for enterprises. In the present study, these principles are of particular relevance to SMEs, as they highlight the resource-related, organizational, and leadership prerequisites for the transition from a linear to a circular model of economic development:¹⁰

1. The first fundamental principle is the elimination, or at least the substantial minimization, of waste at the design stage.
2. The second principle concerns extending the life cycle of products, materials, and resources. This principle encompasses practices such as reuse, repair, refurbishment, and recycling.
3. The third principle is based on the distinction between technical and biological cycles. Technical cycles encompass products and materials that cannot be directly returned to the biosphere, whereas biological cycles concern materials that can safely re-enter natural processes¹¹. The “Butterfly” model splits the circular economy into two cycles: a biological cycle and a technical cycle. The technical cycle primarily concerns durable consumer products, while the biological cycle relates predominantly to biodegradable materials¹².
4. The fourth principle involves slowing resource flows by retaining products in use for extended periods. Accordingly, value is not generated exclusively through the production and sale of new products, but also through activities such as repair, maintenance, refurbishment, upgrading, and other forms of life-cycle extension^{13,14}.
5. The fifth principle is based on systems thinking and collaboration across the value chain. A publication by Moveko¹⁵ emphasizes the importance of maintaining clean material flows, establishing transparent framework conditions for monitoring and tracing material flows, and integrating all actors across the value chain in order to improve the product design and waste management practices.

These principles demonstrate that the circular economy is not a one-off environmental measure, but rather a long-term managerial approach. It changes the way an enterprise understands value. In the linear model, value

⁸ Ibid., p.2.

⁹ Bocken, N.M.P., de Pauw, I., Bakker, C., van der Grinten, B., (2016). *Product design and business model strategies for a circular economy*, Journal of industrial and Production Engineering, 2016, Vol.33, No.5, <http://dx.doi.org/10.1080/21681015.2016.1172124>, p.308-309.

¹⁰ Ellen MacArthur Foundation. (2013). *Towards the Circular Economy*. EMF Report, <https://www.ellenmacarthurfoundation.org/towards-the-circular-economy-vol-1-an-economic-and-business-rationale-for-an>. p.6-7

¹¹ Kraft, M. H. G., Christ, O., Scherer, L. (2022). *Management der Kreislaufwirtschaft. Positionierung und Gestaltung zirkulärer Unternehmen*. Wiesbaden: Springer Gabler, 2022, ISBN 978-3-658-39225-3. p. 13-14.

¹² Ellen MacArthur Foundation. (2013). *Towards the Circular Economy*. EMF Report, <https://www.ellenmacarthurfoundation.org/towards-the-circular-economy-vol-1-an-economic-and-business-rationale-for-an>. p.24.

¹³ European Commission. (2024). *The circular economy: what it is and why it matters*. [Кръговата икономика: какво представлява тя и защо е важна | Темы | Европейски парламент](#).

¹⁴ European Commission. (2020). *A new Circular Economy Action Plan for a cleaner and more competitive Europe*, COM (2020) 98 final. 2024. [Kreislaufwirtschaft – Umwelt – Europäische Kommission](#).

¹⁵ MOVECO (2019). *The Danube Goes Circular: Cross-Country Road Map to Accelerate Transition Towards a Circular Economy in the Danube Region — Austria, Germany, Slovenia*. Interreg Danube Transnational Programme, www.interreg-danube.eu/moveco. стр. 34.с. 1-2, 7-8.

is primarily associated with the sale of products and their subsequent consumption, whereas in the circular model, value is created and preserved through reuse, repair, upgrading, recycling, the efficient use of materials, and the development of sustainable partnerships.

One of the main challenges faced by SME leaders is translating the circular economy from a macroeconomic concept into concrete management practices. This involves reducing material consumption, reusing certain resources, carrying out repairs, motivating employees, and negotiating with suppliers. Germany's National Circular Economy Strategy (*Nationale Kreislaufwirtschaftsstrategie*) identifies the development of knowledge and specialized skills within small and medium-sized enterprises as one of the conditions for a successful circular transition.¹⁶

Felger and Paul-Kohlhoff¹⁷ regard HRM as a strategic link between employees and the corporate strategy, whereby employees' potential and capabilities are treated as an internal resource of the enterprise.

In addition to resource-related and cognitive barriers, the circular approach also encounters resistance at the level of organisational behaviour. The circular economy cannot be implemented solely through technological investments or changes in external policies; rather, it requires a transformation in the way people within an enterprise think, adapt, work, participate, and make decisions. Ovcharova¹⁸ considers knowledge to be a key resource for organisational competitiveness, linking it to the enterprise's ability to utilise and renew its resources.

Kirchherr, Piscicelli, Bour, Kostense-Smit, Müller, Huibrechtse-Truijens, and Hekkert¹⁹ find that cultural barriers, specifically hesitant corporate culture and a lack of awareness, constitute a more significant obstacle to the circular transition than technological constraints. Ries, Lugmayr, Kurz, Beckmann, and Roth²⁰ further develop this finding by categorising the factors influencing the implementation of sustainable digital services into three groups: cultural factors at the level of attitudes and behaviour, managerial factors at the institutional level, and competency factors related to knowledge. Within the framework they examine, these factors may manifest themselves as barriers to transformation; however, when appropriately managed, they can also function as enabling conditions for overcoming such barriers. This threefold classification is relevant to the present study insofar as it reflects three of the main problem areas identified in the empirical part of the dissertation.

The relationship between the human factor and organisational culture demonstrates that, for SME leaders in Germany, the issue is not only *what we do*, but also *how we think about what we do*. If resource efficiency, responsibility, participation, and learning are not regarded as integral components of leaders' professional behaviour, the circular transition remains formally declared but is not implemented in practice.

Even when an enterprise has motivated employees and maintains a positive organisational culture, the circular transition remains challenging if systems for measuring and monitoring outcomes are lacking.

According to Erchinger, Koch, and Schlemminger²¹, sustainable management requires not only conventional financial indicators, but also organisational characteristics, normative objectives, and management approaches that reflect a sustainable and contemporary way of thinking. It is through this mindset that sustainable thinking is expressed and can be assessed by determining whether it is *present or absent*. From this perspective,

¹⁶ BMUV. (2024). Nationale Kreislaufwirtschaftsstrategie. https://www.bundesumweltministerium.de/fileadmin/daten_bmu/download_pdf/abfallwirtschaft/nationale_kreislaufwirtschaftsstrategie_en_bf_01.pdf. p. 61. Accessed in 03.2026.

¹⁷ Felger, S. Paul-Kohlhoff, A. (2004). *Human Resource Management. Konzepte, Praxis und Folgen für die Mitbestimmung*. Düsseldorf: Hans-Böcker-Stiftung. ISBN 3-935145-78-0. p.15-17 и p.27-33.

¹⁸ Ovcharova, Sn. (2019). *Managing creative people in an Organizational Environment*. ed. Medical University - Varna. ISBN 978-619-221-228-5. p. 52-54, p.61.

¹⁹ Kirchherr, J. Piscicelli, L. Bour, R. Kostense-Smit, E. Muller, J. Huibrechtse-Truijens, A. и Hekkert, M. (2018). Barriers to the Circular Economy: Evidence From the European Union (EU). *Ecological Economics*, Science Direct. <https://doi.org/10.1016/j.ecolecon.2018.04.028>. Accessed in May 2026.

²⁰ Ries, L., Lugmayr, N., Kurtz, J., Beckmann, M. & Roth, A. (2024). Das Versprechen nachhaltiger digitaler Dienstleistungen – Eine Fallstudie. In: M. Bruhn & K. Hadwich (Hrsg.), *Sustainable Service Management*, Forum Dienstleistungsmanagement, Wiesbaden: Springer Gabler, S. 537–558. DOI: 10.1007/978-3-658-45146-2_19. p. 541-543.

²¹ Erchinger, R. Koch, R. Schlemminger, R. B. (2022). *ESG(E) - Kriterien - die Schlüssel zum Aufbau einer nachhaltigen Unternehmensführung*. Springer Gabler. ISBN 978-3-658-37877-6. p. 17.

ESG management and HRM increasingly become interconnected, as both require data, consistency, accountability on the part of leaders and employees, and the capacity to adjust sustainable management methods.

An additional challenge are partnerships and collective learning. SMEs can rarely close material cycles entirely on their own. They require suppliers, customers, recycling organisations, digital solutions, industry associations, and, in some cases, public support. The academic literature explicitly recommends establishing information and support networks for SMEs, improving access to information on environmental legal requirements, and providing assistance in integrating circular economy principles into enterprise management systems.²² The European Circular Economy Stakeholder Platform (ECESP) confirms that accelerating the circular transition in Europe requires not only regulatory and technological changes, but also the development of organisational capabilities within enterprises, sufficient time for adaptation and learning, and strengthened interaction among the various actors involved in the economic process²³.

Partnerships are particularly important for the three sectors examined in the present dissertation. In the craft sector, circular practices such as repair, refurbishment, and reuse have traditionally been present, but they are rarely formalised through measurement systems that enable them to be planned and managed systematically. In the real estate sector, closing material cycles depends on interaction among property owners, property managers, construction companies, and suppliers. In the financial advisory services sector, partnerships are associated with the need for ESG-oriented advisory services, which require new knowledge, qualifications, and competencies to support employee development. In each of these cases, the circular transition is not merely an internal organisational task, but a process of interaction within a broader business ecosystem.

Section 1.2. Creating Synergies between Human and Natural Capital in Business Management

Following the examination and presentation of the fundamental principles of the circular economy, it may be concluded that it is not limited solely to recycling, waste management, or individual environmental actions. It requires a change in the way enterprises create, use, preserve, and restore value. In this context, there is a need to examine the relationship between human and natural capital as one of the fundamental managerial prerequisites for the transition towards a circular economy in SMEs.

In the present study, synergy between human and natural capital is understood as a mutually reinforcing and, at the same time, strong managerial interaction in which the development of employees' knowledge, competencies, motivation, health, culture, and participation supports the efficient, responsible, and circular use of natural resources. At the same time, the preservation of natural capital within the enterprise creates conditions for the long-term development of human potential. This definition is important because it positions the human factor not as an addition to the circular economy, but as a prerequisite for its practical implementation. Natural capital indicates the resource boundaries of value-creating activities, while human capital determines whether these boundaries will be understood, interpreted, managed rationally, and translated into sustainable organisational decisions.

The topic is relevant because, in the contemporary economy, natural capital is increasingly perceived not merely as an environmental given, but as a strategic foundation of economic activity. Materials, energy, water, land, biodiversity, ecosystem services, and resource flows directly contribute to value creation. Under conditions of a circular economy, these resources cannot be treated as unlimited input factors.

Natural capital is gradually becoming an independent object of management. Amicarelli, Bux, Del Chica, Giungato, Tarabella, and Tricase²⁴ regard natural capital as an aggregate of renewable and non-renewable environmental stocks that provide goods and services for the present and future development of the organisation. Emphasis is placed on measuring natural capital through non-financial reporting under the CSRD, assessing impacts and dependencies on nature, as well as the need to use qualitative, quantitative, and monetary indicators.

²² MOVECO. (2019). *The Danube Goes Circular: Cross-Country Road Map to Accelerate Transition Towards a Circular Economy in the Danube Region — Austria, Germany, Slovenia*. Interreg Danube Transnational Programme, p.34.

²³ European Environment Agency. (2024). *Accelerating the circular economy in Europe: State and outlook 2024*. EEA Report No. 13/2023. Luxembourg: Publications Office of the European Union. DOI: 10.2800/055236. Accessed in May 2026.

²⁴ Amicarelli, V. Bux, C. Del Chicca, A. Giungato, P. Tarabella, A. Tricase, C. (2026). *Toward a Business-Oriented Concept of Natural Capital and Its Measurement in Organizations*. *Business Strategy and the Environment*, 35, 2482-2501. <https://doi.org/10.1002/bse.70310>. p. 2482-2483.

Six steps for measuring natural capital are identified, encompassing material and energy flows, environmental impacts, the development of resource balances, monetisation, integrated economic and environmental indicators, and the preparation of structured non-financial reporting.

In the scientific literature, natural capital is positioned alongside human, social, infrastructure, and financial capital as a relevant form of capital at the enterprise level. Natural capital comprises renewable and non-renewable resources, whereas human capital encompasses individual abilities, health, knowledge, and motivation. It is emphasised that the different forms of capital are not isolated but are interconnected and mutually influence one another²⁵.

This understanding constitutes the basis of the present dissertation. When natural capital is considered independently, the analysis remains predominantly environmental. When human capital is considered independently, the analysis remains within the boundaries of the traditional understanding of human resources; however, the circular economy does not permit such a separation. It requires the two forms of capital to be considered together because materials can be reused only if people know how to organise the process; energy can be saved only when control and responsibility are present; and waste can be transformed back into a resource only when knowledge, partnerships, and a managerial mindset are present.

In the present study, human capital is not reduced to the number of employees or formal qualifications. It encompasses knowledge, skills, health, motivation, creativity, professional experience, the capacity to learn, and readiness to adapt. These characteristics are particularly important for SMEs because their managerial functions are often limited, while employees have a direct influence on everyday work processes.

Human capital in SMEs cannot be managed solely through operational functions; rather, it requires a strategic approach to people and their development. Ovcharova²⁶ emphasises that human resource management in the context of sustainable business is associated with a long-term orientation, systematic training, development, and the establishment of an organisational culture that supports responsible behaviour and adaptation to a changing environment.

Dixit et al.²⁷ use the notion *green human capital* to refer to human capital oriented towards environmental sustainability and green innovation. This concept is not limited to general environmental awareness but encompasses specific competencies, expertise, and capabilities of employees in the areas of environmental protection and green innovation. It is emphasised that *green human capital* comprises intangible assets such as skills, knowledge, and professional experience, which can be developed through training, coaching, career development, development programmes, and reward systems.

This perspective is important for the present dissertation because it allows human capital in SMEs to be considered not merely as a labour resource, but as a carrier of the capacity for a circular transition. If the circular economy requires waste reduction, reuse, recycling, resource regeneration, and the use of more efficient processes, then employees must possess practical knowledge of how these principles are applied in everyday work. In this sense, *green human capital* connects HRM with the actual management of natural capital.

Organisations that invest in environmental training, the development of green skills, and sustainability education are better prepared to implement circular business models. The authors define *green human capital* as a foundation for the development of the circular economy because employees' skills, knowledge, and environmental awareness create a culture of sustainability and innovation. It is also emphasised that human resource policies that promote environmentally oriented recruitment, the development of green leadership, and environmental awareness enhance an organisation's capacity to reduce waste, recycle materials, and design regenerative systems²⁸.

²⁵ Schreiber, H. Polsterer, N. Stocker, A. (2012). *Welche strukturellen Bedingungen sind notwendig, damit der Unternehmenssektor künftig möglichen Krisen und Wirtschaftsschwächen im Sinne der Nachhaltigkeit begegnen kann?* Policy Paper Serie „Wachstum im Wandel“, Policy Paper Nr. 6, SERI, 1-37, p. 4.

²⁶ Ovcharova, Sn. (2019). *Управление на креативни хора в организационна среда*. Издателство Медицински университет-Varna. ISBN 978-619-221-228-5. p.104-105.

²⁷ Dixit, A. Baber, P. Baber, R. Agrawal, M. (2025). *Integrating Green Human Capital and Innovation for Advancing Circular Economy: A Pathway to Sustainable Development*. In A. Lydia Issac & H. Baber (Eds.), *Circular Economy and Human Resources: Global Perspectives*. Springer Nature Singapore, p. 36.

²⁸ Ibid., p. 40-41.

The scientific literature indicates that sustainable transformation depends not only on material resources, technologies, and sufficient financial capital. A significant part of an organisation's capacity to adapt, create new solutions, and change its behaviour is associated with resources that do not possess physical forms. It is precisely this group of resources that is emphasised in the present analysis. Intangible resources are regarded as factors that have no material substance but are essential for value creation. According to Kinne, contemporary eco-social challenges, as well as opportunities for sustainable development, are related to the ways in which people think, feel, learn, know, create, interact, and collaborate²⁹.

The present dissertation argues that synergy between human and natural capital requires a managerial mechanism. This mechanism is human resource management. It is not considered solely as an administrative activity, but as a strategic function through which knowledge, motivation, competencies, and culture can be transformed into sustainable behaviour.

Felger and Paul-Kolhoff³⁰ distinguish HRM from narrower conceptions of staff management by emphasizing its strategic and long-term orientation. HRM focuses on managing the workforce structure and potential, rather than solely on the operational aspects of employee work. This understanding is important for the present dissertation because the transition to a circular economy in SMEs cannot be achieved through one-off instructions; rather, it requires the development of people, knowledge, culture, and processes. Ovcharova³¹ extends this line of reasoning by linking HRM to sustainable business, strategic planning, corporate culture, and well-being.

In the literature, this relationship is further developed through the concept of *green HRM*. This concept is systematized through practices such as green recruitment and selection, green training, green performance appraisal, rewards, and employee participation³². Jamil and colleagues further elaborate on this concept by linking green HRM to green ability, green motivation, and green opportunity, as well as to green intellectual capital, green innovation, green transformation leadership, and environmental performance³³.

Goranova and Angelov³⁴ examine the transition to a circular economy as a process that depends not only on external factors but also on internal organizational conditions. Their findings indicate that organizations with substantial managerial, expert, technological, and financial capacity achieve better results.

Management that connects employee motivation, participation, training, and well-being with environmental objectives creates the conditions for human capital to contribute more actively to the sustainable use of natural resources³⁵.

The potential for creating synergy between human and natural capital depends on leaders' ability to manage change. The transition to a circular economy may generate uncertainty, tension, resistance, divergent expectations, and conflicts between short-term costs and long-term sustainability benefits. Therefore, coaching and mediation can be considered complementary management tools.

Nikolaeva emphasizes that a manager's participation in the coaching process, both in the role of a coach and in the role of a client (coachee), contributes to his transformation into a leader, the development of

²⁹ Kinne, P. (2020). *Nachhaltigkeit entfesseln!*. Wiesbaden: Springer Gabler. ISBN 978-3-662-61021-3. <https://doi.org/10.1007/978-3-662-61021-3> p. 119-120.

³⁰ Felger, S. Paul-Kohlhoff, A. (2004). *Human Resource Management. Konzepte, Praxis und Folgen für die Mitbestimmung*. Düsseldorf, Hans-Böckler-Stiftung. ISBN 3-935145-78-0. p. 15–17.

³¹ Ovcharova, Sn. (2019). *Управление на креативни хора в организационна среда*. Издателство Медицински университет-Varna. ISBN 978-619-221-228-5. p.104-105.

³² Pinheiro et al. (2023). Promoting the Circular Economy Through Green Human Resource Management: Development of Green Skills and Future Research Directions." *Business Strategy and Development*. 1–19. p.2.

³³ Jamil, K., Zhang, W., Anwar, A., & Mustafa, S. (2025). *Driving SME Sustainability via the Influence of Green Capital, HRM, and Leadership. Sustainability*. 17(13), 6076. <https://www.mdpi.com/2071-1050/17/13/6076>. <https://doi.org/10.3390/su17136076>.

³⁴ Goranova, S., Anguelov, K. (2026). *Assessing Organisational Capacities of Motivation-Driven Performance Outcomes in Circular Economy Transitions. Economics Ecology Socium*, Vol. 10, Issue 1. 1-12. p. 7,9.

³⁵ Попова, Д., (2024) Мотивационна промяна в условия на неопределеност. Стопанските трансформации в глобалния свят, Сборник доклади от международна научна конференция 7 - 8 юни 2024 г. ВСУ, р. 266-273.

communication and management culture, increased flexibility and confidence, and a better understanding of the team and the processes in the organization³⁶.

At the same time, mediation is presented as a management approach for constructively addressing workplace tensions and conflicts. A manager acting as a mediator listens from a neutral position, asks open-ended questions, and provides feedback, enabling the disputing parties to view the conflict from a new perspective and seek possible solutions that align with the interests of all participants. When successful, mediation leads to the acquisition of new communication knowledge and skills and fosters more sustainable behavior over time³⁷. In leadership and HRM, coaching supports personal reflection and individual accountability, while mediation facilitates the reconciliation of differing interests and reduces tensions through the use of the “The Nine Faces of Life” model³⁸.

It has been established that synergy between human and natural capital cannot remain merely a formally stated objective. For this synergy to be operationalized within an enterprise, it must be managed through indicators, clearly allocated responsibilities, and internal accountability mechanisms. Without measurement, the contribution of people to resource efficiency remains difficult to identify and is often invisible in management decisions.

Through the integrated Balanced Scorecard system, it becomes possible to incorporate not only financial effects but also non-financial synergic effects associated with human, intellectual, relational, and natural capital into enterprise management. In this context, the Synergic Balanced Scorecard functions as a comprehensive control tool that links strategy with operational objectives and enables the management of synergies through a limited set of key indicators covering six types of capital: financial, manufactured, intellectual, human, social-relational and natural capital.³⁹

Based on the analysis conducted, it is assumed that synergy between human and natural capital is a key managerial prerequisite for the transition of SMEs to a circular economy. Natural capital defines the resource boundaries within which an enterprise operates, while human capital provides the capacity to understand, accept, manage, and translate these boundaries into sustainable solutions. The empirical data reveal a nuanced yet important picture. An examination of respondents’ answers indicates that a significant proportion of enterprises still do not recognize this relationship as a management issue. At the same time, other enterprises identify leadership, values, communication, training, incentives, processes, health, and well-being as practical approaches to connecting human and natural capital. Therefore, the challenge facing SME leaders is not merely to introduce individual sustainability measures, but to transform existing practices into an integrated management logic.

Section 1.3. Corporate Social Responsibility and Information Disclosure

The European Commission defines the circular economy as a model in which products and materials are kept in circulation for as long as possible, while waste and resource use are minimised. The traditional linear *take-make-use-dispose* model is considered unsustainable because it pushes the economy beyond its planetary boundaries⁴⁰. In this context, disclosure of information takes on new significance. It is not merely a regulatory obligation, but also a reflection of how an enterprise manages its resources, employees, materials, activities, and their impacts. If resources are to remain in the economic cycle for longer, enterprises must be able to demonstrate how they manage materials, energy, waste, emissions and employees along the value chain.

In academic literature, Corporate Social Responsibility (CSR) is not viewed solely as voluntary philanthropy or a reputational tool. The concept has gradually evolved from a narrower understanding of socially responsible behaviour towards a clearer framework for corporate sustainability management. Chyucher-Alanyurt summarises the positions of Kitzka and Schaltegger, noting that CSR can be understood more narrowly in terms

³⁶ Николаева, В. (2024) *Коучингът и медиацията като управленски инструменти в практиката на мениджъра*. В: *Стопанските трансформации в глобалния свят. Сборник доклади от международна научна конференция*. Varna: ВСУ „Черноризец Храбър“. p. 199–210. p.201-202.

³⁷ Ibid., p.204-205.

³⁸ Stadler.S. (2025). The nine faces of life. <https://www.mein.shp.de/the-nine-faces-of-life/>. Accessed in May 2026.

³⁹ Ibid., p.20-24.

⁴⁰ European Commission. (2020). *Circular Economy*. https://environment.ec.europa.eu/strategy/circular-economy_en?utm_source. Accessed in May 2026.

of social and environmental sustainability, whereas actually CSR encompasses all three dimensions of sustainability. Along the same lines, Schaltegger distinguishes voluntary CSR from Corporate Sustainability, which represents a CSR broader approach to sustainability management that is partially subject to regulatory requirements and also encompasses sustainable supply chains⁴¹. The European Commission further develops this understanding by defining CSR as the responsibility of enterprises for their impact on society and emphasising the need to integrate social, environmental, ethical, human rights, and consumer-related considerations into business operations and the core strategy of the enterprise, in cooperation with stakeholders.⁴²

In the German institutional context, CSR is understood as enterprises assuming social responsibility beyond their legal obligations. The German Federal Ministry of Labour and Social Affairs emphasises that enterprises can make a significant contribution to ensuring “decent work” worldwide and that responsible corporate conduct plays an important role in addressing global challenges such as climate change, air pollution, inequality, poverty, and the protection of human rights⁴³.

Contemporary European frameworks extend this understanding towards the integrated management of environmental, social, and governance factors, that is, towards an ESG-oriented approach.

With the adoption of the Corporate Sustainability Reporting Directive (CSRD), the European Union has moved towards a more structured framework for reporting and transparency. The European Commission states that enterprises falling within the scope of the CSRD must report in accordance with the European Sustainability Reporting Standards (ESRS), the draft versions of which are developed by EFRAG. The EU Taxonomy is also part of this regulatory framework, establishing a common classification system for identifying economic activities that are aligned with the transition to net zero by 2050 and with the EU’s key environmental objectives. In this way, the CSRD, ESRS, and EU Taxonomy form an interconnected framework through which sustainability is no longer presented merely as a general management orientation, but as a systematically structured system involving data collection and processing, indicators and assessment criteria, and their systematic disclosure⁴⁴.

For SMEs, this change has both direct and indirect implications. Although not all SMEs fall directly within the scope of the CSRD, they may be affected through value chains, banks, investors, customers, and larger enterprises that require their business partners to provide sustainability-related information. In response to this specific position of SMEs, the European Commission has adopted a recommendation on a voluntary sustainability reporting standard (VSME) for SMEs. The aim is to reduce the administrative burden and facilitate SMEs’ responses to sustainability information requests from large companies and financial institutions that are subject to the CSRD and have SMEs within their value chains⁴⁵.

EFRAG further supports this approach by stating that the VSME is a voluntary standard designed for enterprises with fewer than 250 employees. It provides a simplified and streamlined framework for non-listed SMEs to disclose sustainability-related information⁴⁶. The European Commission’s recommendation emphasises the principle of proportionality, according to which non-listed SMEs and micro-enterprises that wish to report

⁴¹ Tschüscher-Alanyurt, A. цит. Kiszka (2023, p. 97–99) и Schaltegger (2015, p. 202). (2026). *Interdependenzen zwischen den Nachhaltigkeitsdimensionen*. Springer Fachmedien Wiesbaden, Online ISBN 978-3-658-50493-9. p. 100.

⁴² European Commission. (2011). *A Renewed EU Strategy 2011–14 for Corporate Social Responsibility*. COM (2011) 681 final. <https://eur-lex.europa.eu/legal-content/en/txt/?uri=celex:52011dc0681>. p. 6.

⁴³ Bundesministerium für Arbeit und Soziales (BMAS). (2024). *Gesellschaftliche Verantwortung von Unternehmen*. https://www.bmas.de/DE/Europa-und-die-Welt/International/Gesellschaftliche-Verantwortung-von-Unternehmen/Gesellschaftliche-Verantwortung-Unternehmen/gesellschaftliche-verantwortung-unternehmen.html?utm_source. Accessed in May 2026.

⁴⁴ European Commission. (2025). *Corporate sustainability reporting*. https://finance.ec.europa.eu/publications/commission-presents-voluntary-sustainability-reporting-standard-ease-burden-smes_en?utm_source. Accessed in May 2026.

⁴⁵ European Commission. (2025). *Commission presents voluntary sustainability reporting standard to ease burden on SMEs*. https://finance.ec.europa.eu/publications/commission-presents-voluntary-sustainability-reporting-standard-ease-burden-smes_en?utm_source. Accessed in May 2026.

⁴⁶ EFRAG. (2025). *Press Release — EFRAG welcomes European Commission’s Recommendation on VSME*. [Press Release - EFRAG Welcomes European Commission’s Recommendation on VSME | EFRAG](https://www.efrag.org/press-releases/efrag-welcomes-european-commission-s-recommendation-on-vsme). Accessed in May 2026.

sustainability information voluntarily should use the VSME. A standalone statement is considered sufficient, and external verification is not required⁴⁷.

An enterprise's sustainability cannot be limited solely to its internal practices. Within the contemporary framework of CSR, ESG, and the circular economy, sustainability is increasingly assessed through an enterprise's relationships with employees, customers, suppliers, banks, investors, public institutions, local communities, larger enterprises, and society as a whole.

In Freeman's classical theory⁴⁸, a stakeholder is any group or individual who can influence the achievement of an organisation's objectives or is affected by their achievement.

Carroll⁴⁹ further develops this perspective through his CSR pyramid model. He identifies four levels of responsibility that coexist and build upon one another. At the base is *economic responsibility*, according to which an enterprise must produce goods and services that society needs and purchases, while selling them at a profit and managing its revenues effectively. Above this is *legal responsibility*, whereby society expects the enterprise to fulfil its economic mission within the boundaries of the law. The next level is *ethical responsibility*, which requires business activities and practices that society expects or prohibits to be conducted fairly and honestly. At the top of the pyramid is *philanthropic responsibility*, which is associated with the enterprise's role as a good corporate citizen and its contribution to the community.

The German institutional framework builds upon the EU's approach by emphasising that enterprises are responsible not only for what happens within their own organisations, but also for how they participate in the value chain. Meissner, Wiedemann, and Prophet point out that, in the course of the sustainability transformation, enterprises can no longer focus exclusively on the traditional triad of "enterprise–competitor–customer". Instead, they must become integrated into a significantly more complex multi-stakeholder environment and interact not only with customers and competitors, but also with regulators, non-governmental organisations, and society. At the same time, these stakeholders place legitimate demands on enterprises regarding sustainability, transparency, and ethically acceptable business practices. It is emphasised that SMEs find themselves in a particularly challenging position because they must respond to requirements similar to those imposed on large enterprises while operating with limited resources⁵⁰. Directive (EU) 2022/2464 CSRD establishes a framework for sustainability reporting that significantly expands and changes the rules governing corporate non-financial reporting⁵¹. It has been described as "the regulatory tip of an already visible iceberg"⁵². The Directive demonstrates that behind the formal requirement for sustainability reporting lie more stringent transformation requirements concerning business models, organisational structures, leadership competencies, and communication with stakeholders.

It is argued that enterprises must continuously monitor the needs and concerns of different stakeholders and incorporate them into their strategic planning⁵³.

Stakeholder thinking fits within the broader international framework of the Sustainable Development Goals (SDGs). The Court of Justice of the European Union notes that the 2030 Agenda was adopted by the United Nations in 2015 and is based on 17 SDGs, 169 targets, and 232 indicators for monitoring progress towards these

⁴⁷ European Commission. (2025). *Commission Recommendation (EU) 2025/1710 of 30 July 2025 on a voluntary sustainability reporting standard for small and medium-sized undertakings*. Official Journal of the European Union. Accessed in May 2026.

⁴⁸ Freeman, R. E. (2010). *Strategic Management: A Stakeholder Approach*. Cambridge University Press. ISBN 978-0-521-15174-0. p. 46.

⁴⁹ Carroll, A. B. (1991). *The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders*. *Business Horizons*, 34(4). DOI:[10.1016/0007-6813\(91\)90005-G](https://doi.org/10.1016/0007-6813(91)90005-G). p. 39–48, p. 42.

⁵⁰ Meißner, L. Wiedemann, H. и Prophet, N. (2025). *Nachhaltige Wertschöpfungsorientierung im Mittelstand: Das CESG-Konzept*. In J. Pilster et al. (Hrsg.), *Nachhaltige Veränderungen in Organisationen*. Springer Nature. ISBN 978-3-662-70991-7.c. 265–266.

⁵¹ EU. (2022). <https://eur-lex.europa.eu/eli/dir/2022/2464/oj/eng>. Accessed in May 2026.

⁵² Meißner, L. Wiedemann, H. и Prophet, N. (2025). *Nachhaltige Wertschöpfungsorientierung im Mittelstand: Das CESG-Konzept*. In J. Pilster et al. (Hrsg.), *Nachhaltige Veränderungen in Organisationen*. Springer Nature. ISBN 978-3-662-70991-7.c. 266.

⁵³ Ibid., p.269-270.

goals. The Agenda⁵⁴ aims to achieve socially, economically, and environmentally sustainable development worldwide by 2030. In this dissertation, Goals 4, 8, 9, 12, 13, and 17 have the most direct relevance to the research topic.

Therefore, the SDGs are not used here merely as a general international declaration, but as a framework demonstrating why sustainability, education, training, decent work, resource efficiency, global climate awareness, and partnerships must be considered together. In this regard, leaders who adopt the stakeholder approach use CSR and the SDGs within a common conceptual framework. This demonstrates that an enterprise does not create value solely for itself, but operates within a network of social, economic, and environmental interdependencies.

Following the examination of the theoretical, institutional, and regulatory perspectives, it is concluded that CSR is gradually evolving from voluntary socially responsible behaviour into a structural management framework for sustainability, ethics, transparency, and accountability. CSR establishes the principle of responsibility for an enterprise's impact on society, employees, the environment, customers, and business partners, while an ESG-oriented approach translates this responsibility into a system of data, internal and external indicators, and management decisions.

The main challenge facing SMEs is not merely the introduction of individual sustainability measures, but their transformation into traceable and measurable management practices. Information disclosure becomes a tool for building trust, accessing partnerships, improving market positioning within value chains, and strengthening resilience to regulatory and market requirements. In this way, CSR, ESG, and data reporting become directly linked to the management of SMEs in the context of the circular economy.

Section 1.4. Conclusions to Chapter One

In summary, the author demonstrates that the transition to a circular economy cannot be viewed solely as an environmental or technological change. It represents a management transformation in which SMEs must change the way they create, use, retain, and recover value. The linear model, based on the sequence of *extraction-production-consumption-disposal*, is gradually losing its relevance as a management approach because it leads to the loss of valuable resources, rising costs, dependence on primary raw materials, and significant pressure on the natural environment.

The circular economy offers an appropriate and now widely adopted logic of development. It emphasises extending product life cycles, reuse, repair, refurbishment, recycling, waste reduction, partnerships across value chains, and greater resource efficiency. These principles are particularly relevant to SMEs because management decisions in such enterprises are closely connected to day-to-day operations, while change depends on limited resources, managerial flexibility, technological innovation, the personal commitment of senior management, and the adoption of sustainable practices.

A key conclusion of Chapter One is that human capital and natural capital cannot be considered separately. Natural capital establishes the resource boundaries of economic activity, while human capital determines the capacity to understand, accept, and manage these boundaries sustainably. Employees' skills, knowledge, motivation, health, well-being, organisational culture, and participation emerge as essential conditions for transforming the circular economy from a general concept into an actual management practice.

CSR is gradually evolving from voluntary social engagement into a more structured framework in which sustainability must be managed, measured, implemented, and disclosed. The CSRD, ESRS, EU Taxonomy, and VSME demonstrate that sustainable management is becoming increasingly associated with data, criteria, regulations, standards, transparency, and accountability. This is particularly significant for SMEs because, even when they are not directly required to report, they may be indirectly affected through banks, investors, customers, suppliers, and larger enterprises within value chains.

It is important to emphasise that disclosure should not be understood or perceived solely as an administrative burden. In the context of SMEs, it can serve as a key management tool through which sustainability initiatives are structured, documented, substantiated, and shared.

⁵⁴ Europäischer Rechnungshof. (2026). <https://www.eca.europa.eu/de/sustainable-development-goals>. Accessed in May 2026.

Based on the discussion, it is concluded that managing SMEs in the context of the circular economy requires an integrated approach. This approach brings together the principles of the circular economy, human and natural capital, HRM strategies, CSR, an ESG-oriented approach, and information disclosure. Only through such integration can individual sustainability initiatives be transformed into a coherent circular management system.

CHAPTER TWO. HUMAN RESOURCE MANAGEMENT SYSTEM IN THE CONTEXT OF THE TRANSITION TOWARDS A CIRCULAR ECONOMY

The research and analysis system presented in this chapter does not claim to be universally applicable. It is built on a specific empirical context encompassing three sectors of the German economy, a defined time period, and actual management practices in SMEs. This specific perspective is precisely its strength. People management during the transition to a circular economy does not take place in theory, but manifests itself in the everyday decisions of a craft workshop, in the office of a real property manager, and in a financial advisory conversation with a client.

Section 2.1. Examination and Analysis of Successful Circular Business Models Management in SMEs in Germany

The circular economy in Germany is taking shape as a management reality with specific strategic, regulatory, and economic dimensions. On 4 December 2024, the German federal government adopted the National Circular Economy Strategy (NKWS – *Nationale Kreislaufwirtschaftsstrategie*), establishing a long-term framework for reducing the consumption of primary raw materials, keeping products and materials in the economic cycle for longer, and closing material loops.⁵⁵ The strategy aims to significantly reduce primary resource consumption per capita by 2045, from approximately 16 tonnes per year to a target range of 6–8 tonnes⁵⁶. At the same time, the share of secondary raw materials in Germany remains limited. According to Eurostat data (indicator: CEI_SRM030), only 13.9% of the raw materials used are secondary, while the remainder continues to rely on primary resources⁵⁷. In parallel, the circular economy is presented as an economic opportunity. The Federation of German Industries (BDI – *Bundesverband der Deutschen Industrie e.V.*⁵⁸) and the consulting firm Deloitte⁵⁹ predict that, by 2030, the circular economy could increase Germany's annual gross value added by approximately EUR 12 billion and create around 120,000 new jobs. This indicates that the transition to a circular economy already has a clear strategic framework, but a management gap remains between strategy and practical implementation. This discrepancy is particularly evident among SMEs in Germany.

Ahmadov et al.⁶⁰ examine the transition to a circular economy from a multilevel perspective that combines factors at the macro, meso, and micro levels. They point out that SMEs play a key role in economic growth, employment, and innovation, but face specific challenges related to resources and expertise when implementing circular practices. This transition is analysed through the Multi-Level Perspective (MLP), whereby, at the macro level, it depends on policies, regulations, and financial incentives; at the meso level, on supply chains, associations, networks, and consumer demand; and at the micro level, on strategies and innovation, resources, digital technologies, management, and leadership commitment⁶¹. In this context, a successful circular

⁵⁵ Bundesministerium für Umwelt, Klimaschutz, Naturschutz und nukleare Sicherheit (BMUKN). (2024). *Nationale Kreislaufwirtschaftsstrategie (NKWS) — Rahmenbedingungen für eine zirkuläre Wirtschaft*. Berlin. <https://www.bundesumweltministerium.de/WS7029>. Accessed in 04.2026.

⁵⁶ Ibid.

⁵⁷ Eurostat. *Circular material use rate* (Indikator: CEI_SRM030). (2024). Statistical Office of the European Union. Referenzjahr:2023. https://ec.europa.eu/eurostat/databrowser/view/cei_srm030/default/bar. Accessed in 04.2026.

⁵⁸ BDI. (2026). *Bundesverband der Deutschen Industrie e.V.*. Accessed in May 2026.

⁵⁹ Deloitte. (2024). *Deloitte Deutschland*. Accessed in May 2026.

⁶⁰ Ahmadov, T., Durst, S., Gerstlberger, W., и Kraut, E. (2025). *SMEs on the way to a circular economy: insights from a multi-perspective review*. Management Review Quarterly, 75, p. 290-293

⁶¹ Ahmadov, T., Durst, S., Gerstlberger, W., и Kraut, E. (2025). *SMEs on the way to a circular economy: insights from a multi-perspective review*. Management Review Quarterly, 75.

business model cannot be reduced to recycling alone. Instead, it encompasses reuse, repair, restoration, refurbishment, resource efficiency, partnerships, and the management of value after a product's initial use⁶².

A circular business model is not an alternative term for recycling or environmental policy. Rather, it represents a different management logic for creating, retaining, and recovering value. In the academic literature, circular business models are viewed as a conceptual and practical framework through which economic value is created via sustainable and regenerative processes⁶³, that is, by preserving the value of products and materials rather than using and discarding them after a single use. Circular business models are based on rethinking four key dimensions of every business model: circular value creation, circular value proposition, circular value delivery, and circular value capture⁶⁴. Research has demonstrated that circular business models integrate various R-strategies across the value chain—Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, and Recover—thereby transforming the linear logic of value creation into a circular one⁶⁵. The successful implementation of these strategies requires the adaptation of three interrelated factors: the product, the business model, and the business network⁶⁶.

The distinction from the linear model is managerial rather than merely environmental. In the linear model, value is realised at the moment of sale⁶⁷, whereas in the circular model, value is managed throughout the entire product life cycle through repair, maintenance, reuse, material regeneration, and reintegration into new production cycles⁶⁸. Research has demonstrated that while traditional linear logic follows the *take-make-dispose* model, in which value is realised linearly from resource extraction to final disposal, circular logic operates through a closed loop. In this system, products and materials circulate among different stakeholders, reducing resource extraction and final neutralization⁶⁹. This requires new sustainability-oriented management competencies.

For enterprises, this logic has specific managerial implications. Research has established that enterprises face challenges in adapting to new developments and require support to transform their established business model into a sustainable circular model. This process should be followed by an assessment of sustainability potential within the business context, as well as by the selection of appropriate practices and their implementation⁷⁰.

The managerial value of circular business models for SMEs has clear economic dimensions. The less waste an enterprise generates, the lower its costs. A longer product life cycle means more prolonged customer relationships and recurring revenue. Reuse creates a new revenue stream from existing resources. This approach to sustainable management does not necessarily require large-scale initial investments, but rather a strong managerial mindset, a combination of knowledge, personal motivation, team spirit within the organisation, and consistency.

The environment in which German SMEs implement circular business models is both supportive and challenging. NKWS (the National Circular Economy Strategy) establishes a structural regulatory framework, but it does not automatically resolve the managerial challenges faced by SMEs. A paradox emerges: on the one hand, regulatory pressure and market expectations encourage German and European SMEs to adopt circular economy principles; on the other hand, these enterprises encounter considerable difficulties in selecting and adapting appropriate business models, practices, and technological solutions that match their scale, resource base, and organisational capacity. Additional pressure arises from the requirements of the CSRD and VSME, as well as

⁶² Ibid.

⁶³ Rittershaus, P. Gaier, J. & Renner, M. (2025). *Business Models in the Context of a Circular Economy*. In A. Buettner & E. Weidner (Eds.). Springer Nature Switzerland. DOI: 10.1007/978-3-031-66209-6_2. p.25.

⁶⁴ Ibid., p.31-33.

⁶⁵ Ibid., p.26-28.

⁶⁶ Ibid., p.30-31.

⁶⁷ Galvão, G.D.A., Ferrer, P.S.S., Evans, S., & Carvalho, M.M. (2024). *A Value Flow Perspective in the Circular Business Model*. In: Ometto, A.R., Sarkis, J., Evans, S. (eds) *A Systemic Transition to Circular Economy*. Greening of Industry Networks Studies, vol. 12. Springer, Cham. DOI: 10.1007/978-3-031-55036-2_2. p.21-22.

⁶⁸ Ibid., p.23.

⁶⁹ Ibid., p.18-19.

⁷⁰ Gellert, B., Buxmann, H.N., Orth, R., & Kohl, H. (2025). *Navigating the Circular Economy: A Practical Step-by-Step Approach for Business Model Transformation*. In: Kohl, H. et al. (eds) *Advances in Production Management Systems*. Springer, Cham. DOI: 10.1007/978-3-031-93891-7_1. p.3.

from banks, investors, and large enterprises, which increasingly demand sustainability information and ESG indicators.

Monitoring resource efficiency and circular performance remains underdeveloped⁷¹, particularly regarding practical applicability and reducing implementation efforts⁷². One notable characteristic is that many SMEs are still unfamiliar with concepts for measuring circular economy activities, and even less familiar with approaches that combine such measurements with resource efficiency⁷³. The practical use of indicator sets presents a challenge because excessive amounts of information are often provided⁷⁴, while a lack of time, employee mindset, budget, and willingness to change constitute significant barriers for enterprises.

Research analysis indicates that, despite the considerable growth in academic interest in integrating sustainability reporting with the circular economy, significant challenges remain in aligning circular economy principles with sustainability reporting practices⁷⁵. A major barrier is the fragmented treatment of sustainability concepts, whereby individual dimensions are often considered in isolation rather than through a holistic approach that addresses all dimensions⁷⁶. Standardised indicators capable of simultaneously assessing circular economy practices and sustainability reporting are lacking. Furthermore, much of the available guidance relies on qualitative and self-reported data, limiting comparability⁷⁷.

The knowledge deficit is a leading barrier identified in this dissertation. A total of 47.1% of the SMEs surveyed report limited or insufficient knowledge of circular economy principles. This finding is critical, as it indicates that the problem is not simply a lack of willingness to change, but also the absence of a management framework through which change can be understood and implemented. In the present study, 32.4% of respondents identify financial constraints as a major barrier, while 19.6% identify the lack of partners as a significant obstacle to circular economy development⁷⁸.

Reim and colleagues demonstrate that the successful implementation of circular business models in SMEs depends not only on an enterprise's internal resources and competencies, but also on its ability to position itself within a broader circular ecosystem in which value is created through interactions among multiple interdependent actors⁷⁹. Based on their research, the authors develop a typology comprising four ecosystem strategies: visioner, synergizer, explorer, and amplifier. These ecosystem strategies depend on two principal dimensions: the role of enterprises within the ecosystem and the ecosystem's level of development⁸⁰. It is therefore argued that SME success in the circular economy depends not only on firm-level capacity, but also on the extent to which an enterprise can strategically select an appropriate ecosystem role and adapt its business model to the specific configuration and maturity of the network in which it operates⁸¹. Official assessments of the transition to a circular economy indicate that SMEs in Germany and other EU Member States are targeted by specific measures designed to modernise production processes, introduce resource-efficient and circular business models, and integrate enterprises into innovation ecosystems through projects funded by programmes such as Horizon 2020⁸².

Successful implementations of circular business models in SMEs share one common characteristic: the starting point is not technology, but the managerial mindset. Circular business models integrate R-strategies

⁷¹ Vogt, A., Tietze, I., Preiss, P., & Lang-Koetz, C. (2025). *Tracking resource efficiency and circular economy: Developing a set of indicators for small and medium-sized enterprises in the chemical industry*. *Clean Technologies and Environmental Policy*. Springer Nature. <https://doi.org/10.1007/s00550-025-00564-2>. p.2-3.

⁷² Ibid., p.11.

⁷³ Ibid., p. 2.

⁷⁴ Ibid., p. 8.

⁷⁵ Narang, M., Puri, N., & Lodh, S. (2026). *Sustainability Reporting in the Era of Circular Economy: A Bibliometric Network Visualization*. In K. Kumar et al. (Eds.), *Sustainable Value Creation: Corporate Strategies for SDGs Implementation* (c. 237–253). World Sustainability Series. Springer Nature. https://doi.org/10.1007/978-3-032-24652-3_15. p.237.

⁷⁶ Ibid., p.251.

⁷⁷ Ibid., p. 251-252.

⁷⁸ Данни от емпиричното изследване

⁷⁹ Reim, W., Tabares, S., & Parida, V. (2025). Small and Medium-Sized Enterprises and the Circular Economy: Leveraging Ecosystem Strategies for Circular Business Model Implementation. *Business Strategy and the Environment* (SAGE). DOI: 10.1177/10860266251325247. p.258-261.

⁸⁰ Ibid., p.259-161, 271-273.

⁸¹ Ibid., 268-275.

⁸² European Court of Auditors. (2023). https://www.eca.europa.eu/ecapublications/sr-2023-17/sr-2023-17_bg.pdf. Accessed in May 2026.

throughout the value chain, thereby transforming linear logic into circular logic. Their successful implementation requires the simultaneous adaptation of the product, the business model, and the business network⁸³. In this context, the key strategies, resources, and capabilities required to implement the circular economy in SMEs include not only technical solutions, but also dynamic organisational capabilities developed through people, knowledge, and leadership⁸⁴.

The practices examined do not constitute a prescriptive list of standards; rather, they illustrate what works, why it works, and under what conditions it can be implemented. Each practice incorporates technical, human, and organisational elements, since good management practices remain ineffective unless supported by competent, motivated, ethical, and committed employees.

Repair and life-cycle extension are practices that are both among the oldest and most relevant in the circular management approach. In German skilled crafts and trades sector, they form a natural part of everyday work. In the German city of Bayreuth, RemanLab⁸⁵ operates as a practical learning environment where enterprises can directly test and develop their circular business models, assess the technical feasibility of remanufacturing, and train their employees across the entire process chain⁸⁶. Another example illustrates the social and managerial dimensions of repair. The repair initiative movement in Germany encompasses more than 1,600 active initiatives nationwide, whose participants are predominantly professionals qualified in electrical engineering, engineering, and skilled trades⁸⁷. While repair and life-cycle extension in Germany are supported by institutional infrastructure such as RemanLab, an example from Bulgaria demonstrates how this practice is being developed through financial instruments under the National Recovery and Resilience Plan. Procedure BG-RRP-3.008, *Support for the Transition to a Circular Economy in Enterprises*, with a total budget of BGN 180 million (EUR 90 million), provides grants to manufacturing enterprises for the implementation of circular models⁸⁸.

Digitalisation as a circular practice extends beyond paperless processes. It includes material flow monitoring, ESG measurement, product life-cycle tracking, and data management relating to partners and customers. The EEA Country Profile⁸⁹ for Germany documents specific initiatives promoting the application of artificial intelligence (AI) to improve resource efficiency in SMEs, including mobile and digital consultancy services specifically targeting small enterprises. De et al.⁹⁰ confirm the effectiveness of the synergies between the circular economy, Industry 4.0 technologies, and green HRM in improving sustainability performance. To achieve genuine synergies between digitalisation, circular practices, and AI, it is essential to invest not only in technology but also in employee training through targeted workshops, practical training sessions, internal learning sessions, and a positive attitude towards knowledge sharing among leaders and employees.

Product-as-a-Service (PaaS) is considered a type of circular business model in which customers pay for access and functionality of a product rather than ownership, while the provider retains ownership and responsibility for the product throughout its whole life cycle⁹¹. Under this model, ownership remains with the service provider, and customers do not retain ownership of the products after use. In this sense, PaaS changes the

⁸³ Rittershaus, P. Gaier, J. & Renner, M. (2025). *Business Models in the Context of a Circular Economy*. In A. Buettner & E. Weidner (Eds.). Springer Nature Switzerland. DOI: 10.1007/978-3-031-66209-6_2. p.26-28.

⁸⁴ Prieto-Sandoval, V. et al. (2019). Key strategies, resources, and capabilities for implementing circular economy in industrial SMEs. *Corporate Social Responsibility and Environmental Management*, 26(6), pp. 1473–1484. DOI: 10.1002/csr.1761. p. 1473-1474, 1481.

⁸⁵ RemanLab. [RemanLab - Fraunhofer IPA](#). Accessed in May 2026.

⁸⁶ Fraunhofer IPA. (2025). [Remanufacturing und Zirkularität - Fraunhofer IPA](#). Accessed in May 2026.

⁸⁷ Netzwerk Reparaturen-Initiativen. (2025). *Reparieren verbindet: Einblicke in Deutschlands Reparaturinitiativen 2025*. Auswertung von 327 Initiativen. [Reparieren verbindet - Einblicke in Deutschlands Reparatur-Initiativen 2025 | Netzwerk Reparatur-Initiativen](#). Accessed in May 2026.

⁸⁸ Ministry of Innovation and Growth (2024). [PowerPoint Presentation](#). Accessed in May 2026.

⁸⁹ European Environment Agency. (2024). https://www.eea.europa.eu/en/topics/in-depth/circular-economy/country-profiles-on-circular-economy/circular-economy-country-profiles-2024/germany_2024-ce-country-profile_final.pdf/@download/file. p.10-11, 17.

⁹⁰ De, S. et al. (2024). *Exploring the synergistic effects of circular economy, Industry 4.0 technology, and green HRM practices on sustainable performance*. *Business Strategy & Development* (Wiley). DOI: 10.1002/bsd2.70002. Accessed in May 2026.

⁹¹ University of Exeter. (2025). <https://exeterce.org/knowledge-hub/what-is-a-circular-business-model/>. Accessed in May 2026.

traditional logic of one-time sales by shifting the business model towards the provision of functionality, extended sustainable use, maintenance, and greater provider responsibility throughout the product life cycle⁹².

Partnerships in green management are increasingly emerging as a key mechanism for overcoming the resource constraints faced by SMEs during the transition to a circular economy. In its study *Circular Economy as an Opportunity? (Kreislaufwirtschaft als Chance)*⁹³, the Association of German Chambers of Industry and Commerce (DIHK) finds that enterprises do not perceive the circular economy solely as an environmental issue, but also as an opportunity to improve resource efficiency, reduce costs, and strengthen competitiveness⁹⁴. At the same time, the circular economy is understood as a process that requires the intelligent integration of different stages of the value chain, from product design and business models to recycling and industrial quality requirements⁹⁵.

Partnerships in green management are increasingly recognised as a key mechanism for overcoming the limited resources of SMEs⁹⁶. The circular economy is understood as a process that requires the intelligent integration of different stages of the value chain, from product design and business models to recycling and industrial quality requirements.⁹⁷ This means that SMEs must operate within networks involving suppliers, customers, recycling companies, consultants, and knowledge institutions, rather than focusing exclusively on optimising their internal processes. Programmes such as Circular Economy–CircularCities.NRW⁹⁸ and the Climate Protection Business Network (*Unternehmensnetzwerk Klimaschutz*⁹⁹) demonstrate how cooperation networks reduce risk, facilitate knowledge sharing, and support the development of joint circular solutions.

Knowledge and competency development is the practice most directly connected to HRM and leadership. An analysis by the IFO Institute¹⁰⁰ of green skills in German manufacturing shows that Germany has one of the highest proportions of green talent in industry. Nevertheless, the transition to green manufacturing requires the targeted development of new skills, while demand for green skills is growing faster than supply.

A study of digital skills in German SMEs shows that at least one form of digital competence is highly important for approximately 80% of companies, yet one-third are unable to meet their needs. Many SMEs rely specifically on continuing professional development (*Weiterbildung*) to develop the necessary green competencies. Although the current focus is on digitalisation, the same logic is directly applicable to green and circular competencies¹⁰¹.

Initiatives such as Mittelstand-Digital and Kompetenzzentrum eStandards organise workshops, including *Design Thinking trifft Kreislaufwirtschaft* (“Design Thinking Meets the Circular Economy”), as well as interactive CE guide tools and other resources designed to help SMEs develop the knowledge and skills needed to rethink products and services within a circular framework. It is emphasised that the circular economy requires not only technological solutions but also new competencies in design, cooperation across value chains, and

⁹² Petänen, P., Sundqvist, H., & Antikainen, M. (2024). *Deconstructing Customer Value Propositions for the Circular Product-as-a-Service Business Model: A Case Study from the Textile Industry*. *Circular Economy and Sustainability*, 4(3), p. 1631–1632.

⁹³ DIHK (2024). *Kreislaufwirtschaft als Chance? Unternehmerische Perspektiven zur Circular Economy*. Berlin: DIHK. [Kreislaufwirtschaft als Chance?](#). Accessed in May 2026.

⁹⁴ DIHK (2024). *Kreislaufwirtschaft als Chance? Unternehmerische Perspektiven zur Circular Economy*. Berlin: DIHK. <https://www.dihk.de/resource/blob/117788/4847632a7db7d7cdf922f1dc55e6ac8a/dihk-circular-economy-report-2024-v3-data.pdf> p. 5-6. Accessed in May 2026.

⁹⁵ Ibid., p.3.

⁹⁶ DIHK (2024). *Kreislaufwirtschaft als Chance? Unternehmerische Perspektiven zur Circular Economy*. Berlin: DIHK. [Kreislaufwirtschaft als Chance?](#). Accessed in May 2026.

⁹⁷ Ibid., p.3.

⁹⁸ Innovationsförderagentur NRW / Ministerium für Umwelt, Naturschutz und Verkehr des Landes Nordrhein-Westfalen. *Circular Economy — CircularCities.NRW. Fördermaßnahme im EFRE/JTF-Programm NRW 2021–2027*. <https://www.in.nrw/massnahmen/circular-cities-nrw>. Accessed in May 2026.

⁹⁹ DIHK Service GmbH (2025). *Unternehmensnetzwerk Klimaschutz. 1.000 Mitglieder im Unternehmensnetzwerk Klimaschutz*. Stand: Juni 2024. <https://www.dihk-service-gmbh.de/de/1-000-mitglieder-im-unternehmensnetzwerk-klimaschutz--118878>. Accessed in May 2026.

¹⁰⁰ Falck, O. u Kaura, A. (2023). *Green Skills in German Manufacturing*. https://www.ifo.de/docdl/econpol-policybrief_55_green-skills_0.pdf. *Green Skills in German Manufacturing*. p. 1,4,8. Accessed in May 2026.

¹⁰¹ KfW. (2020). *Der Mangel an digitalen Fähigkeiten behindert die Digitalisierungsbemühungen deutscher KMU*. Accessed in 04.2026.

systems thinking¹⁰². A study by Horn et al. involving 120 German companies found that 65% of SMEs already implement sustainability measures, while the share in large companies constitutes 94%¹⁰³.

ESG-oriented management in German SMEs can be understood as a practical framework for linking sustainability, regulatory requirements, and stakeholder trust. It involves collecting, structuring, and communicating data on environmental, social, and governance indicators to customers, partners, banks, and other stakeholders. The Chamber of Industry and Commerce of North Rhine-Westphalia (IHK Nordrhein-Westfalen) points out that, although the requirements of the CSRD, ESRS, and EU Taxonomy are formally directed primarily at large companies and certain capital-market-oriented SMEs, all enterprises are affected in practice, as sustainability is gradually becoming an integral part of financial and market relationships¹⁰⁴.

The German Sustainability Code presents the VSME as a voluntary European standard for SMEs, offering a more structured and less burdensome approach to sustainability reporting. The standard is organised into two modules and contains 140 disclosure items, some of which correspond to ESRS requirements, while others have been specifically developed for small enterprises¹⁰⁵.

An example of ESG-oriented management in an operating German SME is Kretschmer, a woodworking enterprise based in Saxony. The company presents its activities as sustainable timber construction and states that its timber originates from the Erzgebirge (Ore Mountains), ensuring short transport distances while supporting the growth of the local economy.¹⁰⁶¹⁰⁷

HRM and leadership play a fundamental role in developing competencies within SMEs¹⁰⁸. Competency management is understood as a systematic approach through which an enterprise's existing and required competencies are identified, measured, developed, and purposefully utilised. It encompasses all measures through which competencies are documented, developed, and applied in pursuit of organisational objectives. It must also be linked to both the enterprise's strategic competencies and the knowledge, experience, and skills of its employees¹⁰⁹. Key organisational strengths include the influence of the manager or owner, high flexibility resulting from flat hierarchies, shorter communication channels, rapid informal decision-making, employees' accumulated knowledge, and opportunities for employees themselves to participate in shaping processes¹¹⁰.

In this context, the development of the Industry 5.0 concept should also be considered. According to the European Commission, Industry 5.0 builds upon the technological foundations of Industry 4.0 by placing greater emphasis on human well-being, sustainability, and the ability of organisations to adapt to crises and changes¹¹¹. Industry 5.0 places human capital, competencies, well-being, leadership, and the sustainable use of natural resources at the centre of organisational transformation. In this way, it complements the principles of the circular

¹⁰² Mittelstand-Digital. (2022). [So wichtig ist die unternehmensübergreifende Kooperation für die Kreislaufwirtschaft im Mittelstand - Mittelstand Digital Zentrum WertNetzWerke](#). Accessed in 04.2026.

¹⁰³ Horn, A., Berk Müller, R., Bokelmann, M. et al. (2025). *Sustainability in the German economy — A comparison of understanding, measures and reporting between SMEs and large companies*. Bayreuth Working Papers on Finance, Accounting and Taxation (FAC-T-Papers), No. 2025-01. Universität Bayreuth. p. 9.

¹⁰⁴ IHK Nord Westfalen. (2026). https://www.ihk.de/nordwestfalen/finanzierung/sustainable-finance-5426980?utm_source. Accessed in May 2026.

¹⁰⁵ Deutscher Nachhaltigkeits Kodex. (2026). *VSME: Der freiwillige EU-Standard für KMU*. https://www.deutscher-nachhaltigkeitskodex.de/de/berichtspflichten/voluntary-sustainability-standard-for-smes-vsme/?utm_source. Dostzpn0 05.2026.

¹⁰⁶ ZDH. (2026). [ZDH | Zentralverband des Deutschen Handwerks | ZDH](#). Accessed in May 2026.

¹⁰⁷ Holzbau Kretschmar. https://holzbau-kretschmar.de/?utm_source. Accessed in May 2026.

¹⁰⁸ Sprafke, N., Hohagen, S., Erlinghagen, M., Nolte, A., Wenig, P., Zechmann, A., Wilkens, U., Minssen, H., & Herrmann, T. A. (2019). *Voraussetzungen der erfolgreichen Implementierung von Kompetenzmanagement in KMU*. In C. Bullinger-Hoffmann (Hrsg.), *Zukunftstechnologien und Kompetenzbedarfe. Kompetenzmanagement in Organisationen*. Springer Gabler, c. 62–63.

¹⁰⁹ Ibid., p. 63–64.

¹¹⁰ Herrmann, T. A. (2019). *Voraussetzungen der erfolgreichen Implementierung von Kompetenzmanagement in KMU*. In C. Bullinger-Hoffmann (Hrsg.), *Zukunftstechnologien und Kompetenzbedarfe. Kompetenzmanagement in Organisationen*. Springer Gabler, c. 65–66.

¹¹¹ Europäische Union (2021). *Industry 5.0: Towards a sustainable, human-centric and resilient European industry*. <https://op.europa.eu/de/publikation-detail/-/publikation/468a892a-5097-11eb-b59f-01aa75ed71a1>. Accessed in 08.2026.

economy and ESG orientation by emphasising that technological change creates genuine value only when it is linked to human capital development, organisational learning, competency management, and the sustainable use of resources.

The successful implementation of competency management in SMEs requires clarity regarding the prerequisites for implementation, consideration of the economic context, employee involvement in work processes, alignment with the enterprise's strategic orientation, clear communication throughout the change process, and the development of an appropriate participation framework¹¹².

The analysis of successful management practices in circular business models among German SMEs reveals a picture that is both encouraging and challenging.

The management practices examined—including repair and life-cycle extension, digitalisation, Product-as-a-Service, sustainable partnerships, knowledge and competency development, ESG-oriented management, resource efficiency, and reuse—cannot be reduced to individual technical solutions. The managerial conclusion is that these practices cannot be introduced separately or only partially. A comprehensive, systemic management approach is required to integrate them within a coherent framework.

The German context offers concrete institutional support, ranging from RemanLab in Bayreuth to CircularCities.NRW, and from the Climate Protection Business Network (*Unternehmensnetzwerk Klimaschutz*) to Mittelstand-Digital. Nevertheless, these instruments remain underutilised, although they can be applied effectively when adequate internal management capacity is available. A study involving 120 German companies indicates that SMEs increasingly rely on external support, particularly because internal expertise and knowledge concerning a sustainable circular economy remain limited¹¹³.

Successful circular business models among German SMEs share a common characteristic: their starting point is not technology, but managerial competence and the leader's mindset.

Section 2.2. Main Research Questions and Methodology

The methodological logic of the dissertation is based on the understanding that the HRM challenges faced by leaders in the era of the circular economy cannot be studied using only one type of data. On the one hand, these challenges have a measurable dimension, manifested by the presence or absence of specific practices, training programmes, criteria, digital tools, motivational mechanisms, and management processes. On the other hand, they have semantic and organisational dimensions, which are manifested in the ways respondents describe their difficulties, attitudes, lack of motivation, lack of knowledge and leadership examples, participation, and internal organisational culture.

In the dissertation, the author applies a mixed-methods research approach in which quantitative and qualitative data are used in a complementary manner. The questionnaire comprises 49 questions, some of which are closed-ended and subject to quantitative analysis, while the remainder are open-ended, allowing for an in-depth content analysis of respondents' managerial attitudes, opinions, arguments, and practices. In this way, the empirical study combines a structural description of the collected data with an in-depth understanding of the meaning conveyed by the responses.

The closed-ended questions were processed quantitatively using the R software programme¹¹⁴. Data analysis is viewed as a process involving data entry, preparation, visualisation, modelling or testing, and communication of results. It is emphasised that these stages do not always proceed in a strictly linear sequence but often alternate and build upon one another¹¹⁵. In the present study, this software was used to process the closed-ended questions by calculating frequencies and percentages, preparing pie charts, and presenting the results in tables. The primary statistical approach adopted in the quantitative component is descriptive. The aim

¹¹² Ibid., p. 78-79.

¹¹³ Horn, A. et al. (2025). *Sustainability in the German economy — A comparison of understanding, measures and reporting between SMEs and large companies*. Bayreuth Working Papers on Finance, Accounting and Taxation (FAC-T-Papers), No. 2025-01. Universität Bayreuth. <https://hdl.handle.net/10419/325597>, p. 22

¹¹⁴ rOpenSci. (2021). <https://ropensci.org/blog/2021/11/16/how-to-cite-r-and-r-packages/>. Accessed in May 2026.

¹¹⁵ Sauer, S. (2019). *Moderne Datenanalyse mit R*. Wiesbaden: Springer Fachmedien Wiesbaden, https://doi.org/10.1007/978-3-658-21587-3_1, p. 3.

is to present the distribution of responses across the 102 fully completed questionnaires, without drawing broad or generalised conclusions about all SMEs in Germany. The quantitative analysis in the dissertation is intended to identify distributions, frequencies, percentages, and sectoral differences in practice, rather than to develop a predictive¹¹⁶ or inferential¹¹⁷ model.

Before the actual data processing began, fully completed questionnaires were separated from those that respondents had only partially completed or merely opened. This stage was necessary because the quality of the analysis depends on a clear and consistent dataset. It is considered essential that, before data processing and analysis, the data be entered, prepared, and organised into an appropriate format for analysis¹¹⁸.

The open-ended questionnaire responses were analysed using Kuckartz's content-structuring qualitative analysis¹¹⁹. The author selected this analytical approach because it enables responses to be systematically organised according to predefined main categories. In the present empirical study, the categorisation framework comprises deductively established analytical dimensions and inductively refined main categories derived from the open-ended questions. These are oriented towards the principal analytical dimensions: *HRM, the circular economy, ESG orientation, leadership, CSR, and synergy between human and natural capital*.

The procedure for analysing the open-ended responses involved repeatedly reading the 102 questionnaires, identifying thematically relevant responses, defining categories, assigning responses to the predefined categories, consolidating the coded segments, and identifying key thematic emphases. This sequence of data processing follows the logic of Kuckartz's content-structuring qualitative analysis, which progresses from an initial examination of the text to coding, systematisation, and analytical exploration of the material¹²⁰.

Familiarity with the research context is considered an important methodological element. The importance of subject-specific and sectoral knowledge in data analysis is also emphasised, as the findings must be connected to decisions and a specific practical context¹²¹. In the present study, this is particularly significant because the author has a longstanding professional involvement with the three sectors under investigation. This position facilitates an understanding of the actual organisational environment but does not replace empirical analysis. The conclusions drawn from the analysis are based on the questionnaire data obtained through the quantitative and qualitative processing of the responses. The mixed-methods nature of the study does not arise from a single method but from the combination of two analytical approaches. These are necessary to establish a link between the structural picture and the substantive understanding of the data.

In the empirical part of the dissertation, the online survey was conducted using the LimeSurvey platform. The platform provides compliance with the requirements of the GDPR (General Data Protection Regulation), data storage on servers within the EU, control over data, multilingual support, and respondent anonymity. It is also widely accepted in academic research and has been cited in more than 2,000 peer-reviewed publications indexed in the Web of Science and Scopus databases as a standard tool for online surveys¹²².

The survey was conducted from August 2025 to February 2026. A total of 235 SMEs from Germany across the three sectors actively participated in the study. Of these, 102 respondents completed the questionnaire in full, corresponding to 43.40%, while 133 questionnaires (56.60%) were classified as incomplete and excluded from further analysis. The academic literature indicates that the average completion rate for online surveys ranges from 30% to 50%, depending on questionnaire length, the target population, and the method of dissemination¹²³. Given the 49 questions and the target group of highly engaged SME managers and owners, the completion rate achieved is methodologically satisfactory.

¹¹⁶ Cambridge University Press. (2023). [Descriptive and Inferential Statistics \(Chapter 22\) - The Cambridge Handbook of Research Methods and Statistics for the Social and Behavioral Sciences](#). Accessed in May 2026.

¹¹⁷ Ibid.

¹¹⁸ Sauer, S. (2019). *Moderne Datenanalyse mit R*. Wiesbaden: Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-21587-3_1. p. 3.

¹¹⁹ Kuckartz, U. (2014). *Mixed Methods. Methodologie, Forschungsdesigns und Analyseverfahren*. ISBN 978-3-531-17628-4.

¹²⁰ Ibid., p. 174–178.

¹²¹ Sauer, S. (2019). *Moderne Datenanalyse mit R*. Wiesbaden: Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-21587-3_1. p.7-8.

¹²² LimeSurvey GmbH (2024). *LimeSurvey: An Open Source Survey Tool*. Hamburg, Germany. URL: <https://www.limesurvey.org>. Accessed in May 2026.

¹²³ Döring, N. Bortz, J. (2016). *Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften* (5. Aufl.). Springer Berlin Heidelberg. DOI: 10.1007/978-3-642-41089-5, p. 416.

The study focuses on three main sectors: financial advisory services, real estate management, and skilled crafts and trades sector. An additional “Other” category was included in the questionnaire to accommodate enterprises that do not wish to identify directly with any of the three sectors or whose activities are related to them but do not fall entirely within their sectoral boundaries. This category serves a supplementary rather than a primary analytical function and does not alter the study’s principal sectoral focus.

The financial advisory services sector is particularly significant, not only because of the high level of representation among respondents but also because of its direct connection to ESG-oriented sustainable investment, sustainable finance, investment decisions, and long-term advisory services. In this sector, the circular economy is manifested primarily not through material flows but through accumulated investment experience, knowledge development, advisory and regulatory expertise, established trust, and an orientation towards sustainable financial products subject to government regulation. Consequently, human capital is of particular importance.

Real estate management illustrates the direct relationship between buildings, energy, materials, resources, renovation, maintenance, and the long-term value of assets. In this sector, the circular economy is associated with energy efficiency, sustainable materials, renovation, maintenance, coordination, and collaboration with external contractors and partners that adopt sustainable practices. This creates a more complex management environment in which leadership, communication, partnerships, and service delivery play a significant role.

The skilled crafts and trades sector is most directly associated with circular practices, as it involves repair, reuse, material efficiency, waste reduction, shared travel, and practical and professional expertise. In this sector, employees’ skills, qualifications, work discipline, ethical attitudes towards resources and the environment, and practical competence are directly linked to the feasibility of sustainable practices and the successful implementation of leadership models.

The author’s practical experience facilitates an understanding of everyday management challenges, communication with employees, clients, partners, and suppliers, as well as the constraints faced by SMEs. However, this experience is used as contextual expertise rather than as independent evidence. The conclusions are based on the empirical data collected.

The survey was designed as a standard online questionnaire aimed at collecting comparable empirical data from enterprises. Its primary function is to provide a structured dataset for the quantitative processing of closed-ended questions and the content analysis of open-ended responses. Accordingly, the questionnaire was not designed as an unstructured interview but as a combined survey instrument with a clearly defined sequence, thematic logic, and scope for both statistical and qualitative analysis.

The quantitative analysis focuses on the structural description of the sample and the identification of key distribution patterns within the sectors under investigation. While the quantitative analysis establishes the structure of the sample and the distribution of responses, the qualitative analysis reveals the content, underlying logic, and managerial mechanisms behind the observed trends.

It is emphasised that qualitative data are not an inferior form of data compared with quantitative data, but rather a different type of empirical material that requires its own methodologically controlled analytical procedures. Quantitative data are numerical, whereas qualitative data may comprise texts, images, audio and video recordings, cultural artefacts, and other forms of non-numerical material¹²⁴. The type of data does not automatically determine the type of analysis. Within this framework, both quantitative analysis of qualitative data and qualitative analysis of quantitative results are possible. It is also emphasised that there is no compelling reason to assume a strict division between qualitative and quantitative perspectives, as the two are frequently combined in scientific practice¹²⁵. This position supports the methodological logic of the present dissertation, in which quantitative and qualitative data are used in a complementary manner. The dissertation describes the specific steps involved in analysing the open-ended responses, including repeated reading and identification of responses, inductive category development, coding, the exclusion of responses that cannot be evaluated, and detailed analysis supported by illustrative quotations organised by category.

¹²⁴ Kuckartz, U. и Rädiker, S. (2023). *Qualitative Content Analysis: Methods, Practice and Using Software*. 2nd ed. London: SAGE, p. 2.

¹²⁵ Ibid., . p.3-4.

Following categorisation, the respondents' answers were analysed systematically by category. The author's objective is to trace recurring themes, the arguments put forward by managers and employees, practical actions, levels of sustainability awareness, and sectoral differences. Qualitative analysis is not limited to the mechanical allocation of responses to categories; rather, it serves to transform respondents' free-text answers into systematically organised empirical material. This makes it possible to distinguish between different levels of managerial maturity, ranging from an absence of action, uncertainty, or a perceived lack of relevance of the topic to the partial implementation of established practices and the adoption of more systematic approaches to HRM in the transition towards the circular economy, ESG, and leadership.

Consequently, the integrated approach makes it possible to examine the survey results simultaneously in terms of both structure and meaning. This is essential for investigating the challenges faced by leaders in HRM in the context of the transition towards a circular economy, because management processes in SMEs are not limited to the presence or absence of particular practices. They also encompass how these practices are understood, how people are motivated, how implementation is organised, and how the practices are ultimately put into effect.

Conducting empirical research involving human participants requires compliance with established ethical standards and legal regulations governing the protection of personal data. Informed consent is a fundamental principle of research ethics, ensuring that participants understand the purpose of the study, the procedures involved, and the potential consequences of their participation before giving their consent. As stated in the *Guidelines on Research Ethics in the Social Sciences*, "participants are independent individuals and must have the right to decide whether or not to participate in the research"¹²⁶.

Since the study was conducted in Germany and involved respondents from enterprises operating in this country, data processing is subject to the EU General Data Protection Regulation (Regulation (EU) 2016/679 — GDPR; known in German as the DSGVO). Article 5(1) of the GDPR establishes six fundamental principles governing the processing of personal data: lawfulness, fairness and transparency; purpose limitation; data minimisation; accuracy; storage limitation; and integrity and confidentiality).¹²⁷ A study by the European Data Protection Board (EDPB) confirms that, in scientific research, ethical principles and legal safeguards should be applied jointly. It also emphasises the importance of confidentiality and anonymity as key measures for ensuring appropriate safeguards within the meaning of Article 89(1) of the GDPR¹²⁸.

2.3. Conclusions to Chapter Two

Chapter Two establishes a methodological and analytical link between the theoretical framework of the dissertation and the subsequent empirical analysis of SMEs in Germany. The author's primary aim and objective is to demonstrate HRM can be investigated in the context of the transition towards a circular economy, ESG orientation, and sustainable business practices. In this respect, the chapter does not treat HRM as an independent administrative function, but rather as a management system through which knowledge, competencies, communication, motivation, leadership, and employee participation can contribute to the more responsible use of natural resources and the development of synergies between humans and nature.

From a methodological perspective, the chapter justifies the adoption of a mixed-methods research approach combining quantitative and qualitative methods. The quantitative component enables the presentation of frequencies, percentages, and sectoral differences based on 102 completed questionnaires, without claiming statistical representativeness for all SMEs in Germany. The qualitative analysis of the open-ended responses makes it possible to examine managers' attitudes, employees' personal arguments, barriers, individual opinions, and the substantive themes emerging from respondents' answers. Thus, the present study goes beyond

¹²⁶ Ethical Guidelines for Social Science Research in Health (2003). National Committee for Ethics in Social Science Research in Health (NCESSRH), Section IV.1.7, <https://compliance.iastate.edu/wp-content/uploads/sites/4/pdf/ethical-guide-socscience-rsch.pdf>. p. 10. Accessed in May 2026.

¹²⁷ Fundamentale Grundlagen der klinische Datenwissenschaft (2018). [Die Datenschutzverordnung \(DSGVO\) der EU im Forschungskontext – Grundlagen der klinischen Datenwissenschaft – NCBI-Bookshelf](#). Accessed in May 2026.

¹²⁸ European Data Protection Board (EDPB). (2021). *Study on the appropriate safeguards under Article 89(1) GDPR for the processing of personal data for scientific research*. Milieu Consulting / European Commission, p. 54, Section 4.1.2.7 и p. 61, Section 5.1.2.8. [legalstudy on the appropriate safeguards 89.1.pdf](#). Accessed in May 2026.

determining whether a particular practice exists and investigates how it is understood, accepted, implemented, adapted, and justified by the research participants.

A significant contribution of the study lies in its selection of three sectors: financial advisory services, real estate management, and skilled crafts and trades. Each sector represents a different approach to integrating human capital, natural resources, and the circular economy. In financial advisory services, sustainability is manifested through professional knowledge, advisory competence, specialised training and mindset development, digitalisation, client trust, portfolios of ESG-oriented products, and sustainable client relationships. In real estate management, it is associated with energy efficiency, renovation, maintenance, sustainable materials, building upkeep, and cooperation with external partners. In the skilled trades sector, the circular economy is expressed most directly through repair, reuse, shared travel, material efficiency, qualifications, and practical professional knowledge.

The analysis presented in the chapter demonstrates that a circular business model cannot be reduced to recycling or an isolated environmental initiative. Rather, it represents a management logic for creating, retaining, and restoring value throughout the entire life cycle of a product, service, or resource flow.

In the German context, this transformation takes place amid strong strategic, regulatory, political, and market-driven requirements. The National Circular Economy Strategy, EU sustainability reporting requirements, ESG criteria, and voluntary standards for SMEs establish a new framework for sustainable action. Nevertheless, the existence of strategic documents and institutional support does not, in itself, automatically guarantee the successful implementation of circular business models in practice. The author clearly demonstrates that a gap exists between the policy framework and actual management practices in SMEs. This gap is manifested in knowledge deficiencies, financial constraints, a lack of partners, and varying levels of organisational maturity.

It is particularly important to recognise that the barriers to circular transformation are interdependent. Insufficient knowledge of sustainability limits enterprises' ability to use financial resources strategically. Financial constraints hinder the introduction of new technologies, employee training, and partnership projects across the value chain. A lack of partners restricts access to external expertise, sustainable suppliers, innovation, and network-based solutions. Consequently, overcoming these barriers requires not isolated actions but a systematic management approach in which leadership and HRM play a central coordinating role.

Based on the analysis of good practices, the author concludes that circular business models in SMEs do not emerge through the mechanical addition of individual sustainable activities, but through their integration into the organisation's overall management system. Technical solutions, digital tools, partnerships, ESG orientation, and competency development can have a tangible impact only when they are linked to leadership coordination, strong internal communication by leaders, and employee participation. As a result, the successful management of the transition towards circularity depends less on the existence of any single practice than on an SME's ability to transform that practice into a sustainable, long-term management routine.

The development of knowledge and competencies emerges as a key prerequisite for the transition towards a circular economy. Competency-based management in SMEs is presented as a systematic approach to identifying, developing, and utilising employees' knowledge and skills in alignment with the enterprise's strategic objectives. This is particularly important for SMEs, as limited resources and a lower degree of formalisation in personnel management require stronger personal commitment from the owner, manager, or the leader. Clear and open communication about sustainable change, employee participation and support, and alignment with the enterprise's strategic orientation are decisive factors in the successful implementation of new management practices.

The resulting conclusion is that the HRM system in the context of the transition towards a circular economy should be understood as an integrated management system. It brings together research methodology, sectoral context, circular business models, ESG orientation, competency development, partnerships, and the leadership role within a unified analytical framework. This system provides the foundation for the following chapter, in which the empirical findings can be analysed not merely as individual survey responses, but as evidence of specific management challenges, opportunities, and strategic directions for the development of SMEs in Germany.

CHAPTER THREE. APPLIED TOOLS AND RECOMMENDATIONS FOR DEVELOPING KNOWLEDGE ON THE SUSTAINABLE MANAGEMENT OF HUMAN AND NATURAL CAPITAL IN SMEs IN GERMANY

Section 3.1 Analysis of the Challenges Facing SME Leaders

As mentioned in Chapter Two, the analysis was conducted thematically. Initially, the main categories were defined based on the research questions, which include the integration of the circular economy into HRM, ESG orientation, leadership approaches, and structural barriers to the transition to a circular economy.

The analysis first presents the results of Part I of the questionnaire, followed by Parts II and III in the sequence in which the questions were asked. The detailed qualitative content analysis of the open-ended questions is documented separately and presented under the relevant subsections. The statistical analysis of the closed-ended questions is presented immediately after the corresponding question.

The research design was developed as an online survey employing a mixed-methods analytical approach that combines quantitative and qualitative questions within a unified methodological framework. The survey was structured to trace the progression from the general profile of the respondent and the enterprise to specific management practices related to HRM in the context of the circular economy, ESG, leadership, barriers within contemporary management practices, and organisational challenges facing SMEs in Germany.

The first section, “General Information,” includes questions that establish the research context by examining the respondent’s role, length of professional experience, enterprise sector, and educational level. The survey then moves on to the extent to which the principles of the circular economy are understood and implemented. This section includes questions on specific practices, challenges, measures undertaken, performance measurement, assessments of employee attitudes, and the implementation of ESG principles by partners, suppliers, and distributors. Thus, Part I goes beyond collecting general background information and examines actual practices, such as resource efficiency, waste management, the use of sustainable materials, and defining the CSR.

The second part of the survey, “Integrating Circular Economy Principles into Human Resource Management,” focuses on the relationship between the circular economy and HRM. It examines the importance of synergy between human and natural capital; the presence or absence of a dedicated HRM department; the individuals (owners) or organisational structures (staff) responsible for carrying out this function; and the mechanisms for integrating environmental initiatives into corporate culture. It also considers staff selection criteria in the context of sustainability, the organisation of work processes in accordance with environmental standards, forecasts concerning the transformation of professional roles following the introduction of artificial intelligence (AI), and the competencies required to promote ESG principles among employees.

The survey also examines specific HRM tools through which sustainability can be translated into everyday management practice. These include questions on training and qualification, employee motivation, participation in circular economy initiatives, carbon footprint reduction, ethics, equality and inclusion measures, and employee well-being and mental health initiatives. These questions make it possible to determine whether sustainability remains an isolated topic or is becoming institutionalised within recruitment, training, motivation, performance appraisal, and employee development processes.

The third part of the survey focuses on the managerial and leadership aspects of the transition to sustainability. It examines how HRM supports the achievement of environmental objectives; the mechanisms used to ensure transparency and accountability in sustainable management processes; the application of ESG criteria in employee performance assessment and incentivization; and the structural challenges involved in integrating ESG principles and the circular economy into HRM. The final questions aim at identifying successful strategies, leadership policies, ethical conduct among managers, support for employees’ professional development, leadership competency development programmes, performance indicators used to evaluate managers, and the extent to which management decisions are oriented towards short-term or long-term efficiency.

The survey structure combines closed-ended and open-ended questions, reflecting the logic of the mixed-methods research design. For closed-ended questions, respondents select their answers from predefined

categories or respond with “yes” or “no”¹²⁹. This type of question provides quantitative data on the distribution of practices and attitudes, as well as the extent to which circular economy principles are implemented within the sample. Closed-ended questions make it possible to describe “how” things are, “how many” enterprises implement particular practices, “how frequently” certain phenomena occur, and “how” responses are distributed across sectors¹³⁰.

Section 3.2 Integrated Model for Overcoming Identified Barriers and Challenges in the Circular Transformation

The analysis of the survey conducted among 102 SMEs in Germany reveals that the transition to a circular economy is taking place in the context of several concurrent deficits. These include limited knowledge of circular business models, financial constraints, organisational and cultural barriers, a lack of partners, and the inconsistent use of digital solutions. In the context of the Corporate Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting Standards (ESRS), these deficits are further compounded by the need for SMEs to prepare for future ESG reporting requirements.

Although some enterprises have already adopted measures such as product repair and life cycle extension, recycling, energy efficiency, and paperless work processes, these practices are rarely embedded in a targeted strategy driven by leadership and HRM. Furthermore, they remain weakly integrated into the systematic management of human and natural capital.

From the perspective of the present study, it can be argued that overcoming these challenges requires a set of mutually reinforcing strategies. These include securing financial resources for the circular transition, changing cultural attitudes and motivating employees, advancing digitalisation and the use of AI, building partnerships across the value chain, managing the social impacts of consumption, and transforming HRM into a strategic driver of sustainability.

Based on the findings of the study of SMEs operating in three distinct sectors—finance, crafts, and real estate—the author proposes the following strategies to address the problems and challenges associated with the transition to a circular economy:

3.2.1. Strategy for Financing the Transition to a Circular Economy and the Development of HRM

Given that a significant proportion of SMEs identify financial constraints and a lack of resources as key barriers to the adoption of circular business models, it can be argued that sustainable transformation faces a tension between short-term liquidity constraints and the long-term benefits of investing in human and natural capital. The new European ESG reporting requirements under the CSRD will gradually extend to more enterprises, while the option for SMEs to voluntarily apply the simplified VSME Standard means that they may need to invest in ESG systems and training, thereby increasing the financial pressure on them.

Although some enterprises have already implemented measures with the potential to generate cost savings, such as digitalisation and energy efficiency improvements, these initiatives are rarely planned within the framework of a targeted financial strategy for the green transition. Instead, they tend to emerge as reactive solutions at the operational level.

Based on the findings of the present study, the first strategic priority for addressing the identified challenges is proposed to be the development of internal financial frameworks that treat expenditure on training, digitalisation, green technologies, and process reorganisation as investments in the value of human and natural capital rather than as secondary costs.

A specific strategy for addressing the challenges faced by leaders in this context is to establish dedicated budgets for developing competencies in the circular economy, ESG, and digital knowledge and skills, as well as for implementing technical solutions that enable more efficient resource utilisation.

3.2.2. Strategy for Cultural Transformation and Changing Employee Attitudes

¹²⁹ Universität Leipzig. (2023). <https://home.uni-leipzig.de/methodenportal/glossary/frage-offen-vs-geschlossen/>. Accessed in May 2026.

¹³⁰ Universität Leipzig. (2023). <https://home.uni-leipzig.de/methodenportal/qualivsquant/>. Accessed in May 2026.

The survey results indicate the presence of pronounced cultural inertia, manifested both in the persistence of established work habits and in scepticism towards sustainability concepts, including the perception of green policies as “*greenwashing*”. In the context of increasingly stringent ESG requirements and preparations for compliance with the ESRS, cultural resistance may become a significant obstacle to adapting to the new regulatory environment.

The present study shows that strategies for overcoming cultural barriers should combine information and communication tools with a consistent leadership vision and ethical values. This includes explaining the significance of the CSRD and ESRS requirements not merely in terms of regulatory compliance, but also as an opportunity for strategic positioning and competitive advantage.

3.2.3. Strategy for Enhancing Employees’ Intrinsic and Extrinsic Motivation

The identified challenges related to employee resistance indicate that the sustainability transition cannot be viewed solely as a technological or financial issue, but must also be understood as a process that largely depends on mobilising human capital. Preparing for ESG reporting and the potential implementation of the VSME Standard require the active involvement of employees in collecting and validating sustainability data.

Although some SMEs already use training and awareness-raising as measures to overcome barriers, the present study indicates that there is no systematic distinction between intrinsic motivation (spirit and values) and extrinsic motivation (incentives, recognition and well-being), which limits the effectiveness of the initiatives undertaken.

Based on the findings of this study, it can be argued that effective strategies for overcoming motivational barriers should combine the creation of a meaningful context with structured incentives. Intrinsic motivation can be supported by actively involving employees in identifying and understanding the significance of ESG reporting, as well as clarifying their role in collecting the data required for ESRS compliance. Extrinsic motivation entails introducing specific incentives by incorporating sustainable behaviour into performance appraisal systems, offering non-monetary and financial rewards for participation in green initiatives, promoting work–life balance, supporting mental health, and ensuring transparency and feedback. In this way, motivation is regarded as a management tool for overcoming resistance and unlocking the potential of human capital throughout the transition process.

3.2.4. Strategy for Digitalisation, Artificial Intelligence and Green Transition

The survey results indicate that a significant proportion of SMEs have already taken concrete steps towards digitalising their internal processes. In the context of CSRD requirements, these existing digital capabilities can be adapted to automate the collection, processing and analysis of ESG data required for ESRS reporting. This includes developing systems to monitor energy consumption, materials used and waste generated, all of which are key elements of the ESRS standards.

Based on the findings of the present study, the author argues that strategies for addressing the identified challenges should build on existing digitalisation efforts through the targeted use of AI and analytical tools to manage the transition towards sustainability. Based on the data collected can can be made sector-specific management decisions regarding the optimisation of business processes, the introduction of new technologies and the prioritisation of investments. As regards HRM, this entails the strategic development of digital and analytical competencies that enable professionals responsible for human capital to work effectively with ESG data and translate it into decisions concerning training and coaching, motivation, and team structure.

3.2.5. Strategy for Partnerships and Sustainability-Oriented Networks

One of the problems identified in the survey relates to the *lack of partners*. This problem manifests itself not only as a quantitative shortage of collaborations, but also as a qualitative mismatch between SMEs’ sustainability visions and practices across the value chain. As a result, individual enterprises implement circular economy and ESG measures but remain isolated within networks that operate according to the logic of the linear economic model. This limits their ability to effectively close material and information loops. In the context of the CSRD, large enterprises falling within the scope of the Directive are increasingly likely to require ESG emissions data from their suppliers and partners, making ESG-focused partnerships critical for SMEs.

Based on these findings of the present study, it can be argued that addressing this deficit requires strategies aimed at deliberately establishing partnerships with organisations that share similar visions, management principles and approaches to sustainable development.

3.2.6. Strategy for Reducing Consumption and Managing the Social Impacts of Sustainable Behaviour

Although some respondents primarily associate the circular economy with waste management and energy efficiency, the present analysis shows that underlying operational measures are deeper social patterns of consumption that shape both organisational and individual behaviour. These behavioural aspects are related to the social criteria within the ESRS standards, making their management relevant to the future of ESG reporting.

The problem of consumption and resource waste, both in households and in organisational contexts, manifests itself as a systemic deficiency that cannot be addressed solely through technological interventions.

Based on the research, the author argues that strategies for addressing these challenges should emphasise the social impacts of sustainable behaviour and link organisational practices—such as resource sharing, reuse, repair, and the optimisation of material flows, etc. to shared values and socially significant objectives. This entails promoting initiatives such as carpooling, the shared use of company equipment, internal systems for donating or reusing materials and products, and the active involvement of employees in local community projects related to sustainability and the green transition.

3.2.7. Strategy for Transforming HRM in the Context of the Circular Economy

The present study establishes that, in a significant proportion of the SMEs examined in Germany, HRM is, in practice, conducted informally. In the light of CSRD requirements and the need for ESG data, the role of HRM as a coordinator of sustainability-related information becomes particularly important. In practice, HRM is most commonly managed by the owner or a small management group, without clear and systematic links to circular economy and ESG objectives. This creates a starting point in which organisational culture, recruitment, training, motivation and remuneration develop unevenly and remain outside the enterprise's strategic focus, limiting their role as tools for the sustainability transition.

Based on the results obtained, it can be argued that addressing this problem requires a shift in corporate values, systematic training and sustainability-oriented talent management, including preparation for ESRS requirements and the potential implementation of the VSME Standard. It also requires integrating sustainability objectives into recruitment, performance assessment and employee potential development processes.

In this regard, the present dissertation proposes an integrated **formula for sustainable leadership-oriented transformation in SMEs**:

$$\text{SLOT sme's} = f(\text{L, SHRM, K, C, M, D, P}) \quad (3.1.)$$

Where:

SLOT sme's: Sustainable Leadership-Oriented Transformation in SMEs

Leadership: Leadership Insight and Vision for Implementing ESG Principles

SHRM: Strategic Human Resource Management and Practices

Knowledge: Knowledge of the Sustainable Management of Human and Natural Capital

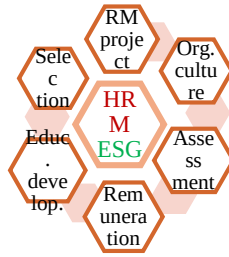
Culture: Organisational Culture

Motivation: Motivation and Well-being, Coaching, and Mental Health

Digitalisation: Digitalisation and AI to Support and Develop Management Processes for the Green Transition

Partners: Collaborative Development through Partnerships and Knowledge Exchange

In conclusion, the author argues that HRM has the potential to become a key intermediary between management's strategic intentions and employees' day-to-day behaviour, thereby contributing to the effective and targeted

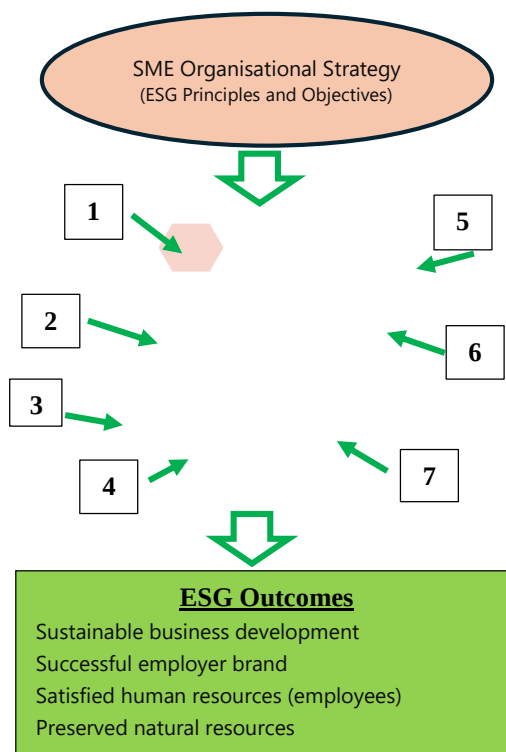


development of knowledge for the sustainable management of human and natural capital (Figure 3.28).

Where:

1. Strategy for Financing the Transition to the Circular Economy and the Development of HRM
2. Strategy for Digitalisation, AI, and Green Transition in the Context of the Circular Economy and HRM Development
3. Strategy for Cultural Transformation and Changing Employee Attitudes towards the Circular Economy and HRM Development
4. Strategy for Partnerships and Sustainability-Oriented Networks
5. Strategy for Enhancing Employees' Intrinsic and Extrinsic Motivation towards the Circular Economy and HRM Development
6. Strategy for Reducing Consumption and Managing the Social Impacts of Sustainable Behaviour
7. Strategy for Transforming HRM in the Context of the Circular Economy

Figure 3.28. Model for the Sustainable Management of Human and Natural Capital in SMEs during the Transition to a Circular Economy.



The underlying logic of the developed sustainable business model is that the more effectively the individual strategies are developed and interconnected, the greater the likelihood that SMEs will achieve a long-term, rather than campaign-driven, transition to a new model of HRM in the era of the circular economy.

Section 3.3. Recommendations and Practical Tools for the Targeted Development of Knowledge for Sustainable Management

The present study establishes that, among the SMEs examined in Germany, the development of knowledge for the sustainable management of human and natural capital does not follow a unified and systematically structured approach. The survey data indicate that, in a significant proportion of enterprises, key management elements, such as leadership training, the use of ESG indicators and the implementation of sustainable practices, are applied unevenly and often outside a strategic framework. Based on the findings of this research, it can be argued that the development of targeted management approaches should focus on integrating the identified gaps into a unified knowledge development framework encompassing the financial, organisational, motivational, technological, partnership-related and HRM dimensions of the transition to a circular economy.

The author has developed **recommendations** aimed at promoting the more effective and targeted development of knowledge for the sustainable management of human and natural capital.

3.3.1. Institutionalising Knowledge of HRM in the Circular Economy and ESG in SMEs

Knowledge of the circular economy and ESG should become a structural component of SME management. In practical terms, regular training cycles can be organised according to a three-phase model: (1) quarterly internal training sessions focused on specific operational practices and the basic ESRS requirements; (2) six-monthly strategic training sessions during which management analyses the relationship between circular practices and the business model in the context of ESG; and (3) an annual ESG review incorporating an assessment of results, new CSRD and ESRS requirements, and the definition of objectives for the following period.

3.3.2. Financially Backed-up Knowledge of Sustainability and Circular Business Models

The survey results indicate that financial constraints and a lack of resources are perceived as significant barriers to implementing circular practices in SMEs. Based on the present study, it is recommended that a dedicated budget equivalent to 2–3% of annual turnover be allocated to developing sustainability-related knowledge and competencies. This budget should include funding for preparation for ESRS requirements and the potential voluntary application of the VSME Standard. Such an approach would position SMEs as proactive participants in the sustainability transition.

3.3.3. Knowledge Development through Cultural Transformation and Motivation

The established cultural resistance and attitudes characterised by the belief that “*we have always done things this way*” indicate that knowledge is not universally perceived as a resource for change, but often encounters routine practices and scepticism. In this context, formal training is insufficient unless it is supported by cultural change and by an understanding of sustainability as part of the organisation’s identity.

Leaders play a significant role in this process and should present sustainability not merely as a regulatory requirement, but as an integral part of the enterprise’s strategic vision. It is also recommended that motivational systems be established that incorporate sustainable behaviour into performance appraisal criteria, recognise innovative ideas, provide incentives for participation in green initiatives, and offer opportunities for professional development and reskilling in areas related to ESG and the circular economy. Maintaining work–life balance and safeguarding employee mental health should also be taken into account.

3.3.4. Digitalisation and Artificial Intelligence

Digitalisation and AI can be used as tools for collecting, analysing and transforming data into management knowledge concerning human and natural capital. The survey findings indicate that digitalisation and AI can support the collection, analysis and transformation of data into management knowledge relating to human and natural capital. The recommendation involves establishing integrated information systems that

collect, process, optimise, store and visualise data on energy consumption, materials and raw materials, water use, waste generation, employee behaviour and the outcomes of training programmes. On this basis, analytical and AI-based tools can be applied to forecasting, optimisation and assessment of the impact of the measures implemented. For the HRM department, this entails developing digital and analytical competencies so that professionals responsible for human capital can work with ESG data and use it in decision-making concerning training, intrinsic and extrinsic motivation, coaching, and team structuring within the enterprise.

3.3.5. Partnerships and Knowledge Sharing across the Value Chain

It is recommended that partnerships and networks be established to facilitate knowledge sharing among enterprises, including their suppliers and customers. This can be achieved through participation in joint initiatives at both regional and broader levels, knowledge sharing, the exchange of experience, and the implementation of innovative sustainable practices through collaboration. In this way, knowledge related to the sustainable development of human and natural capital can be developed both within the enterprise and through interactions with other participants across the value chain.

3.3.6. Reorienting HRM towards Strategic Sustainability-Oriented Knowledge Management

One of the key findings of the empirical study is that HRM in SMEs often remains at an operational or informal level and is rarely systematically linked to the objectives associated with increasingly stringent CSRD and ESRS requirements. This indicates that the potential of HRM as a carrier and intermediary of knowledge has not been fully applied. In this context, it can be argued that effective knowledge development requires a clearer strategic positioning of HRM processes related to sustainability. In practice, this involves integrating circular economy, ESG, digitalisation and AI-related topics into recruitment, workplace design, performance appraisal, employee development and remuneration. It also entails creating training programmes for reskilling and upskilling aimed at reducing the environmental footprint, systematically planning information seminars, green campaigns and initiatives such as carpooling, promoting electric mobility, and participating in community-based environmental projects.

The author proposes an integrated three-phase model for strategic transformation based on critical success factors, including the structural consistency of processes, the integration of strategies, measurability through specific key performance indicators, and adaptability to sector-specific characteristics. This approach ensures a realistic and gradual transformation that reflects the resource constraints of SMEs while nevertheless leading to systemic change.

Based on the present study, it can be concluded that the effective and targeted development of knowledge for the sustainable management of human and natural capital is a long-term process of gradual institutional development. On the first phase, this process is implemented through the institutionalisation of knowledge, financial back-up and cultural transformation. On the second phase, it is structured through targeted HRM practices and competency development, while on the third phase, it is expanded through digital support, collaborative learning and the strategic positioning of HRM as an architect of sustainability-related knowledge. This phased sequence establishes the necessary conditions for the sustainable transition of SMEs towards circular business models.

3.4. Conclusions to Chapter Three

The empirical research conducted among SMEs in Germany shows that the transition to a circular economy can be understood as a management process requiring the integration of knowledge, leadership, organisational culture, human resources and resource efficiency. The survey results portray the circular transition not merely as a matter of environmental action or technological solutions, but as a need for improved internal management through which individual sustainable practices can be linked to the everyday decisions of managers and employees. Despite differences between the examined sectors, the results reveal several common challenges. These include insufficient knowledge of circular economy principles, financial constraints, a lack of partners, varying degrees of formalisation of human resource management processes, and the limited use of indicators to assess sustainable behaviour and ESG orientation.

At the same time, the empirical data show that the SMEs examined do not share the same level of organisational readiness. Some have already adopted sustainable practices related to resource efficiency, waste

reduction, the use of sustainable materials, digitalisation, training, motivation and initiatives to reduce their carbon footprint. In other enterprises, these practices are less developed or are not integrated into a comprehensive management system. These findings demonstrate that SMEs may face similar challenges while differing in how they understand, internalise, organise and address them. In some enterprises, these challenges are perceived primarily as external pressures associated with regulation, costs or market expectations. In others, they are gradually understood as opportunities to improve internal processes, develop knowledge and use resources more efficiently. The difference lies not only in the presence or absence of sustainable practices, but also in the level of managerial maturity with which SMEs connect these practices to their employees, partners, organisational culture and long-term objectives. The findings related to HRM are particularly significant. In some enterprises, HRM is carried out by a dedicated department or designated individual, whereas in others, this function is assumed directly by owners, managers or other senior personnel. This indicates that HRM in SMEs is often closely linked to overall business management. Consequently, the development of knowledge, competencies, motivation, participation and sustainable behaviour cannot be separated from leadership and the day-to-day organisation of work processes.

Based on the data, it can be concluded that the enterprises examined have opportunities to develop circular and sustainable practices by establishing stronger links between human and natural capital. Human capital is reflected in employees' knowledge, skills, motivation, health, well-being and participation, while natural capital is associated with resources, materials, energy, waste and environmental impacts. The empirical findings indicate that the relationship between these two forms of capital is reflected in individual management activities, but is not always sufficiently formalised or measurable.

The strategies proposed by the author, together with the integrated model and practical toolkit, have been derived directly from the findings. They highlight the need to develop knowledge, improve the structuring of HRM processes, establish partnerships, use digital tools, introduce ESG-oriented criteria, and progressively strengthen organisational capacity.

The current stage of development of the enterprises examined provides a basis for conceptualising a model for the sustainable management of human and natural capital in the context of the circular economy. At the same time, the results provide grounds for drawing conclusions about development trends among SMEs. They make it possible to identify problematic areas and formulate applicable management recommendations for the sectors examined. Accordingly, the proposed model should be regarded as an analytical and practical framework that can assist leaders and strengthen their capacity to introduce sustainable, ESG-oriented and circular management practices progressively.

CONCLUSION

This dissertation examines the challenges facing leaders in HRM in the era of the circular economy. The author's critical review of the existing specialised literature and European sustainable development policies identified research gaps concerning HRM in SMEs and the requirements for implementing ESG principles.

A discrepancy exists between the perceived importance of ESG principles and their actual implementation in organisational management. Although the majority of the enterprises surveyed recognise and acknowledge the importance of sustainability, only a limited number use specific indicators, assessment systems, management mechanisms and integrated HRM processes.

Based on the empirical research conducted among 102 SMEs operating in the skilled-crafts, real estate management and financial services sectors in Germany, it can be concluded that the research objectives have been achieved. The main challenges facing SME leaders in Germany have been identified; the role and transformation of HRM have been analysed; key competencies and development needs have been determined; strategic directions for addressing the identified deficiencies have been outlined; and an integrated model for the sustainable management of human and natural capital has been developed.

Based on the analysis of the research findings, the main research thesis can be considered confirmed. The synthesis of the results demonstrates that the challenges facing leaders in human resource management in the context of the circular economy are not limited to external economic, political, regulatory and technological factors. To a considerable extent, they are determined by the internal organisational capacity of SMEs to create,

integrate, develop and share knowledge, foster an ESG-oriented culture, and attract and retain motivated employees who demonstrate sustainable behaviour.

The study established that the SMEs surveyed already employ individual sustainable practices related to recycling, repair, reuse, energy efficiency, digitalisation, AI and paperless processes. Nevertheless, these practices largely remain fragmented and are often not conceptualised as part of a comprehensive model for managing the transition from a linear to a circular economy. This reveals one of the main contradictions identified in the research: enterprises implement individual circular practices but do not always possess the knowledge, structures and management mechanisms necessary to transform these practices into a competitive advantage. In the context of CSRD, ESRS and VSME, this deficiency is further complicated by the need for SMEs to prepare for sustainability reporting in the absence of robust knowledge and data systems.

The dissertation emphasises that the main challenge facing SME leaders in Germany is not merely a lack of resources or technology, but the absence of a systematic management framework through which sustainability can be integrated into everyday decision-making, employee behaviour and human resource development. Financial constraints, knowledge gaps, cultural inertia, employee resistance to change, fragmented digitalisation and underdeveloped partnerships do not operate in isolation. Rather, they accumulate and reinforce one another, limiting the ability of SMEs to move from individual initiatives towards sustainable circular business models.

The study identified cultural and psychological barriers, including attitudes such as “*we have always done it this way*” and scepticism towards ESG initiatives, which are sometimes perceived as a form of greenwashing. These barriers highlight the role of the human factor in implementing sustainable solutions.

A significant finding of the analysis is that HRM in the transition towards a circular economy should be reconceptualised as a strategic architect of sustainable knowledge. In this dissertation, HRM is viewed not merely as an administrative or support function, but as a key mechanism for developing competencies, motivation, organisational culture, well-being and behavioural readiness for change. This is particularly important in practice because the circular economy cannot be implemented through technologies and methods alone if employees do not understand its underlying rationale, recognise their role in the process, and receive organisational, psychological and professional support.

The research establishes the importance of motivation, coaching, mentoring and well-being programmes within enterprises. These should not be regarded as secondary or “soft” management tools, but as integral components of the internal infrastructure underpinning the social dimension of the sustainability transition. Mental health, work–life balance, social well-being and opportunities for reskilling create the conditions necessary for employees to embrace change not as external pressure, but as a conscious contribution to the sustainable development of the enterprise.

Identifying the challenges facing SMEs through the study necessitates the formulation of strategies to overcome them. These include securing financial resources for the circular transition; cultural and communication transformation; motivation and coaching programmes; digitalisation and the use of AI; partnerships and networks with a sustainability focus; social and behavioural measures; and the reorientation of HRM towards strategic and sustainable knowledge management. These directions should not be regarded as isolated measures, but as interconnected management levers through which leaders can reduce barriers and accelerate the transition to circular business models.

The principal barriers and risks limiting the ability of SMEs to integrate circular economy principles into a comprehensive management model have been clarified and substantiated. The analysis indicates a genuine risk that the transition to a circular economy may remain formalistic and fragmented in the absence of the strategic integration of sustainable practices. Another prominent risk is that sustainability and ESG may be perceived primarily as administrative or reporting processes and not as management opportunities for development. The underestimation of the human factor is also significant. This includes talent management, mental health, equality, diversity and readiness for cultural change, all of which are critical to the successful implementation of sustainable practices. At the same time, the limited development of partnership networks hinders the establishment of effective circular models across the value chain and results in individual initiatives being implemented in isolation.

An important contribution of the dissertation is the proposed integrated **SLOT SMEs (Sustainable Leadership Oriented Transformation in SMEs) formula**, which brings together leadership, strategic HRM, knowledge, culture, motivation and well-being, digitalisation, and partnerships within a unified framework for

sustainable, leadership-oriented transformation. Its significance lies in presenting the circular economy not as a technical set of practices, but as a comprehensive and coordinated management mechanism.

The author has also developed a **model for the sustainable development of human and natural capital**, incorporating a set of strategies for integrating ESG principles into the HRM system.

To facilitate the practical implementation of the theoretical model in SMEs, recommendations have been developed, setting out specific phases and steps.

In conclusion, the analysis of the empirical data demonstrates the need to move from fragmented to systematic management of the circular transition. SMEs need not merely more environmental measures, but a new level of management capacity capable of bringing together leadership vision, HRM, ESG orientation, digital solutions, partnerships and employee well-being. This integration creates the conditions for the sustainable management of human and natural capital and establishes the foundation for a long-term transition towards circular business models. An important conclusion is that the circular economy in SMEs can succeed only when it ceases to be perceived as a collection of separate environmental practices and begins to function as a comprehensive, integrated management framework. Within this framework, leaders play a central role, HRM fulfils a strategic function, knowledge serves as a key resource, and human capital becomes a decisive factor in the sustainable use of natural capital.

DISSERTATION CONTRIBUTIONS

Scientific contributions

1. The dissertation contributes to the advancement of scientific knowledge by proposing a concept for integrating ESG principles into the HRM system to achieve sustainable business development.
2. The role of HRM as a strategic function for developing and managing sustainability-related knowledge has been substantiated, demonstrating how existing practices can be transformed into structured ESG processes.

Scientific-applied contributions

1. The problems and challenges facing leaders in HRM during the transition to a circular economy have been identified and systematised based on an empirical study of SMEs in three sectors in Germany.
2. A generalized formula for the sustainable development of SMEs has been formulated, integrating leadership, strategic HRM, knowledge, culture, motivation and well-being, digitalisation, and partnerships within a unified framework.
3. A model for the sustainable and integrated development of human and natural capital in SMEs during the transition to a circular economy has been developed, incorporating a set of strategies.
4. A strategic HRM reorientation plan has been proposed, structured into three consecutive phases to implement changes in accordance with the CSRD.
5. Recommendations have been developed to support SMEs in preparing for compliance with regulatory requirements and standards, as well as in fostering more effective and targeted development of knowledge for the sustainable management of human and natural capital.

Applied contributions:

1. A relationship has been established between the level of digitalisation and readiness for ESG integration in SMEs, with enterprises having more advanced digital processes demonstrating a greater capacity to collect and analyse data on resource consumption, track their environmental footprint, automate reporting to stakeholders, and adapt more rapidly to regulatory requirements.

PUBLICATIONS RELATED TO THE DISSERTATION

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5. Joe A., Sn.Ovcharova. Strategies for overcoming the challenges facing SME leaders in the transition to the circular economy. KSI Transactions on KNOWLEDGE SOCIETY, ISSN 1313-4787, VolumeXVII, num 1., June 2026 (CEEOL)