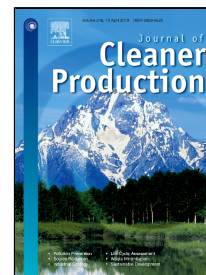


Accepted Manuscript

Who is in charge? A review and a research agenda on the 'human side' of the circular economy



Charbel Jose Chiappetta Jabbour, Joseph Sarkis, Ana Beatriz Lopes de Sousa Jabbour, Douglas William Scott Renwick, Sanjay Kumar Singh, Oksana Grebinevych, Isak Kruglianskas, Moacir Godinho Filho

PII: S0959-6526(19)30727-9
DOI: 10.1016/j.jclepro.2019.03.038
Reference: JCLP 16042
To appear in: *Journal of Cleaner Production*
Received Date: 07 December 2018
Accepted Date: 04 March 2019

Please cite this article as: Charbel Jose Chiappetta Jabbour, Joseph Sarkis, Ana Beatriz Lopes de Sousa Jabbour, Douglas William Scott Renwick, Sanjay Kumar Singh, Oksana Grebinevych, Isak Kruglianskas, Moacir Godinho Filho, Who is in charge? A review and a research agenda on the 'human side' of the circular economy, *Journal of Cleaner Production* (2019), doi: 10.1016/j.jclepro.2019.03.038

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Who is in charge? A review and a research agenda on the 'human side' of the circular economy

Charbel Jose Chiappetta Jabbour (cjcjabbour@gmail.com) (Corresponding Author)
Montpellier Business School, 2300 avenue des Moulins, 34000, Montpellier, France

Joseph Sarkis (jsarkis@wpi.edu)
Worcester Polytechnic Institute, Foisie Business School, USA.

Ana Beatriz Lopes de Sousa Jabbour (ablsjabbour@gmail.com)
Montpellier Business School, Montpellier, France

Douglas William Scott Renwick (douglas.renwick@ntu.ac.uk)
Nottingham Business School, Nottingham Trent University, Nottingham, UK

Sanjay Kumar Singh (sanjay.singh@adu.ac.ae)
College of Business, Abu Dhabi University, Abu Dhabi, United Arab Emirates

Oksana Grebinevych (o.grebinevych@montpellier-bs.com)
Montpellier Business School, Montpellier, France

Isak Kruglianskas (ikruglia@usp.br)
USP – University of Sao Paulo, The School of Economics, Business and Accounting,
Sao Paulo, Brazil

Moacir Godinho Filho (moacir@dep.ufscar.br)
Federal University of Sao Carlos, Sao Paulo, Brazil

Short Biographies:

Charbel Jose Chiappetta Jabbour. He is Associate Professor of Sustainable Management, Montpellier Business School. Former Director of the University of Stirling MSc in Strategic Sustainable Business, Scotland, UK. His research interests are:

comparative studies between countries in subjects related to sustainability management, low carbon economy, and strategic sustainable business.

Joseph Sarkis. He has been a faculty member at WPI since July 2013. He previously served as a faculty member at Clark University and the University of Texas at Arlington. His teaching and research interests are in the field of operations, supply chain management, and sustainability. He is the author or co-author of approximately 400 publications. His research is widely cited and earned the designation of highly cited researcher in 2016 from Thomson-Reuters.

Ana Beatriz Lopes de Sousa Jabbour. Associate Professor, Montpellier Business School, Operations Management. She was a senior lecturer within the University of Strathclyde, Faculty of Engineering, Department of Design, Manufacture and Engineering Management (DMEM), Scotland, UK. Prior to joining the University of Strathclyde she worked for UNESP-Sao Paulo State University, Brazil. Her research interests are: engineering for a low carbon economy, circular economy, innovation for sustainable supply chains, and technology for green growth strategy.

Douglas W. S. Renwick. He is Associate Professor of Sustainable Workforce Management at Nottingham Business School (NBS), where he undertakes research in Green (environmental) human resource management (HRM), involving line managers in HRM, employee well-being and HRM in Brazil.

Sanjay Kumar Singh. He is an Associate Professor of Management, College of Business, Abu Dhabi University, Abu Dhabi. His research has explored the 'human side' of organizations and firms' continuous improvement.

Oksana Grebinevych. She is an Assistant Professor at Montpellier Business School, France. Her research focuses on international business, and management for sustainable development.

Isak Kruglianskas. He is a Full-Professor of Sustainable Management at USP-University of Sao Paulo, Brazil. He has supervised dozens of PhD researchers. His research focus is sustainability management, business education, and circular economy.

Moacir Godinho Filho. He is a Professor at Federal University of Sao Carlos (UFSCar), Brazil. He has been researching on sustainable operations.

Who is in charge here? Unveiling the ‘human side’ of the circular economy

Abstract

The adoption of the circular economy (CE) at the firm level has rarely intersected with human resource management (HRM) – here called ‘the human side of organizations’ – and these two fields remain largely separate areas of knowledge. While the literature on the CE is expanding, discussion of its implementation in organizations is, so far, rare, along with exploration of the necessary alignment of the CE with green human resource management (GHRM). In this article, we extend the state-of-the-art literature on CE business models through the inclusion of the ‘human side’ of such issues. This goal is met by offering an original integrative GHRM framework for organizations developing CE. The theoretical lenses of stakeholders’ theory and the resource based view (RBV) form the foundation of this framework, which represents a ‘middle range theory’. We underline the practices and dimensions of the links between GHRM and the ‘ReSOLVE’ CE model. Through an exploration of this integrative framework, we propose a future research agenda along with original research propositions. Furthermore, the middle-range integrated theoretical framework we propose can serve both academics and practitioners in developing understanding of the human resource management (HRM) and change management aspects of the CE.

Keywords: circular economy; green human resource management; human resources; change management; sustainable supply chain.

1. Introduction

The state-of-the-art knowledge concerning the circular economy (CE) has recently seen significant growth in many areas (Stahel, 2016). This topic is currently of interest throughout the world, both in terms of sustainability in general, and more specifically in environmental and economic concerns (Murray et al., 2017). CE-related initiatives and policies have been adopted in national contexts such as China (Geng et al., 2013; Schroeder et al., 2018), in supply chains in Europe (Koh et al., 2017) and at the organizational level through the development of new business models to further the progression of the circular economy (Tse et al., 2015; Esposito et al., 2016). These policies are popular since they can help to decouple economic growth from environmental degradation, which is a prerequisite for sustainability (Geng et al., 2016).

Interestingly, and unfortunately, the ‘human side’ of the circular economy is underrepresented in the research literature. The ‘human side’ of organizations has been of interest to scholars for decades (McGregor, 1966), and is also referred as the ‘soft side’ of organizations (Wilkinson, 1992). Although there is no consensus on a crystal-clear definition of the ‘human side’ of organizations (Liu et al., 2017), in this work it is defined as the employment of human resource management (HRM) (Chen, 1997) along with management leadership (McGregor, 1996) to influence human interactions in the workplace (Teal and Blanchard, 2006), and which can contribute to successful organizational change management (Iacovini, 1993). The ‘human side’ or ‘soft side’ are terms which contrast with the ‘hard’, ‘technological’ and ‘engineering’ aspects of managing organizations (Boks, 2006; Song et al., 2018).

The focus of CE research so far has been on operations management (Koh et al., 2017), technology (Masi et al., 2018; Batista et al., 2018), historical factors (Smart et al., 2017), methodology (Tse et al., 2016), resource management (Steinmann et al., 2019; Fischer and Pascucci, 2017), innovation (Pieroni et al., 2019), CE indicators (Howard et al., 2018), limitations of the concept (Korhonen et al., 2018) and economic aspects of the CE (Subramanian et al., 2018). Issues concerning HRM, and the human side of the CE in general, have largely gone unnoticed in the literature (Esposito et al. 2015), and explorations of the role of HRM dimensions in the CE have been only recently begun. For example, Hopkinson et al. (2018), after analyzing more than 30 years of history in an exemplary case of CE business model implementation, concluded that human aspects – such as managerial competencies and capabilities – can be considered key elements of any CE initiative.

This study contributes to the existing conceptual foundations on CE business models (Planing, 2018; Korhonen, et al., 2018; Stahel, 2016; Geng et al., 2016; The Ellen MacArthur Foundation, 2015). It also expands the foundations of the circular economy by integrating GHRM

theory and practice (Dubois and Dubois, 2012; Res et al., 2018; Jackson et al., 2011, 2014; Renwick et al., 2013; Jackson et al., 2011; Wehrmeyer, 1996; Dumont et al., 2017; Zoogah, 2018). The purpose here is to develop an integrative theoretical framework (Wright and McMahan, 1992; Schuler et al., 1993) incorporating the vital role of GHRM in further strengthening CE practices and policy. Such a framework may also serve as a ‘middle range theory’ to help advance both fields, in order to avoid perpetuating a bifurcated trajectory.

The relevance of addressing the ‘human side’ of organizations is undeniable (McGregor, 1966). Quality management (Simmons et al., 1995), operations management (Boudreau et al., 2003), innovation (De Leed and Loise, 2005), lean manufacturing (Tortorella and Fogliatto, 2014) and green supply chains (Jabbour and Jabbour, 2016) are all organizational practices in which the importance of the human side of business has been understood and incorporated, and the list is longer than just these aspects.

While both the GHRM and CE business models have developed substantially over the past decade (Renwick, 2013; Winans et al., 2017), research at the nexus of the two disciplines has remained scarce and bifurcated. Awareness and understanding of CE principles is still relatively limited in society at large (Geng et al., 2016), while capacity building and development of competencies regarding CE are necessary (Hopkinson et al., 2018). Disregarding the human side of the CE has contributed to the fact that adoption of circular economy practices remains a risky endeavor for organizations.

While the technical side of the circular economy has been addressed (see for example, Dubey et al. 2017; Jabbour et al. 2018; Nobre and Tavares 2017), its human dimension requires further investigation. In this context, research on how the circular economy is spreading across all economic sectors, from manufacturing (Genovese et al. 2017; Esposito et al. 2016) to services (Bocken et al. 2017) and agriculture (Noya et al. 2017), is limited if it does not fully embrace the role of GHRM. As sustainability requires new forms of organizational arrangements (Brown 1991), the ‘human side’ of this complex process should be understood better. The power of human resources to facilitate sustainability initiatives goes beyond the boundaries of the firm, with the human side of sustainable supply chain management also attracting significant attention, as suggested by the work of Nejati et al. (2017). Arguably, environmental sustainability may be at the epicenter of emergent human resources research (Jackson et al. 2014).

Nevertheless, GHRM and the CE have certain similarities, and they can also generate certain synergies. By understanding the potential relationships between these areas, as well as what each can contribute, these synergies may be enhanced. Both sustainable human resources

(Huselid 1995) and the circular economy can affect firms' performance (Despeisse et al. 2017) and competitive advantage (Tse et al. 2015). Companies operating in a circular economy can be better off than those operating in a linear economy, especially given the possibilities of relative increases in resources from used products and material flows (McKinsey 2017; Nasir et al. 2017). The circular economy can contribute towards organizational sustainability by re-shaping the role of businesses in society (Koh et al. 2017; Winans et al. 2017; Rothenberg et al. 2017).

The present work aims to address the following emergent questions: (a) how can HRM and the CE be articulated theoretically? (b) what is the role of stakeholders' theory and the resource based view (RBV) in triggering this articulation?; (c) what are the main research propositions which can be derived from the relationship between HRM and the CE? Consequently, the three original contributions of this study are:

- Suggesting a new conceptualization of the 'human side' of CE business models by integrating GHRM and the CE.
- Showcasing an integrative, middle-range theoretical framework for this new field of research and practice, and identifying the latent inter-relationships triggered by a stakeholder-resource based perspective (Sodhi 2015).
- Presenting new research propositions which emerge from the integrative research framework.

As previously mentioned, in dealing with the complexity of exploring the nexus of GHRM and CE-based business models, we draw on two relevant organizational theories to understand how to build more sustainable organizations. The two pertinent theoretical lenses are stakeholder theory and the resource-based view (Sodhi 2015).

Stakeholder theory (Freeman et al. 2004) is important in the understanding of organizational change with the aim of developing sustainability goals (see Sarkis et al. 2010). This theory denotes HRM as key in both influencing and being influenced by sustainability management in organizations (Res et al., 2018; Sodhi 2015). Stakeholder theory argues that: (a) employees should be motivated towards sustainability engagement (Govindarajulu and Daily 2004; Graves et al. 2013); (b) a GHRM strategy should be deployed to enact this principle (Jackson et al. 2014); and (c) HRM systems should be aligned towards the sustainability objectives of organizations (Jabbour and Santos, 2008). Relevant empirical evidence has confirmed the positive role of the 'human side' of organizations in sustainability initiatives (Brio et al., 2008; Jabbour et al. 2015; Teixeira et al. 2012; Sarkis et al. 2010), an understanding which we look to extend by arguing that there is a crucial part to be played by HRM in unlocking firms' CE capabilities.

The resource-based view (RBV) of the firm (Wernerfelt 1984; Barney 2001) theoretically supports the positive effects of HRM (Wright et al., 1994), while its extension – the natural resource-based view (NRBV) – supports the positive effects of sustainability-related initiatives (Hart 1995; Hart and Dowell, 2011) on firm performance. By taking into account the natural resource based view (NRBV) of the firm, sustainability initiatives – such as circular economy practices – are believed to create unique and long-lasting competitive advantages for organizations (Chan 2005).

We aim to address the literature gap identified by Sodhi (2015) by uniquely blending stakeholder theory and the resource-based view theory to make the case for ending the hitherto bifurcated development of GHRM and organizational initiatives regarding the CE.

Moreover, this study relies on a number of recent research findings on the positive support which HRM provides in achieving organizational-level green sustainability goals (see for example Gholami et al. 2016; Guerci and Pedrini 2014; Renwick et al. 2013; Zibarras and Coan, 2015). These findings suggest that HRM, through training (Li et al. 2011), articulation of green teams (Beard and Rees 2000; Sroufe, 2017) and workforce empowerment (Daily et al. 2012) can advance organizational sustainability. Links to and support for eco-design (Govindarajulu and Daily, 2004), environmental management systems (Jabbour and Santos, 2008) and low-carbon management initiatives (Féernandez et al., 2017) are all organizational sustainability dimensions that can be advanced with HR.

The remainder of this paper begins by providing the conceptual background to GHRM, along with the fundamental aspects of organizational-level CE initiatives. We then propose our conceptualization of the ‘human side’ of the CE, based on an integrative framework. This framework sets the foundation for deriving testable theoretical prepositions for future research on GHRM-CE integration, with implications for firms’ sustainability performance. The final section includes our conclusions, implications arising from this work for theory and practice, and pertinent limitations of the study.

2. Theoretical background

2.1 Green human resource management (GHRM) and firms’ sustainability performance

Previous studies have firmly established the role that HRM can play in assisting the achievement of organizational goals and strategies, as well as the effects which HRM practices

can have on organizational performance (see for example Huselid 1995; Jiang et al. 2012). Human resources have become a central dimension of management (Jackson et al. 2014), and stakeholder theory suggests that human resources constitute the most relevant primary area of interest for any organization: its employees (Murrey 2012). Human resources practices incorporate a number of organizational actors, with employees constituting a central component of organizational development (Ferrary 2009). The resource-based view (Barney 2001) supports human resources as a unique and distinguishable resource which organizations may utilize in building strategic competitive advantage (Kamoche 1996; Wright et al. 1994).

Substantial progress has been made in environmental sustainability and human resources research through the use of the stakeholder and resource-based views as theoretical underpinnings. Environmentally focused sustainable HRM perspectives – here termed GHRM – concern the process of aligning HRM strategy, practices and systems with key organizational sustainability goals, as well as with targets for employee empowerment and organizational culture (Renwick et al. 2013; Renwick et al. 2016). Therefore, GHRM is a crucial factor in establishing desirable organizational sustainability initiatives (Jackson et al. 2014).

Areas included in GHRM research are: developing corporate reactions to climate change (Hoffman 2005); encouraging the development of more environmentally friendly products (Govindarajulu and Daily, 2004); and the possibility of synergy between GHRM workplace practices and organizational environmental goals (Renwick et al. 2013). In this way, HR may be the key to supporting organizations to introduce and sustain environmental management systems (Daily and Huang 2001) and green innovation (El-Kassar & Singh, 2018), as well as supporting the adoption and use of the ISO 14001 standard (Jabbour and Santos, 2008). HR practices have been studied from the perspectives of supporting low carbon management (Jabbour and Jabbour 2014), green training (Jabbour, 2013) and the use of ‘green teams’ (Moxen and Strachan 2017; Sroufe, 2017).

Green HR initiatives are capable of improving employees’ work-life balance (Muster and Schrader 2011) and are vital to improving the adoption of advanced green manufacturing practices (Sarkis et al. 2010). Links between employee motivation for sustainability, eco-innovation, and pro-environmental behaviors have also been found (Ramus & Steger, 2000; Graves et al., 2013). Put differently, company-level green-initiative strategies can also affect human resources management (see Fernández et al. 2018; Hoffman 2005).

Connections have also been made between HR and supply chain sustainability (Nejati et al. 2017; Jabbour and Jabbour, 2016), and although these studies may be limited by their methodological approaches (for example, restricted sample), they may also provide insights into

the role played by human resources in more sustainable supply chains. Addressing the human side of sustainability in supply chains is relevant here, as fundamental aspects of the CE literature also share key principles with sustainable supply chains (see for example, Kirchherr et al. 2017; Koh et al. 2017). The green practice of extending producer responsibility for their products is one example. The literature on environmentally sustainable human resources and sustainable supply chains can be unified by combining theoretical proposals and practical findings (Nejati et al. 2017; Jabbour and Jabbour, 2016). This characteristic of these two topics supports the development of an integrated view of GHRM and the CE; such a view may prove beneficial for making theoretical and practical progress in both areas.

GHRM practices include many dimensions, such as eco-focused recruitment and selection, environmental training, green performance assessment and rewards, developing an environmental organizational culture, green teams and employee empowerment regarding environmental initiatives (Jabbour and Jabbour 2008, 2016; Renwick et al. 2013; Renwick et al. 2016). Key green supply chain practices, such as green supplier selection, green supplier development, reverse environmental logistics and eco-design, each combine strong employee and HR practices (Bai et al. 2016; Muduli et al. 2013; Nejati et al. 2017; Zhu and Sarkis 2004; Zhu et al. 2005). These studies reveal critical human success factors that support recent environmental developments, such low-carbon eco-innovations (Jabbour et al. 2015), exemplifying the way in which green training and employee empowerment are key enablers of such initiatives (Daily et al. 2012). Recent empirical data further supports a positive and significant relationship between GHRM activities and the successful operation of green supply chains (Nejati et al. 2017). Indeed, other studies also argue that the use of more green training, eco-aware recruitment and selection, environmental performance evaluation and eco-focused employee rewards could overcome challenges in implementing green supply chain practices (Jabbour et al. 2017).

Researchers have also suggested that GHRM can positively influence firms' sustainability performance. In this research, sustainability performance is defined using the triple bottom line of firm performance (Elkington, 1997), which is a perspective on business performance capable of encapsulating economic, social and environmental aspects of firm performance. To measure sustainability performance, various proposals of sustainability performance indicators have been made, such as Searcy (2012). Overall, as supported by previous works on GHRM, it is possible to suggest that GHRM practices can enhance firms' sustainability performance in terms of achieving better economic, environmental and social performance (Subramanian et al., 2019). The positive effect of GHRM on firms' sustainability-

related indicators is due to the fact that GHRM can enhance the workforce's green behavior (Pham et al., 2019; Kim et al., 2019). Thus, it is natural to consider GHRM as a part of emerging sustainable operations concepts (Walker et al., 2014), including CE business models (Koh et al., 2017), which will ultimately affect firms' performance.

2.2 Circular Economy (CE) business models for organizations

The CE is a major driver towards building a more sustainable society (UNEP 2006), with implications for societal wellbeing (Geng et al. 2016) and the economy through the development of eco-innovations (de Jesus and Mendonca 2018; Genovese et al. 2017). In macroeconomic terms, by adopting the CE model, European-based economies could enhance their resource productivity by 3%, generate cost savings of €600 billion a year, and add €1.8 trillion in other economic benefits by 2030 (McKinsey 2017). In microeconomic terms, CE business models can signify potential win-win opportunities for organizations (Esposito et al. 2016; Esposito et al. 2017; Jabbour et al. 2017; Tse et al. 2015).

The CE concept has evolved (Winans et al. 2017) from the traditional linear economy (Korhonen et al. 2018; Stahel 2016), which has influenced the design of the majority of existing production systems (Lieder and Rashid 2016). The basic foundational philosophy of the CE is that natural resources are considered to be finite (Ghisellini et al. 2016).

Although there are many definitions of the CE (Kirchherr 2017), it is predominantly understood as using post-consumption products, resources, and packaging to create new value through the exchange of linear flows of energy and materials for closed-loop systems of production and consumption. At the organizational level, principles of circularity have motivated organizations to develop and adopt disruptive technologies and business models 'based on longevity, renewability, reuse, repair, upgrade, refurbishment, servitization, capacity sharing and dematerialization' (Esposito et al. 2017; Moktadir et al., 2018). Consequently, the CE necessitates improved valuation and usage of resources, which in turn requires new and innovative business models to be developed.

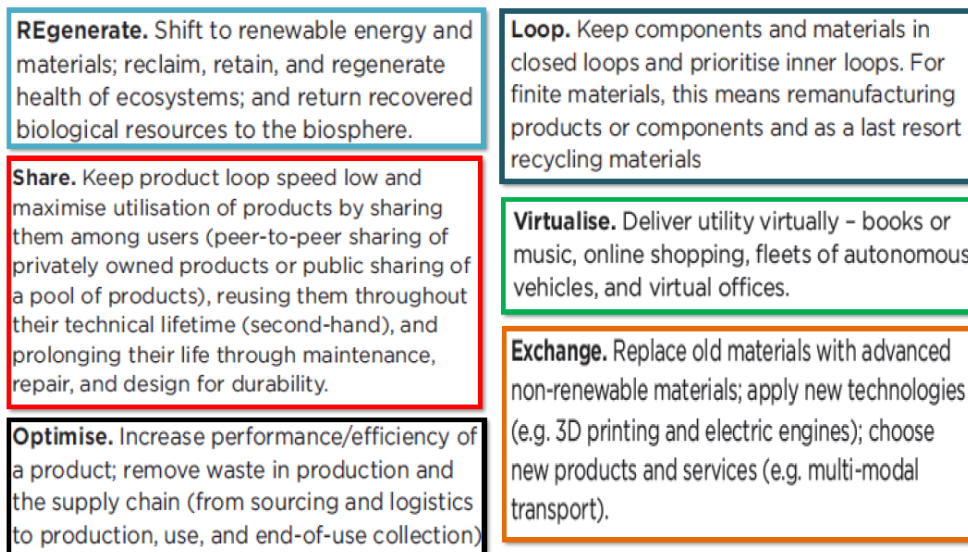
The CE model may also be understood through the synergy of two cycles: the biogeochemical cycle and the technical cycle (Murray et al. 2017). The biogeochemical cycle, also known as the biological cycle, concerns a decrease in the use of natural resources, alongside management of renewable resource flows. On the other hand, the technical cycle has the goal of applying the three 'R's – Reduce, Reuse, and Recycle – to recapture value from waste products by circulating them as novel material resources across supply chains.

Both the biogeochemical and the technical cycles may be implemented in the CE through the adoption of the following principles: (a) carefully controlling the equilibrium of finite stock and renewable resources; (b) making the use of components, products and materials more circular; and (c) reducing unwanted consequences of systems of production and consumption through the implementation of new CE business models (The Ellen MacArthur Foundation 2015).

At the organizational level, the CE can be deployed through the adoption of CE business models, as presented in the ReSOLVE model. The ReSOLVE framework has been developed to guide organizations through their transition towards the CE (The Ellen MacArthur Foundation 2015), providing six CE-based strategies for organizations to implement new business models (see Figure 1; The Ellen MacArthur Foundation 2015).

Figure 1 – CE business models based on the ReSOLVE framework.

Source: The Ellen MacArthur Foundation 2015



Much of the literature tends to focus on macroeconomic issues, such as innovation policy, when considering the difficulties involved in implementing the CE (McKinsey, 2017). However, the key role which GHRM can play within organizations in unlocking CE models has been largely overlooked. This more integrated approach between GHRM and the CE is now being further developed, and results of this exploratory integration can be found below.

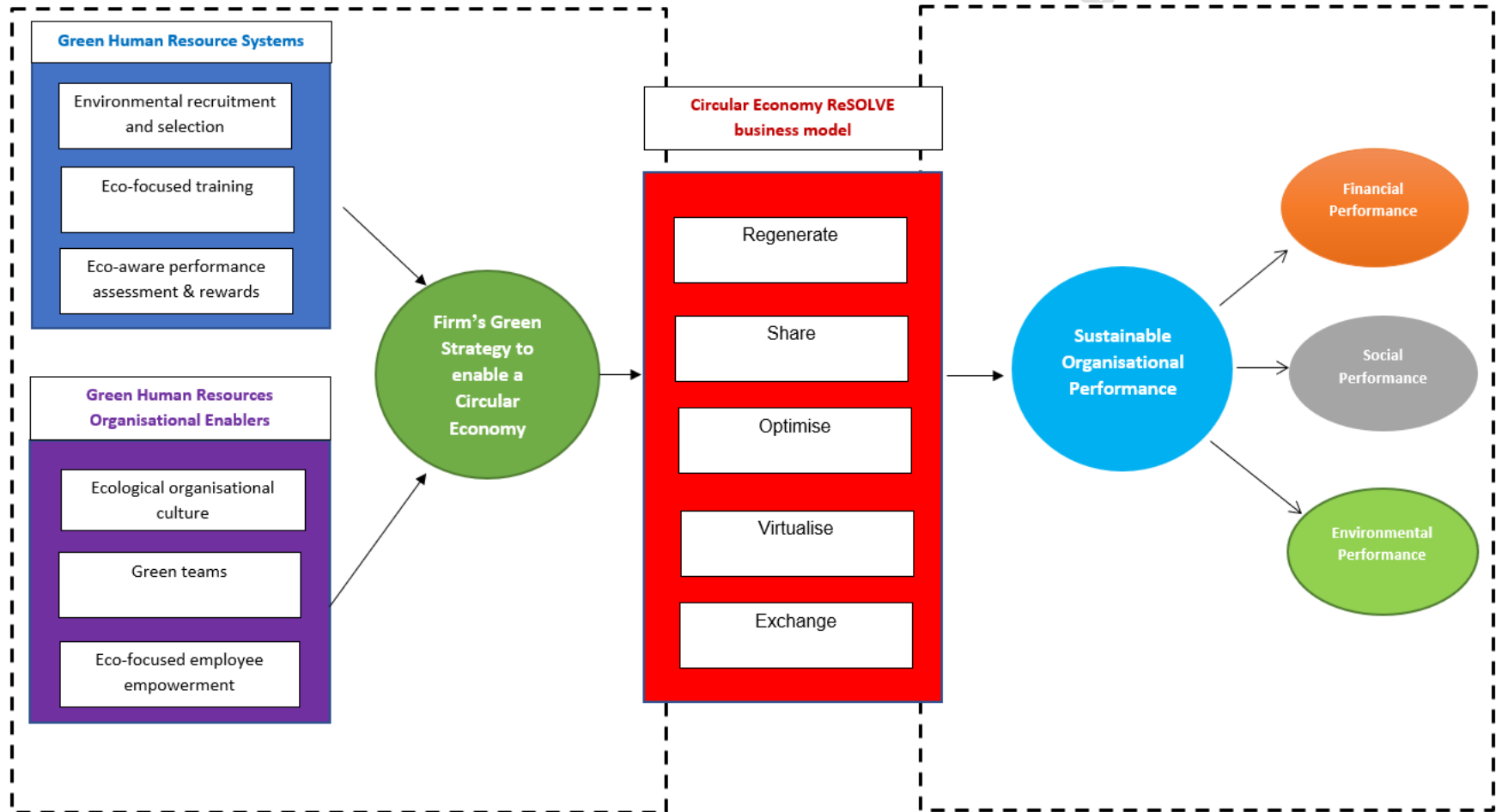
3. Proposal of a research framework integrating GHRM and CE business models

In addressing the issues surrounding the interface between GHRM and the CE, we now propose an integrative framework (see Figure 2). This framework enables us to capture the main relationships between these two emerging topics. In doing so, we expand the definition of GHRM (Jackson et al. 2011) by placing it squarely within the CE context. *We conceptualize GHRM for the CE at the organizational level thus: CE-enabling HRM aligns GHRM practices and dimensions (including recruitment and selection, training, performance assessment, rewards, culture, teamwork, and empowerment) with CE business models. These models represent corporate opportunities to enhance sustainability performance, thus contributing to a more sustainable society.*

The integrative framework encapsulates the human side of CE business models, and offers testable research propositions that draw upon several works which follow a similar development rationale (for instance, Schuler et al. 1993).

This framework is an important theoretical development and can be firmly placed within the middle-range theoretical boundary (Weick 1989). Middle-range theories and their associated frameworks may transition from an intermediary stage towards becoming more robust theories through testing and refinement in the light of empirical evidence (Carter and Rogers 2008). This work may contribute to a wider discussion on the interface of HR-operations management (Boudreau et al. 2003) and the links between HR and sustainability (Jackson et al. 2014). In particular, this work may contribute to the debate on the human side of supply chains (Schorsch et al. 2017).

Figure 2: An integrative framework representing the relationships between GHRM, the CE and sustainable organizational performance.



There is a substantial theoretical background which acts as scaffolding to our proposed integrative framework. Here, we draw upon:

- classic works (such as McGregor 1966) which suggest that the human side of organizations should be a focus of management research;
- the stakeholder-resource based view of the firm, which encapsulates both the differing perspectives of stakeholders (Barney 1991), and the view that organizations can increase their profits by investing in sustainability (Dowell and Hart 2011);
- links between GHRM and green supply chains, which support the consideration of GHRM as a vital element (Jabbour and Jabbour 2015) in the adoption of CE business models by organizations. If the topic of supply chains is relevant to understanding the current debate around the CE (De Angelis, et al., 2018), and if GHRM can affect green supply chains, it is natural to accept that GHRM can have implications for CE.

As such, our integrative framework suggests that the adoption of workplace-based GHRM practices may positively affect the development of a CE strategy within organizations.

Further supporting the middle-range theoretical development process, we have derived a number of research propositions based on our framework and the relevant literature. Formulating research propositions can stimulate further research and refinement of the proposed research framework through further theoretical development and empirical testing (Carter and Rogers 2008).

GHRM has positively influenced the adoption of a wide range of sustainability (Nejati et al. 2017) and corporate social responsibility practices in firms (Rothenberg et al. 2017). Organizational development and change initiatives are important aspects of encouraging organizations to use more sustainable policies and practices. GHRM policies in particular can facilitate transformation to create an environmentally friendly organizational culture (Ramus and Steger, 2000). Consequently, the adoption of GHRM practices may have a positive impact in implementing CE principles. Although the research on the direct effects of GHRM on the CE is in its infancy, Geng et al. (2013) and Geng & Doberstein (2008) have suggested that the provision of training and development schemes can be considered essential to the implementation of the CE at the national level. Thus, our first proposition is as follows:

Proposition 1: The adoption of GHRM can positively stimulate the deployment of CE business models at the firm level.

Human resources strategies and routines can also indirectly affect the connections between CE business models and firms' performance. Evidence has emerged that human resources practices, such as training, can improve the adoption of advanced environmental management and green supply chain practices (Sarkis et al. 2010), which may consequently improve firms' performance. As previously noted, a number of works (Macke and Genari, 2019; Wagner, 2013) suggest a potential positive impact of GHRM on firms' sustainability performance, through the alignment of HRM and proactive environmental management practices (Haddock-Millar et al., 2016).

Given that organizational CE practices can be viewed as related to both internal environmental management and external green supply chain practices, developing these complementary capabilities to enable the actual adoption of CE practices is central to the overall performance of an organization (Collins and Clark 2003; Rothenberg et al., 2017). Along these lines, it has also been found that various personnel-focused constructs are critical to the adoption of broader green supply chain practices, and ultimately to organizational performance (Yu et al. 2017). Hence, we arrive at a second research proposition, exemplifying the need for more nuanced flow relationships between such practices and organizational performance:

Proposition 2: The enactment of workplace-based GHRM practices can indirectly enhance company-level sustainable performance, as a mediator in the use of CE business models.

On the other hand, it is also believed that CE practices can maximize firms' efforts towards sustainability (Tse et al. 2015; Zhu et al., 2010). In this context, CE principles can mediate the already positive relationship between GHRM and firm performance. The CE can have a positive effect on firms' performance because it can promote innovation (Pieroni et al., 2019), better use of resources (Steinmann et al., 2019; Smart et al., 2019) and more efficient operations management (Batista et al., 2018; Govindan and Hasanagic, 2018). This is because proactive environmental attitudes among employees, triggered by GHRM initiatives (Paillé et al., 2014; Pham et al., 2019; Subramanian et al., 2019), can lead to more successful implementation of CE business models, which, in turn, will affect

the relationship between GHRM and firms' sustainability performance (Subramanian et al., 2018). Accordingly, our third proposition is as follows:

Proposition 3: CE business models positively mediate the relationship between organizational GHRM practices and firm-level sustainable performance.

After observing an exemplary case of CE business model implementation, Hopkinson et al. (2018) suggest that CE initiatives should involve human dimensions, such as managerial competencies and the use of capabilities as scaffolds. The human-focused dimensions of firms' operation – such as organizational culture, empowerment, and teamwork – can improve the success of sustainability initiatives, and it is possible to conclude that GHRM can help in the implementation of CE business models. These dimensions have generally been accepted as playing a special and long-term role in sustaining the adoption of green practices (Jabbour and Santos 2008; Graves et al., 2019). Such practices also play complementary and cross-influencing roles, and areas such as green climate (culture) and employee workplace behavior are strongly influenced by other GHRM practices (Dumont, et al. 2017). Broadly, studies have also found a positive link between green teams, green empowerment and firm performance (e.g. Daily et al. 2012). The synergistic development and improvement of green supply chain management principles has also been well developed, with the findings indicating that green employee empowerment (employees having strong environmental values) and green development and training have also had strong links with the adoption of green supply chain management (Nejati et al. 2017). Other mechanisms that may facilitate GHRM in positively affecting CE practices and firm performance are top management commitment, managerial leadership and employee motivation (Graves et al., 2019). Consequently, our next proposition is:

Proposition 4: Human-focused dimensions of firms, such as culture, teamwork, and empowerment, positively affect the adoption of CE business models at the company level.

Although there has been some contention (Christiansen 2017), the literature has been broadly supportive of the argument that 'doing good' helps companies 'do well' from a business perspective (Vardarajan and Kaul 2017). Green management practices, such as the adoption of green supply chain principles (Zhu et al. 2005) and environmental

management systems have shown positive relationships with firms' environmental and organizational performance. Similarly, CE business models are expected to positively influence firms' sustainability performance (The Ellen MacArthur Foundation 2015) due to various innovations in product and process designs to make them more conducive to cost-effective and efficient practices, such as in the ReSOLVE model. Zhu et al. (2010), in a study based on Chinese data, suggest that CE-related practices may be related to firms' sustainability performance. However, the positive effects of the CE on firm performance and on society will only be achieved if certain limitations on the current understanding of the CE are debated (Geissdoerfer et al., 2017; Korhonen et al., 2018). Thus, our last general proposition states:

Proposition 5: CE business models positively influence firm-level sustainable performance initiatives.

To further develop research in this new integrated field, we propose that researchers utilize a variety of methodological approaches, including qualitative and quantitative studies. Future studies may be able to refine and develop these theoretical propositions, moving from a middle-range theory to a more solid theoretical foundation (Carter and Rogers 2008) on the relationship between human resources and CE business models.

4. Conclusion and prospects

4.1 Conclusion

The proposed integrative framework linking GHRM and the CE business models detailed herein represents the first attempt made towards an in-depth consideration of the human side of the CE in organizations today. The state-of-the-art literature on GHRM has developed without a full consideration of the emergent topic of the CE. In parallel, CE business models have emerged as one of the most promising topics in terms of building a more broadly sustainable society. While the literature on the technical dimensions of the CE is relatively well established, its environmentally focused human side has been largely ignored. We can thus conclude that GHRM and CE business models have so far developed in a bifurcated fashion.

In this paper we argue that pursuit of the CE and the adoption of CE business models can only truly be achieved if adequate support from workplace-based GHRM

practices are fully considered and integrated. As such, our thinking takes into account the vital role of GHRM in contemporary organizations to promote firm-level sustainability initiatives, as well as recent studies which advocate that GHRM should support green supply chains (Jabbour and Jabbour 2015; Nejati et al 2017).

In order to capture the complexity of the relationship between GHRM and CE business models and their ultimate impact on firms' sustainable performance, an integrative framework helping to set the foundations for a middle-range theory was proposed (see Figure 2). This framework constitutes a map of potential interactions between GHRM and CE business models, furthering understanding of the CE phenomenon within organizations. This phenomenological perspective allows for the further investigation of a number of research propositions. In making these propositions, the purpose of our integrative framework is to add a new, fresh perspective to debates around the development of CE business models by adding a green, human side to them. We believe that this new perspective will inspire both academics and practitioners to revise, modify and further develop this field, building a stronger theoretical foundation for Green HRM, the CE and supply chain sustainability.

4.2 Implications for theory, practice and policy

Our work has a number of implications for theory. First, it contributes directly to the body of knowledge on human resources management. This work adds an integrated framework and an original conceptualization of the enablement of the CE through HRM. The proposals developed herein also have implications for developing theory to further understand the CE. We highlight that CE business models require clear support from human resources practices and enablers in order to contribute to sustainable organizational performance. We also offer five theoretical propositions to be tested through further research efforts in the field of the 'human side' of CE business models.

For managers and consultants dealing with CE policies and practices, this work adds a structured debate on how to unlock CE business models by carefully considering human aspects that may boost or hamper CE initiatives.

For CE policy makers, sustainability-focused non-governmental bodies and human resource associations, this work highlights the challenges of the discussions and actions which are necessary to address the human aspects of the CE. This means that governments should develop CE plans and targets which also have a clear human component, for example by providing training and building capacities. Human resources

associations may adopt the CE as a key priority in their efforts to contribute to a more sustainable society. Additionally, it has been suggested that CE initiatives could benefit from entering into a dialogue with higher education institutions, such as universities (Mendoza et al., 2019).

4.3 Research limitations and prospects

In this study, we elaborate an overarching theoretical framework and provide a foundation for additional theory building and empirical work by bridging two complementary sets of literature, concerning GHRM and the CE. Our paper has three major limitations, which are primarily related to the theoretical and integrative nature of the proposed study and represent opportunities for further research. First, while we present an integrative theoretical framework, we do not aim to provide an exhaustive or comprehensive model. Therefore, by incorporating other relevant literature, one could develop a more nuanced vision of relevant dimensions, such as specific technological, industrial, and procedural characteristics of both GHRM and the CE at the firm level. In addition, future research could also enrich our framework by expanding the list of variables and investigating more complex interactions between them. A multi-level perspective on the GHRM-CE relationship is suggested for further exploration (Hitt et al., 2007).

Second, for reasons of concision, we limited our considerations to the effects of GHRM on CE business models. Future extensions of this body of knowledge could suggest more complex reverse-causality relationships and examine impacts of CE business models on the development of GHRM practices in an organization. However, the possibilities of expanding the understanding of the GHRM-CE relationship relies on better understanding the limitations of the CE (Korhonen et al., 2018)

Third, empirical micro-level research and case studies could deepen our framework by providing insights into which GHRM practices are oriented towards the CE, and how and why these impact related business models and organizational performance. This research question has strong practical implications and requires empirical investigation that is beyond the scope of our deductive theoretical study.

References

- Bai, C., Dhavale, D., and Sarkis, J. 2016. "Complex investment decisions using rough set and fuzzy means: an example of investment in green supply chains." *European Journal of Operational Research* 248(2): 507-521.
- Barney, J. B. 2001. "Is the resource-based "view" a useful perspective for strategic management research? Yes." *Academy of Management Review*, 26(1): 41-56.
- Batista, L., Gong, Y., Pereira, S., Jia, F., & Bittar, A. (2018). Circular supply chains in emerging economies—a comparative study of packaging recovery ecosystems in China and Brazil. *International Journal of Production Research*, 1-21.
- Beard, C., and Rees, S. 2000. "Green teams and the management of environmental change in a UK county council." *Environmental Management Health* 11 (1): 27–38.
- Bocken, N. M., Olivetti, E. A., Cullen, J. M., Potting, J., and Lifset, R. 2017. "Taking the Circularity to the Next Level: A Special Issue on the Circular Economy." *Journal of Industrial Ecology* in press.
- Boks, C. (2006). The soft side of ecodesign. *Journal of Cleaner Production*, 14(15-16), 1346-1356.
- Boudreau, J., Hopp, W., McClain, J. O., and Thomas, L. J. 2003. "On the interface between operations and human resources management." *Manufacturing & Service Operations Management* 5(3): 179-202.
- Brío, J., Junquera, B., Ordiz, M. 2008. "Human resources in advanced environmental approaches—a case analysis." *International Journal of Production Research* 46(21), 6029-6053.
- Brown, L. D. 1991. "Bridging organizations and sustainable development." *Human Relations* 44(8): 807-831.
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: moving toward new theory. *International journal of physical distribution & logistics management*, 38(5), 360-387.
- Chan, R. Y. 2005. "Does the natural resource based view of the firm apply in an emerging economy? A survey of foreign invested enterprises in China." *Journal of Management Studies* 42(3): 625-672.
- Chen, W. H. (1997). The human side of total quality management in Taiwan: leadership and human resource management. *International Journal of Quality & Reliability Management*, 14(1), 24-45.
- Christiansen, C. O. 2017. The Economic Rationality of "Doing Good to Do Well" and Three Critiques, 1990 to the Present. In *History of Economic Rationalities* (pp. 133-140). Springer, Cham.
- Collins, C. J., and Clark, K. D. 2003. "Strategic human resource practices, top management team social networks, and firm performance: The role of human resource practices in creating organizational competitive advantage." *Academy of Management Journal* 46(6): 740-751.
- Daily, B. F., and Huang, S. 2001. "Achieving sustainability through attention to human resource factors in environmental management." *International Journal of Operations & Production Management* 21: 1539–1552.
- Daily, B. F., Bishop, J. W., and Massoud, J. A. 2012. "The role of training and empowerment in environmental performance: a study of the Mexican maquiladora industry." *International Journal of Operations & Production Management* 32 (5): 631–647.
- Simmons, D.E.; Shadur, A. P. P. (1995) "Integrating TQM and HRM", *Employee Relations* 17(3):75-86
- de Jesus, A., and Mendonça, S. 2018. "Lost in Transition? Drivers and Barriers in the Eco-Innovation Road to the Circular Economy." *Ecological Economics* 145:75-89.
- De Angelis, R., Howard, M., & Miemczyk, J. (2018). Supply chain management and the circular economy: towards the circular supply chain. *Production Planning & Control*, 29(6), 425-437.
- De Leede, J., and Looise, J. K. 2005. "Innovation and HRM: towards an integrated framework." *Creativity and Innovation Management* 14(2): 108-117.
- Despeisse, M., Baumers, M., Brown, P., Charnley, F., Ford, S. J., Garmulewicz, A., and Rowley, J. 2017. "Unlocking value for a circular economy through 3D printing: a research agenda." *Technological Forecasting and Social Change* 115: 75-84.

- Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., Luo, Z., Wamba, S. F., and Roubaud, D. 2017. "Can big data and predictive analytics improve social and environmental sustainability?." *Technological Forecasting and Social Change* in press.
- Dubois, C. L. Z., and Dubois, D. A. 2012. "Strategic HRM as social design for environmental sustainability in organization." *Human Resource Management* 51(3): 799–826.
- Dumont, J., Shen, J., and Deng, X. 2017. "Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values." *Human Resource Management* 56(4): 613-627.
- El-Kassar, A. N., & Singh, S. K. (2018). Green innovation and organizational performance: the influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change*.
- Elkington, J. (1997). *Cannibals with forks: The triple bottom line of twentieth century business*. Capstone: Oxford.
- Esposito, M., Tse, T., and Soufani, K. 2015. "CALL FOR PAPERS CALIFORNIA MANAGEMENT REVIEW (CMR) - Special Section on Circular Economy: Managerial and Policy Implications." Available at: https://cmr.berkeley.edu/documents/paper_calls/cmr_special_section_circular_economy.pdf
- Esposito, M., Tse, T. and Soufani, K. 2016. "How businesses can support a circular economy." *Harvard Business Review*, 1 February 2016.
- Esposito, M., Tse, T., and Soufani, K. 2017. "Is the circular economy a new fast expanding market?." *Thunderbird International Business Review* 59(1): 9-14.
- Ferrary, M. 2009. "A stakeholder's perspective on human resource management." *Journal of Business Ethics* 87(1): 31-43.
- Fischer, A., & Pascucci, S. (2017). Institutional incentives in circular economy transition: The case of material use in the Dutch textile industry. *Journal of cleaner production*, 155, 17-32.
- Freeman, R. E., Wicks, A. C., and Parmar, B. 2004. "Stakeholder theory and the corporate objective revisited." *Organization Science* 15(3): 364-369.
- Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The Circular Economy—A new sustainability paradigm?. *Journal of cleaner production*, 143, 757-768.
- Geng, Y., Sarkis, J., Ulgiati, S., and Zhang, P. 2013. "Measuring China's circular economy." *Science* 339(6127): 1526-1527.
- Geng, Y., Sarkis, J., & Ulgiati, S. (2016). Sustainability, well-being, and the circular economy in China and worldwide. *Science*, 6278(Supplement), 73-76.
- Geng, Y., & Doberstein, B. (2008). Developing the circular economy in China: Challenges and opportunities for achieving 'leapfrog development'. *The International Journal of Sustainable Development & World Ecology*, 15(3), 231-239.
- Genovese, A., Acquaye, A. A., Figueroa, A., and Koh, S. L. 2017. "Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications." *Omega* 66: 344-357.
- Ghisellini, P., Cialani, C., and Ulgiati, S. 2016. "A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems." *Journal of Cleaner Production* 114: 11-32.
- Gholami, H., Rezaei, G., Saman, M. Z. M., Sharif, S., and Zakuan, N. 2016. "State-of-the-art green HRM system: Sustainability in the sports center in Malaysia using a multi-methods approach and opportunities for future research." *Journal of Cleaner Production* 124: 142–163.
- Govindarajulu, N., and Daily, B.F. 2004. "Motivating employees for environmental improvement." *Industrial Management & Data Systems* 104 (4): 364–372.
- Govindan, K., and Hasanagic, M. 2018. "A systematic review on drivers, barriers, and practices towards circular economy: a supply chain perspective." *International Journal of Production Research*, 1-34, in press.
- Graves, L. M., Sarkis, J., & Gold, N. (2019). Employee proenvironmental behavior in Russia: The roles of top management commitment, managerial leadership, and employee motives. *Resources, Conservation and Recycling*, 140, 54-64.

- Graves, L. M., Sarkis, J., and Zhu, Q. 2013. "How transformational leadership and employee motivation combine to predict employee proenvironmental behaviors in China." *Journal of Environmental Psychology* 35:81-91.
- Guerci, M., and Pedrini, M. 2014. "The consensus between Italian HR and sustainability managers on HR management for sustainability-driven change - towards a 'strong' HR management system." *International Journal of Human Resource Management* 25(13): 1787–1814.
- Haddock-Millar, J., Sanyal, C., & Müller-Camen, M. (2016). Green human resource management: a comparative qualitative case study of a United States multinational corporation. *The International Journal of Human Resource Management*, 27(2), 192-211.
- Hart, S. L. 1995. "A natural-resource-based view of the firm." *Academy of Management Review* 20(4): 986-1014.
- Hart, S. L., and Dowell, G. 2011. "Invited editorial: a natural-resource-based view of the firm: fifteen years after." *Journal of Management* 37(5): 1464-1479.
- Hitt, M. A., Beamish, P. W., Jackson, S. E., & Mathieu, J. E. (2007). Building theoretical and empirical bridges across levels: Multilevel research in management. *Academy of Management journal*, 50(6), 1385-1399.
- Hoffman, A. J. (2005). "Climate change strategy: The business logic behind voluntary greenhouse gas reductions." *California Management Review* 47(3): 21-46.
- Hopkinson, P., Zils, M., Hawkins, P., & Roper, S. (2018). Managing a Complex Global Circular Economy Business Model: Opportunities and Challenges. *California Management Review*, 60(3), 71-94.
- Howard, M., Hopkinson, P., & Miemczyk, J. (2018). The regenerative supply chain: a framework for developing circular economy indicators. *International Journal of Production Research*, 1-19.
- Huselid, M. A. 1995. "The impact of human resource management practices on turnover, productivity, and corporate financial performance." *Academy of Management Journal* 38(3):635-672.
- Iacovini, J. (1993). The human side of organization change. *Training & Development*, 47(1), 65-69.
- Jabbour, C. J. C. 2013. "Environmental training in organizations: From a literature review to a framework for future research." *Resources, Conservation and Recycling* 74: 144-155.
- Jabbour, C. J. C., and Jabbour, A. B. L. S. 2016. "Green human resource management and green supply chain management: Linking two emerging agendas." *Journal of Cleaner Production* 112: 1824–1833.
- Jabbour, C. J. C., de Sousa Jabbour, A. B. L., Sarkis, J., and Godinho Filho, M. 2017. "Unlocking the circular economy through new business models based on large-scale data: An integrative framework and research agenda." *Technological Forecasting and Social Change* in press.
- Jabbour, C. J. C., Neto, A. S., Gobbo, J. A., de Souza Ribeiro, M., and de Sousa Jabbour, A. B. L. 2015. "Eco-innovations in more sustainable supply chains for a low-carbon economy: A multiple case study of human critical success factors in Brazilian leading companies." *International Journal of Production Economics* 164: 245-257.
- Jabbour, C. J., Mauricio, A. L., and Jabbour, A. B. L. D. S. 2017. "Critical success factors and green supply chain management proactivity: shedding light on the human aspects of this relationship based on cases from the Brazilian industry." *Production Planning & Control* 28(6-8): 671-683.
- Jabbour, C., and Jabbour, A. 2014. "Low-carbon operations and production: putting training in perspective." *Industrial and Commercial Training* 46(6):327-331.
- Jabbour, C.J.C., and Santos, F.C.A. 2008. "Relationships between human resource dimensions and environmental management in companies: proposal of a model." *Journal of Cleaner Production* 16 (1): 51–58.
- Jackson, S. E., Renwick, D. W. S., Jabbour, C. J. C., and Müller-Camen, M. 2011. "State-of-the-art and future directions for green human resource management: Introduction to the Special Issue." *German Journal of Research in Human Resource Management* 25(2): 99–116.
- Jackson, S.E., Schuler, R. S., and Jiang, K., 2014. "An Aspirational Framework for Strategic Human Resource Management." *The Academy of Management Annals*, Taylor & Francis, UK , 1–89.

- Jiang, K., Lepak, D. P., Hu, J., and Baer, J. C. 2012. "How does human resource management influence organizational outcomes? A Meta-analytic investigation of mediating mechanisms." *Academy of management Journal* 55(6): 1264–1294.
- Kamoche, K. 1996. "Strategic human resource management within a resourceQcapability view of the firm." *Journal of Management Studies* 33(2): 213-233.
- Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management*, 76, 83-93.
- Kirchherr, J., Reike, D., and Hekkert, M. 2017. "Conceptualizing the circular economy: An analysis of 114 definitions." *Resources, Conservation and Recycling* 127:221-232.
- Koh, S. L., Gunasekaran, A., Morris, J., Obayi, R., & Ebrahimi, S. M. (2017). Conceptualizing a circular framework of supply chain resource sustainability. *International Journal of Operations & Production Management*, 37(10), 1520-1540.
- Korhonen, J., Honkasalo, A., and Seppälä, J. 2018. "Circular Economy: The Concept and its Limitations." *Ecological Economics* 143:37-46.
- Li, J., Huang, J., Liu, Z., and Cai, Z. 2011. "The effects of employee training on the relationship between environmental attitude and firms' performance in sustainable development." *International Journal of Human Resource Management* 23(14): 1–14.
- Lieder, M., and Rashid, A. 2016. "Towards circular economy implementation: a comprehensive review in context of manufacturing industry." *Journal of Cleaner Production* 115: 36-51.
- Liu Y, Sarala RM, Cooper C, Xing Y. Human side of collaborative partnerships: A micro-foundational perspective. *Group & Organization Management* 2017, 42(2), 151-162.
- Fernández, Luz, et al. 2017. "The effect of clean development mechanism projects on human resource management practices in Brazil." *International Journal of Operations & Production Management* 37 (10): 1348-1365.
- Macke, J., & Genari, D. (2019). Systematic literature review on sustainable human resource management. *Journal of Cleaner Production*, 208, 806-815.
- Masi, D., Kumar, V., Garza-Reyes, J. A., & Godsell, J. (2018). Towards a more circular economy: exploring the awareness, practices, and barriers from a focal firm perspective. *Production Planning & Control*, 29(6), 539-550.
- McGregor, D. (1966). "The human side of enterprise." *Classics of Organization Theory*.
- McKinsey. 2017. "Mapping the benefits of a circular economy." Accessed on: <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/ourinsights/mapping-the-benefits-of-a-circular-economy>
- Mendoza, J. M. F., Gallego-Schmid, A., & Azapagic, A. (2019). Building a business case for implementation of circular economy in higher education institutions. *Journal of Cleaner Production*.
- Moktadir, M. A., Rahman, T., Rahman, M. H., Ali, S. M., & Paul, S. K. (2018). Drivers to sustainable manufacturing practices and circular economy: A perspective of leather industries in Bangladesh. *Journal of Cleaner Production*, 174, 1366-1380.
- Moxen, J, and Peter S. 2017. eds. *Managing green teams: environmental change in organizations and networks*. Routledge.
- Muduli, K., Govindan, K., Barve, A., Kannan, D., and Geng, Y. 2013. "Role of behavioural factors in green supply chain management implementation in Indian mining industries." *Resources, Conservation and Recycling* 76: 50-60.
- Murray, A., Skene, K., and Haynes, K. 2017. "The circular economy: An interdisciplinary exploration of the concept and application in a global context." *Journal of Business Ethics*, 1-12.
- Muster, V., and Schrader, U. 2011. "Green work-life balance: A new perspective for green HRM." *German Journal of Human Resource Management* 25(2): 140-156.

- Nasir, M. H. A., Genovese, A., Acquaye, A. A., Koh, S. C. L., and Yamoah, F. 2017. "Comparing linear and circular supply chains: A case study from the construction industry." *International Journal of Production Economics* 183: 443-457.
- Nejati, M., Rabiei, S., and Jabbour, C. J. C. 2017. "Envisioning the invisible: understanding the synergy between Green Human Resource Management and Green Supply Chain Management in Manufacturing Firms in Iran in light of the moderating effect of employees' resistance to change." *Journal of Cleaner Production* in press.
- Nobre, G. C., and Tavares, E. 2017. "Scientific literature analysis on big data and internet of things applications on circular economy: a bibliometric study." *Scientometrics* 111(1): 463-492.
- Noya, I., Aldea, X., González-García, S., Gasol, C. M., Moreira, M. T., Amores, M. J., and BoschmonartRives, J. 2017. "Environmental assessment of the entire pork value chain in Catalonia—A strategy to work towards Circular Economy." *Science of the Total Environment* 589: 122-129.
- Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: An employee-level study. *Journal of Business Ethics*, 121(3), 451-466.
- Pham, N. T., Tučková, Z., & Jabbour, C. J. C. (2019). Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behavior in hotels? A mixed-methods study. *Tourism Management*, 72, 386-399.
- Pieroni, M. P., McAloone, T., & Pigosso, D. A. (2019). Business model innovation for circular economy and sustainability: A review of approaches. *Journal of Cleaner Production*.
- Planing, P. 2015. "Business model innovation in a circular economy reasons for non-acceptance of circular business models." *Open Journal of Business Model Innovation* 1:11.
- Ramus, C. A., and Ulrich, S. 2000. "The roles of supervisory support behaviors and environmental policy in employee "Ecoinitiatives" at leading-edge European companies." *Academy of Management Journal* 43 (4): 605-626.
- Renwick, D.W.S., Jabbour, C.J.C., Muller-Camen, M., Redman, T. and Wilkinson, A. 2016. "Introduction: Contemporary developments in Green (environmental) HRM scholarship." *The International Journal of Human Resource Management* 27(2):1-16.
- Renwick, D.W.S., Redman, T., and Maguire, S. 2013. "Green HRM: a review and research agenda." *International Journal of Management Review* 15 (1): 1-14.
- Ren, S., Tang, G., & Jackson, S. E. (2018). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management*, 35(3), 769-803.
- Rothenberg, S., Hull, C. E., and Tang, Z. 2017. "The impact of human resource management on corporate social performance strengths and concerns." *Business & Society* 56(3): 391-418.
- Sarkis, J., Gonzalez-Torre, P., and Adenso-Diaz, B. 2010. "Stakeholder pressure and the adoption of environmental practices: The mediating effect of training." *Journal of Operations Management* 28(2): 163-176.
- Searcy, C. (2012). Corporate sustainability performance measurement systems: A review and research agenda. *Journal of business ethics*, 107(3), 239-253.
- Schroeder, P., Dewick, P., Kusi-Sarpong, S., & Hofstetter, J. S. (2018). Circular economy and power relations in global value chains: Tensions and trade-offs for lower income countries. *Resources, Conservation and Recycling*, 136, 77-78.
- Schorsch, T., Wallenburg, C. M., and Wieland, A. 2017. "The human factor in SCM: Introducing a metatheory of behavioral supply chain management." *International Journal of Physical Distribution & Logistics Management* 47(4): 238-262.
- Schuler, R. S., Dowling, P. J., and De Cieri, H. 1993. "An integrative framework of strategic international human resource management." *Journal of Management* 19(2) 419-459.
- Simmons, D.E.; Shadur, A. P. P. (1995) "Integrating TQM and HRM", *Employee Relations* 17(3):75-86

- Smart, P., Hemel, S., Lettice, F., Adams, R., & Evans, S. (2017). Pre-paradigmatic status of industrial sustainability: a systematic review. *International Journal of Operations & Production Management*, 37(10), 1425-1450.
- Sodhi, M. S. 2015. "Conceptualizing Social Responsibility in Operations via Stakeholder Resource Based View." *Production and Operations Management* 24(9): 1375-1389.
- Song, M., Fisher, R., & Kwoh, Y. (2018). Technological challenges of green innovation and sustainable resource management with large scale data. *Technological Forecasting and Social Change*.
- Sroufe, R. (2017). Integration and organizational change towards sustainability. *Journal of Cleaner Production*, 162, 315-329.
- Stahel, W. R. 2016. "Circular economy: a new relationship with our goods and materials would save resources and energy and create local jobs." *Nature* 531(7595): 435-439.
- Steinmann, Z. J. N., Huijbregts, M. A. J., & Reijnders, L. (2019). How to define the quality of materials in a circular economy?. *Resources, Conservation and Recycling*, 141, 362-363.
- Subramanian, N., Gunasekaran, A., Wu, L., & Shen, T. (2018). Role of traditional Chinese philosophies and new product development under circular economy in private manufacturing enterprise performance. *International Journal of Production Research*, 1-16.
- Subramanian, N., Roscoe, S., & Jabbour, C. J. C. (2019). Green human resource management and the enablers of green organisational culture: enhancing a firm's environmental performance for sustainable development. *Business Strategy and the Environment*.
- Teal, T., & Blanchard, K. (2006). The human side on management. *Software Management*, 16: 305.
- Teixeira, A., Jabbour, C., and Jabbour, A. B. L. S. 2012. "Relationship between green management and environmental training in companies located in Brazil: A theoretical framework and case studies." *International Journal of Production Economics* 140(1): 318–329.
- The Ellen MacArthur Foundation 2015. "Towards a circular economy: business".
- Tortorella, G. L., and Fogliatto, F. S. 2014. "Method for assessing human resources management practices and organizational learning factors in a company under lean manufacturing implementation." *International Journal of Production Research* 52(15): 4623-4645.
- Tse, T., Esposito, M. and Soufani, K. 2015. "How companies can benefit from the circular economy." *California Management Review Blog*, 4 November
- Tse, T., Esposito, M., & Soufani, K. (2016). How businesses can support a circular economy. *Harvard Business Review*. Retrieved April, 30, 2016.
- UNEP. 2006. "Circular Economy: An alternative for economic development." Paris: UNEP DTIE
- Varadarajan, R., and Kaul, R. 2017. "Doing well by doing good innovations: alleviation of social problems in emerging markets through corporate social innovations." *Journal of Business Research in press*.
- Wagner, M. (2013). 'Green' human resource benefits: do they matter as determinants of environmental management system implementation?. *Journal of Business Ethics*, 114(3), 443-456.
- Walker, P. H., Seuring, P. S., Sarkis, P. J., & Klassen, P. R. (2014). Sustainable operations management: recent trends and future directions. *International Journal of Operations & Production Management*, 34(5).
- Wehrmeyer, W. (Ed.) 1996. "Greening people: Human resources and environmental management." Sheffield: Greenleaf.
- Weick, K. E. 1989. "Theory construction as disciplined imagination." *Academy of Management Review* 14(4): 516-531.
- Wernerfelt, B. 1984. "A resource based view of the firm." *Strategic Management Journal* 5(2):171-180.
- Wilkinson, A. (1992). The other side of quality: 'soft' issues and the human resource dimension. *Total Quality Management*, 3(3), 323-330.
- Winans, K., Kendall, A., and Deng, H. 2017. "The history and current applications of the circular economy concept." *Renewable and Sustainable Energy Reviews* 68: 825-833.

- Wright, P. and McMahan, G. 1992. "Theoretical perspectives for strategic human resource management." *Journal of Management* 18(2): 295-320.
- Wright, P. M., McMahan, G. C., and McWilliams, A. 1994. "Human resources and sustained competitive advantage: a resource-based perspective." *International Journal of Human Resource Management* 5(2): 301-326.
- Yu, W., Chavez, R., and Feng, M. 2017. "Green supply management and performance: a resource-based view." *Production Planning & Control* 28(6-8): 659-670.
- Zhu, Q., and Sarkis, J. 2004. "Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises." *Journal of Operations Management* 22(3): 265-289.
- Zhu, Q., Sarkis, J., and Geng, Y. 2005. "Green supply chain management in China: pressures, practices and performance." *International Journal of Operations & Production Management* 25(5): 449-468.
- Zhu, Q., Geng, Y., & Lai, K. H. (2010). Circular economy practices among Chinese manufacturers varying in environmental-oriented supply chain cooperation and the performance implications. *Journal of Environmental Management*, 91(6), 1324-1331.
- Zibarras, L. D., and Coan, P. 2015. "HRM practices used to promote pro-environmental behavior: A UK survey." *International Journal of Human Resource Management* 26(16): 2121-2142.
- Zoogah, D. B. 2018. "High performance organizing, environmental management, and organizational performance: An evolutionary economics perspective." *Human Resource Management in press*.

Highlights

Circular economy requires support from green human resources.

We use stakeholders' theory and resource based view to discuss this topic.

We add a discussion on the "human side" circular economy.

A framework for green human resource management and circular economy is proposed.

The framework suggests a number of original research propositions for future investigation.

ACCEPTED MANUSCRIPT