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

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ABSTRACT

This study investigates the linkage between green human resource management and green supply chain management, in light of the moderating effect of employees' resistance to change. Based on a sample of 161 firms in manufacturing industries in Iran, data were analyzed using partial least squares structural equation modeling (PLS-SEM). Research results suggest: (1) the significant and positive impact of GHRM on GSCM, confirming the general call for integration between HRM and green management; (2) "Green Development and Training", "Green Employee Empowerment", and "Green Pay and Reward" have the most positive influence on GSCM, and these practices of GHRM should receive attention from managers; (3) "Resistance to Change" was found to have a moderating effect on the link between GHRM (particularly green recruitment and selection) and GSCM, because it tends to hamper the first step towards building a sustainable corporate culture, which is the recruitment and selection of new employees. This work can be considered as the first empirical effort towards a better understanding of the GHRM-GSCM link in Iran, adding value to the already existing contributions. The managerial and academic implications of these findings are discussed.

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1. Introduction

There has been an exerting pressure on organizations to adopt responsible practices across all layers of their supply chain (Mathiyazhagan et al., 2013) in order to build up excellence in sustainable management (Dubey et al., 2017). This new business atmosphere aims to reduce environmental impacts towards a low carbon economy and has substantial influences on how companies manage their supply chain (Chen and Chen, 2017; Luo et al., 2017). In search for low carbon and more sustainable supply chains, organizations around the world have adopted a variety of green practices and concepts in an emerging topic called low carbon operations and supply chain. To this end, green supply chain management (GSCM) has emerged as a cutting-edge approach to

balance the organizational economic, social, and environmental requirements (Wu and Chang, 2015). GSCM encompasses green purchasing and procurement, green manufacturing and materials management, green packaging, green distribution and marketing, and reverse logistics (Gandhi et al., 2015; Jayant and Azhar, 2014). It can be induced by demand from the market and community groups as well as the need for full compliance with more stringent environmental regulations (Testa and Iraldo, 2010).

Green supply chain management allows an organization to achieve its economic goals, reduce environmental risks, minimize its adverse environmental impacts, and improve the ecological efficiency of the organization and its associates throughout the supply chain (Zhu et al., 2008). It aims to minimize or eliminate wastages comprising hazardous chemical, emissions, energy and solid waste along the supply chain (T. A. Chin et al., 2015), and to mitigate climate change (Luo et al., 2017) and pave the way towards sustainable manufacturing. To summarize, there are several works that have proved the positive impacts of GSCM on the performance

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of firms (Laari et al., 2016; Li et al., 2016; Mitra and Datta, 2014; Tachizawa et al., 2015; Vijayvargy and Agarwal, 2014).

Successful implementation of green supply chain and environmental management depends on behavioral aspects (Graves et al., 2013; Teixeira et al., 2012; Unnikrishnan and Hegde, 2007; Wagner, 2013), named as "the soft dimension" of GSCM (Dubey et al., 2017). Furthermore, according to the resource-based theory (Hart and Dowell, 2011), the alignment between human resource management and environmental management can help firms to overcome barriers to adopting collaboration with consumers and green purchasing (Teixeira et al., 2016). For example, the effective implementation of environmental management system can only be achieved if the right person with the right skills and competencies is hired for the right job (Ashraf et al., 2015). Because of this, scholars around the world have defended that sustainability is part of the HRM evolution and future (Jackson et al., 2014; Renwick et al., 2016). Green HRM equips organizations with environmentally conscious, committed and competent employees which can help the organization to minimize its carbon footprints through the efficient and effective use of existing resources including telecommunication tools, less printing of papers, job sharing, and video conferencing (Ashraf et al., 2015).

Green HRM is essential for the effective greening of organizations (Aragón-Correa et al., 2013; Cantor et al., 2012). Therefore, GHRM and GSCM complement each other and must be studied in tandem. However, to the date, the integration between GHRM and GSCM (Dubey et al., 2017; Jabbour and de Sousa Jabbour, 2016) has been more mentioned as a research gap than a well-understood topic.

Despite recent studies on green HRM (Dumont et al., In Press; Guerci, Longoni and Luzzini, 2016; Haddock-Millar et al., 2016; O'Donohue and Torugsa, 2016; Pinzone et al., 2016), not only the volume of scholarly work focusing on GHRM remains small, but also there are still persistent research gaps in the literature (Jackson et al., 2011). One of the most substantial gaps regards to: *Does green human resource management influence the implementation of green supply chain management? Is this relationship moderated by employees' resistance to change?* Consequently, the first objective of this research is to investigate the linkage between green human resource management and green supply chain management. Despite earlier research on integration of human resource management and supply chain management (e.g., Ellinger and Ellinger, 2013; Lengnick-Hall et al., 2013), the integration of the 'green version' of these concepts is still under-researched. The second objective is to test the moderating effect of employees' resistance to change on the relationship between GHRM and GSCM. Resistance to change has been regarded as a key barrier to green supply chain management (Grant, 1996; Jayant and Azhar, 2014). Therefore, this study proposes that the relationship between GHRM and GSCM is stronger when resistance to change is weaker.

The research propositions developed in the current study were empirically tested using data obtained from 161 manufacturing firms in Iran, and analyzed through partial least squares structural equation modelling (PLS-SEM). So far, the state-of-the-art literature on the integration between GHRM and GSCM is either conceptual/theoretical (Jabbour and de Sousa Jabbour, 2016) or based on evidence from mature and well-developed economies, such as Italy (Longoni et al., In Press). As a transitional economy, Iran has a high development potential and is regarded as a member of the *Next Eleven* (Lynn, 2014). The country has made considerable developments over the years and lifting of the stringent economic sanctions from the country has made its economic prospects even brighter.

Iran is regarded as one of the major contributors to the global greenhouse gas emissions. This is mainly attributed to excessive waste and outdated manufacturing facilities which leads to inefficient consumption of energy and natural resources. Iran has been part of major environmental agreements over the past decades, which includes Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Marine Dumping, Ozone Layer Protection, and the Paris Agreement. Iran's more relevant environmental impacts relate to industrial activity and the use of manufactured goods. Air pollution has been a major concern, especially in highly-urbanized areas, as a consequence of vehicle emissions, refinery operations, and industrial effluents. Iran tends to face as much environmental challenges as other emerging economies face. As such, Iran plays a vital role in the regional and global economy, and has environmental challenges which are typically faced by emerging economies. On the other hand, the link between GHRM and GSCM has not been studied by taking into account the Iranian context, so investigating it can offer valuable and innovative insights to both researchers and practitioners.

Consequently, the uniqueness of this work can be described as:

- The link between GHRM and GSCM has been proposed almost exclusively in conceptual terms. This work presents empirical evidence on this;
- The link between GHRM and GSCM has not been addressed by considering "resistance to change" as a moderator. This work is the first to explore this complex moderation;
- Empirical evidence from Iranian firms is a major gap in the literature, either in terms of knowledge on GHRM, or on GSCM. This research adds original evidence from Iran to the literature both on GHRM and GSCM.

The manuscript is organized as follows. After this Introduction (Section 1), the theoretical framework and the research hypotheses are presented (Section 2), followed by the research methodology (Section 3). Research results (Section 4) are analyzed and discussed (Section 5) before presenting the final remarks of this work (Section 6).

2. Theoretical framework and hypotheses development

Green supply chain management is an emerging widely-diffused perspective among companies that are aiming to enhance their environmental performance (Testa and Iraldo, 2010). It is becoming increasingly important for organizations with heightened global awareness in environmental impacts (Coskun et al., 2016) as it minimizes their overall environmental footprint (Yu et al., 2014). GSCM which has roots both in environmental management and supply chain management literature, can be defined as the integration of environmental thinking into supply chain management (Srivastava, 2007). It comprises a set of environmental practices throughout the product value chain (Zhu et al., 2008), promotes environmental innovation (Rao and Holt, 2005), and plays a substantial role for firms' environmental and economic performance (Pishvaee and Razmi, 2012).

Implementation of green supply chain management through specific manufacturing practices aimed at resource use reduction and waste minimization can lead to lower cost of materials purchase and energy consumption. This has positive impact on firms' financial performance accrued from cost reduction, market share growth and profit increase (Mathiyazhagan et al., 2013; Mutingi et al., 2014).

While there is an overall perception that GSCM paves the way for a more-advanced sustainable performance of organizations, its implementation is still a challenge due to several obstacles such as implementation cost (Abbasnejad et al., 2015; Jayant and Azhar,