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GREEN HUMAN RESOURCE MANAGEMENT AS AN ELEMENT OF GREEN BUSINESS PROCESS MANAGEMENT

This study aims to answer the following research question: How can green human resource management (GHRM) spur green business process management (GBPM)? It employs a literature review combined with scientific reflection. This work contributes to the development of knowledge by (1) conducting an analysis and synthesis of literature on GBPM, (2) combining the issue of GBPM with GHRM, and (3) showing directions for future empirical research focusing on the linkage between GBPM and GHRM. To the authors' knowledge, this is the first paper systematically discussing the linkage between GBPM and GHRM.

Keywords: environmental sustainability, sustainable development, narrative literature review, Green BPM, Green HRM

1. INTRODUCTION

The problems associated with global environmental change are so important that all governments, companies and individuals should take action in the area of environmental sustainability. Activities directed towards sustainable development directly affect current generations, their children, and – in general – the future, which has been emphasized by the United Nations (United Nations, 2020).

Issues related to reducing the negative impact of the use of resources in processes on the natural environment have become the subject of business process management (BPM). In response to the assumption that each business process affects the natural environment to some extent (through, e.g., the consumption of energy, water, and other resources; greenhouse gas emissions; waste production, etc.), the concept of "green business process management" (GBPM) was developed. It is associated with such categories as process optimization, process performance measurement methods and process design (Roohy Gohar & Indulska, 2020). According to another definition, GBPM is about understanding,

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documenting, modeling, analyzing, simulating, and implementing continuous changes in business processes, with particular emphasis on the environmental consequences of process implementation (vom Brocke et al., 2012).

At the same time, little research attention within GBPM has been directed to human resource management (HRM) and organizational culture (Maciel, 2017), although they are factors affecting the knowledge and involvement of employees in Business Process Management and Business Process Improvement. Introducing the Green BPM concept is usually associated with the implementation of two goals: reducing the negative impact on the natural environment and introducing cultural changes that promote specific values and attitudes among the members of the organization (Hernández González et al., 2019).

Organizational sustainable development is also most influenced by employees because the company's success in different domains depends on the employees' awareness, knowledge, motivation and behaviors. To cope with the above-mentioned environmental challenges, the concept of "green HRM" (GHRM) has been introduced. GHRM combines environmental management with human resource management to develop "green" skills and motivate employees to pro-environmental activities (Ren et al., 2020). It covers a set of policies and practices that stimulate green behaviors of a company's employees. Although the main goal of GHRM is the creation of environmental sensitivity and ecologically responsible behaviors of employees in the workplace, employees' pro-environmental attitudes may be transferred to their private life. Moreover, the role of GHRM is to create a participation-oriented culture (Pham et al., 2019).

Although different approaches to defining the scope of GRHM are presented in the literature, this study assumes that GHRM covers functional areas of HRM, such as job design, HR planning, recruitment and selection, HR training, HR appraisal, compensation, and HR flow (Islam et al., 2019; Piwowar-Sulej, 2021a). GHRM derives inspiration from theories and methods of management and economics, sociology and psychology, due to a wide array of correlated questions and issues (Piwowar-Sulej, 2021b). There is also a need for horizontal consistency between the GHRM practices because it increases the effectiveness of the GHRM system (Foss et al., 2015).

This study aims to answer the following research question: How can GHRM spur GBPM? For the purpose of this article literature review combined with scientific reflection were used. Literature reviews are increasingly needed in most scholarly disciplines because of the rapid development of these disciplines. Moreover, literature reviews recapitulate the stand of knowledge on a particular topic and help to avoid unnecessary and unaware duplication of previous research (Baumeister, Leary, 1997; Pautasso, 2019). The latter refers mainly to systematic literature reviews.

Searching on 23th January 2023 on Google for studies which link GBPM with GHRM resulted in no records. Similarly, the implementation of the following searching strategy in the Scopus database (TITLE-ABS-KEY ("green business process management" AND "green human resource management") OR TITLE-ABS-KEY ("green business process management" AND "human resource management")) resulted in no records. Moreover, there are only 30 studies indexed in Scopus which include the "green business process management" term in their title, abstract or keywords. Therefore, this study utilizes a narrative (traditional) literature review defined as a comprehensive, iterative, critical, consistent and objective analysis of the current knowledge on a topic (Juntunen, Lehenkari, 2021). They are an essential part of the research process and help to establish a theoretical framework and focus or context for future research (Pautasso, 2019).

This study, to our knowledge, being the first which discusses the linkage between GBPM and GHRM, contributes to the development of knowledge through (1) analysis and synthesis of literature on GBPM, (2) combining the issue of GPBM with GHRM, (3) showing directions for future empirical research focusing on the linkage between GBPM and GHRM.

2. GENESIS AND SCOPE OF GBPM

One of the first papers on GBPM was published in 2009 in the *Australasian Journal of Information Systems* (Ghose et al., 2010). The subject of GBPM was subsequently developed by other researchers (Nowak et al., 2011; vom Brocke et al., 2012). However, it is still a relatively new BPM approach and an emerging research discipline. Attempts are still being made to define GBPM. On the one hand, GPBM is a new approach to process management, and on the other it is worth emphasizing that it is based on the concept of sustainable development, which is already firmly rooted in the subject of managing organizations.

Due to the fact that every business process in an organization affects the environment to some extent, it is concluded that process management should also be oriented towards environmental sustainability. In the GBPM concept, sustainability is perceived as both the goal of action and a tool for managing changes within the implemented business processes. It is about understanding, documenting, modeling, analyzing, simulating, and implementing continuous changes in business processes, with particular emphasis on the environmental consequences of process implementation (vom Brocke et al., 2012).

Although the first studies on GBPM were presented at conferences and in IT journals, it should be noted that this concept is not only about IS (Information Systems). In addition to IS technology, it strongly refers to the cultural and social dimension of the organization (Couckuyt, Van Looy, 2019; vom Brocke et al., 2012). For this reason, GBPM can be seen as a general management approach (Kuppusamy, Gharleghi, 2015). Unlike Green IS, GBPM focuses primarily on process change that goes beyond IT applications and refers to Business Management in a broader sense (Couckuyt, Van Looy, 2019). Some researchers point to the relationship between GBPM and green supply chain management (Kuppusamy, Gharleghi, 2015). It is also suggested that GBPM be recognized as the sum of all management activities supported by IT systems that help to monitor and reduce the negative impact of business processes on the natural environment at the design, improvement, implementation or operation stage, as well as leading to cultural changes of process performers (Opitz et al., 2014b).

According to another definition, GBPM is a business model that is sustainable with regard to innovations that are introduced in processes and that significantly reduce negative impact on the environment due to changes in value creation (Bocken et al., 2014). In the GBPM, various aspects are taken into account in the process assessment, such as the generation of carbon footprint, energy consumption, water consumption or the generation of waste produced during the performance of business processes and related activities.

In turn, Maciel (2017) defines GBPM as the result of combining the concept of sustainable development and process management. Therefore, it can be defined as process management that generates business value with minimal impact on the environment, and thus does not affect the availability of environmental resources for future generations. GBPM takes place when an organization models, studies and optimizes processes to improve their environmental performance. These works include the optimization of

existing processes, but also the introduction of new, more environmentally friendly ones, which can be based on less resource consumption and reduced carbon dioxide emissions, while at the same time improving the quality of products and/or services offered to the customer (Opitz et al., 2014a).

According to von Rosing et al. (2015) sustainable processes can be achieved by addressing challenges in the following areas: process design, linkage to strategy, engaging roles, appropriate resources, automation, measurement and reporting of results. Due to the fact that environmental goals are often in opposition to classical measures such as time, costs and flexibility (Reijers, Liman Mansar, 2005), the following definition of GBPM is proposed:

GBPM extends the optimization of cost, quality, time, and flexibility of business processes with an environmental sustainability dimension. This means that Green BPM concerns the modeling, deployment, optimization and management of business processes with dedicated consideration paid to their environmental consequences (Couckuyt, Van Looy, 2019).

In practice, GBPM uses well established process management tools, adapting the implementation of processes to the challenges resulting from the currently observed environmental problems. Such approach forces the expansion or adjustment of processes, introducing actions based not only on measurements using classic KPIs (*Key Performance Indicators*), but also KEIs (*Key Ecological Indicators*). In Green BPM, there is a need for new organizational positions, such as sustainability specialists. They should work closely with the management and process contractors. Their tasks are also to determine the appropriate KEIs in relation to the strategic goals of the organization, identify and define appropriate methods for their measurement, obtain information on the impact of the implemented processes on the environment and find appropriate adaptation methods that meet the defined KEIs. A wide range of such indicators is proposed in the literature (Hernández González, 2018), but the most commonly used ones relate to the monitoring of pollutant emissions, energy consumption and material consumption (Hernández González, 2018). Watson et al. (2012) believe that KEIs should exist at the level of activities, processes and entire organizations and refer to the efficiency, costs and quality of the products offered.

Various capabilities that an organization should develop in order to benefit from GBPM are indicated in the literature (Opitz et al., 2014a). Among them are the attitudes of companies' employees. Effective GBPM requires the participation of employees in all its phases and the involvement of the highest level of management (Couckuyt, Van Looy, 2019). It is also related to the critical BPM factors described in the literature (Rosemann, vom Brocke, 2010). With regard to GBPM, the capacity area "Culture" mentions green attitudes and behavior of employees (von Rosing et al., 2015), training programs for employees, green attitudes of enterprises (Kuppusamy, Gharlegghi, 2015). On the other hand, in the area "Structure", there are references to bodies managing environmental awareness (Nowak et al., 2011) and new management bodies or entities (Opitz et al., 2014b). It is assumed that by acquiring appropriate knowledge and skills, employees will be able to introduce pro-ecological changes in processes. However, the basis of long-term GBPM is shaping appropriate values in the company, aimed at a balance between economic, social and environmental goals (Lacy et al., 2010; Stern et al., 1999). In this regard, HR activities undertaken in organizations play an important role. Solutions such as

the appointment of a sustainable development council, sustainable development owners (von Rosing et al., 2015) or a chief environmental/green officer (Opitz et al., 2014a) are proposed.

It can be observed, however, that the literature on GBPM largely focuses on the stages of the BPM life cycle, such as designing, measuring and improving processes, while at the same time little space is devoted to issues of human resources management and organizational culture (Maciel, 2017). According to Couckuyt and Von Looy (2019), there is a lack of research related to people management in GBPM that would refer to employee competencies, training, readiness for change, evaluation and rewards, and top management commitment. More holistic approach is needed in GBPM, therefore it should also take into account cultural, organizational and managerial factors (Roohy Gohar, Indulska, 2020; vom Brocke, Sinnl, 2011). Changing organizational practices and individual behavior towards GBPM requires raising social and individual awareness about the impact of global environmental challenges, along with offering practical solutions for the individual (Nerlich et al., 2010).

3. CORE ELEMENTS OF GHRM

As presented in the Introduction, GHRM covers job design, recruitment and selection (hiring), HR training, HR appraisal, compensation, and HR flow. Job design and HR planning are the bases for other HRM activities. In this case, environmentally-oriented job duties and responsibilities are included in a formal job description. HR planning is focused on determining the quantitative and qualitative dimensions related to future employees (Islam et al., 2019). Green recruitment and selection is designed to provide the company with highly qualified employees, whereas the subsequent practices refer to developing appropriate behaviors among those already employed (Piwowar-Sulej, 2021b)

Recruitment and selection processes enable companies to employ people who will be more likely to behave in an environmentally-friendly manner (Ababneh, 2021). At this stage employers expose their environmental values in job vacancy advertising and verify the candidate's ecological competencies during the recruitment process (Tang et al., 2018).

Green training increases employees' understanding of the needs of the natural environment, as well as develops green skills, attitudes, and behaviors, including green creativity (Perron et al., 2006; Renwick et al., 2013). In the case of new employees, induction training should be organized to facilitate the integration of these employees with the company's green culture and values. Further training should be based on the analysis of employee needs with regard to ecological knowledge and skills. Furthermore, the extant literature emphasizes that green training should be green itself which means, e.g., the reduction of printed didactic materials and introduction of e-learning courses.

Green HR appraisal is aimed at determining employees' performance in terms of their contribution to the achievement of organizational environmental goals (Ababneh, 2021). At this stage employers establish green goals and responsibilities at different levels (e.g., individual, team-related, organizational), conduct environmental audits and provide employees with regular feedback on their progress in attaining green goals (Tang et al., 2018).

Rewards and HR flow (promotion) based on green criteria are expected to motivate employees to become involved in green activities (Chaudhary, 2020). The rewards system should use monetary-based rewards, non-monetary rewards and recognition-based rewards to promote the completion of environmentally-friendly projects, submission of green ideas

and progress in the development of green competencies (Renwick et al., 2013). In turn, green HR flow means taking into account employees' green performance in the decisions related to promotions. Employers should also enable employees to realize a green career in a company (Piwowar-Sulej, 2022).

4. DISCUSSION

As presented above, GBPM focuses on environmentally-friendly business processes. In turn, GHRM is a key tool of introducing sustainability into a company. The latter is a concept that takes into account the environmental context as a basis for decisions in the HRM area. The GHRM concept can be treated as a key tool for introducing GBPM.

BPM requires focusing on methodological, technological and social aspects, which include: process governance, leadership, process competencies of employees, favorable organizational culture and appropriate technology development. The evolution from classic BPM to GBPM can take place in stages. Such transformation should be implemented in a planned and structured manner, taking into account the needs of various stakeholders, including actions addressed to employees. The shift towards GBPM requires that all process improvement initiatives align with the organization's strategic goals and focus on functional strategies, including HRM strategies. There is a close relationship between process architecture, process management across the organization, redesigning business processes in the "green" direction and matching various supporting functions, such as HRM.

Moving to GBPM and institutionalizing it in the longer perspective requires a set of specific governance mechanisms and the definition of new roles, duties, competencies and responsibilities. In addition to classic process owners, GBPM needs a council for sustainable development, sustainable development owners or a chief ecological officer. These mechanisms should be put in place to properly manage the transition from classic to GBPM and coordinate the actions taken and to prevent the formation of the so-called horizontal silos (von Rosing et al., 2015).

The implementation of process management can be carried out in accordance with a specific methodology. Basing further considerations on the BPM Framework (Burlton, 2014), when introducing GBPM, attention should be focused on adjusting the internal organizational structure to business and regulatory requirements, as well as to the requirements of strategic, tactical and operational nature. Both the strategic (strategy, process architecture) and operational (implementation, understanding, development, launching) planes should be taken into account. This methodology can be adapted to the reorganization of the entire organization as well as its parts, e.g. a selected business process or group of processes. For this reason, it can be used with an evolutionary approach to introducing changes in the scope of implemented business processes. It combines methods of change management, quality management, risk management and project management.

The solutions proposed in it stimulate teamwork, internal communication and the development of skills of employees and managers. The methodology consists of two complementary and interrelated components: one related to building process architecture and one associated with rebuilding business processes in connection with IT and HRM methods. Employees' competences, knowledge, experience, potential and motivation to act are among the elements that play an important role at the level of implementing changes in the organization (Jeston, 2014). Taking into account the individual stages, it should be emphasized that the formulation of the strategy, linking it with business processes and

integrating processes with systems, including the HRM system, are of key importance here. The BPM Framework methodology pays attention to three levels of change: organization level, process level and implementation level. The characteristics of individual levels are presented in Table 1.

Table 1. Stages of GBPM Framework – based on BMP Framework

Level	Characteristics
Organization level	Understanding the environmental context as the foundation of change for the organization
	Development of a process model of organization
	Defining new process efficiency measures (KEIs)
	Establishment of GBPM rules
	Matching the capacity of the GBPM organization
	Process management towards GBPM
Process level	Understanding the "green" process
	Analyzing the current process
	Process redesign
	Implementation of changes in the process
Implementation level	Collecting new requirements
	Designing new solutions
	Testing new solutions
	Standardizing new solutions

Source: Authors' own analysis, based on (Burlton, 2014).

Employee training plays a key role at each level (see: Table 2). In this context, GHRM should provide not only knowledge in the field of environmental protection, but also knowledge in process management (with particular emphasis on the process improvement stage). These may include training in process improvement tools and techniques, training in IT applications, training for continuous improvement, cultural training, process redesign patterns, problem solving techniques, etc. There are various training formats for GBPM initiatives, for example, they can be standard training exercises, training with experienced professionals, training initiated by feedback from leaders, employees, etc. The issue to be considered is who should be trained at each stage of the GBPM implementation. In particular, when to include department managers, process owners and line workers in the training. Training is associated with considerable expenses, and for many organizations this can be a major challenge when implementing GBPM. Lack of proper preparation of employees and difficulties in understanding and applying GBPM techniques and methods can be critical to the success of implementing changes.

As presented in Table 2, there are numerous areas to extend GHRM in a company that would like to successfully implement GBPM. At this point it is worth mentioning that GHRM is one of the processes. Therefore, it can be a subject of improvements within GBPM.

Table 2. Extension of GHRM in the context of GBPM

Element GHRM	Context of GBPM
job design	duties which go beyond pro-environmental behaviors and cover, i.e., process design, process improvement
recruitment and selection	selection criteria include beyond green awareness also the knowledge and skills related to BPM
HR training	training linking green knowledge and skills with BPI
HR appraisal	appraisal criteria include not only green general behaviors but the employee contribution in terms of EPI
compensation	linking rewards and benefits with employee engagement in process improvement (implemented green ideas submitted by employees)
HR flow	introducing not only the possibility to take green positions (in terms of green jobs) but also positions such as green process officer green process leader, green process owner

Source: own study.

5. CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

This article highlights that there is a research gap in literature in terms of linking GBPM and GHRM. Based on the narrative literature review, it also presents the genesis and scope of GBPM as well as the main elements of GHRM. The authors combined these two theoretical concepts, considering that: (1) the effective implementation of GBPM needs qualified and motivated employees, (2) GHRM in a company which implements GBPM should not only develop ecological mindset of employees but also knowledge, skills and motivation related to management of processes. One can state that both these concepts are interrelated. GHRM can be enriched by issues associated with BPM. The presented theoretical considerations should be further explored empirically.

It can be said that the higher the ecological awareness of the society, the more green actions can be expected from employers, but also from producers and service companies. In the near future, every HRM department will probably employ specialists in the field of GHRM or sustainability issues. As the current study shows, GBPM specialists will also be needed in the future. Implementing GBPM is a complex undertaking that poses a great challenge for the entire organization. There is, therefore, a high demand for management staff with deep expertise in the design, implementation and improvement of processes (von Rosing et al., 2015). A key role in this regard may also be played by regulations enforcing certain ways of implementing business processes.

Although this study contributes to the development of both GBPM and GHRM concepts, it has some limitations. They can be, however, eliminated in future studies. First, this study analyzed solely the traditional elements of GHRM. Future studies should also cover the issues of leadership and organizational culture. Green leadership is necessary for the effective implementation of GBPM, because it is accompanied by the introduction of significant changes in the way employees think and act. Without strong leadership, the introduction of GBPM has no chance of success, while without management commitment, the GBPM will not deliver the expected results. If management does not appreciate the green approach, employees will be less likely to engage in new solutions. It should also be defined and presented to employees how the GBPM aligns with the strategy and objectives of the organization, as well as what impact it has on operational management and individual

job positions. In turn, green organizational culture is an element of organizational culture (e.g., values, norms) that reflects the organization's environmental concerns. The level of green organizational culture is influenced by all of the above-mentioned organizational practices (included in both GBPM and GHRM) and individual characteristics presented by employees (Piwowar-Sulej, 2021b).

Second, BPM Framework emphasizes that not only the development of green knowledge and skills but also green technologies are needed. Therefore, the technical side of the GBPM implementation (also linked with GHRM) is another promising research gap to be filled in future studies.

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