Human Resource Factors and Environmental Performance of Selected ISO 14001 Certified Manufacturing Firms in Seethawaka Export Processing Zone in Sri Lanka

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Abstract
Recent days, organizations use human resource management (HRM) practices to accelerate the environmental performance of organizations. Hence, there are lacunas in empirical studies undertaken in Sri Lankan context regarding the relationship between HR factors and environmental performance of organizations. This study was conducted in order to fulfil this empirical knowledge gap. Hence, the objective of this study is to examine the relationship between HR factors and environmental performance of organizations. In order to achieve the study objective, primary data were collected from 165 employees of selected manufacturing organizations in Seethawaka Export Processing Zone in Sri Lanka and the structured questionnaire was administered to collect the data. The data were analyzed by using univariate and bivariate analyses. The findings of the study revealed that HR factors have a positive and significant relationship with environmental performance of organizations in overall. The findings of this study are useful in further enlarging and enriching applications of these concepts in practice.

Key Words: Environmental Performance, Green HRM, Manufacturing Firms, Sri Lanka
Introduction
The present world is confronting with grave environmental problems such as climate change, global warming, devastation of bio diversity, ozone depletion, droughts, floods, tsunami, water scarcity, rising sea level and many more as the consequences of poor environmental concern of the people as well as industries. These consequences of grave environmental problems threaten the sustainable living on this planet, which calls for immediate and collective responses from both developed and developing countries. Thus, individuals and industries are requested to act in an environmental responsible manner in order to mitigate the negative environmental effects and enhance the positive environmental effects in order to ensure the safest life. In order to respond to this issue, organizations and individuals strive to act in an environmental responsible manner to prove their environmental concern.

According to the Central Bank Report of Sri Lanka (2018), Sri Lankan pollution index was recorded as 58.62% which is comparatively higher than previous years. Hence, Sri Lankan government continued its efforts to strengthen the institutional framework for the preservation of the environment in order to maintain a balance between the environment and economic growth to achieve sustainable development (Central Bank Report, 2018). In this sense, Sri Lankan organizations are paying more attention on act as the environmentally and socially responsible entities nowadays than before.

HRM has proved its value in a challenging, diverse world as a pillar in the broad field of management and contributes to the success of the organizations. As employees are considered as a major type of stakeholders in determining the environmental excellence of organizations, there is a highly felt need for HRM to ensure environmental sustainability. Hence, contemporary organizations are increasingly attempting to do the adaptation of the new branch of HRM called green human resource management (green HRM) which contributes to transform normal employees into the green employees to enhance the environmental performance of the organization (Opatha, 2013; Opatha, and Arulrajah, 2014; Opatha, 2015). Green HRM practices are aimed at ensuring the availability of highly productive, motivated and contented team of employees who could contribute towards the achievement of superior environmental performance of organizations. Based on the above arguments, it is possible to conclude that HR factors play a significant role in determining the environmental performance of organizations.

In this context, recently number of environmental scholars (e.g., Luu, 2019; Mousa and Othman, 2020; Amrutha and Geetha, 2019; Islam, Jantan, Yusoff, Chong, and Hossain, 2020; Luu, 2020; Joshi and Dhar, 2020; Pham, Jabbour, Vo-Thanh, Huynh, and Santos, 2020; Ababneh, 2021) discussed the importance of HR factors in achieving the environmental performance of organizations. However, most of the studies were carried out in the perspective of developed countries. A very little amount of studies (e.g., Opatha and Arulrajah, 2014; Arulrajah, Opatha, and Nawaratne, 2015; Arulrajah and Opatha, 2016; Arulrajah, Opatha, and Nawaratne, 2016) have been done in Sri Lankan context. Most of the Sri Lankan studies are review and conceptual papers. A very few empirical research has been conducted (e.g., Opatha and Kottawatta, 2020a) regarding Green HRM in Sri Lanka. Thus, from the researchers’ point of view there is an empirical and methodological gap.
observed regarding the relationship between HR factors and environmental performance of organizations in Sri Lankan context.

The manufacturing sector registered a marginal growth in 2018. As per the index of industrial pollution (IIP), the overall manufacturing sector’s pollution level increased by 0.8 percent in 2018 (Central Bank Report of Sri Lanka, 2018). Hence, Sri Lankan manufacturing organizations were increasingly required to adapt the green manufacturing practices to serve the natural environment. Hence, manufacturing organizations require the green employees to successfully implement their green manufacturing practices. International Organization for Standardization (ISO) 14001 is an internationally agreed standard that sets out the requirements for an environmental management system (EMS). Thus, manufacturing organizations strive to gain this award to ensure the legal compliance and competitive advantage. Thus, considering the above reasons this study was undertaken in ISO 14001 manufacturing companies. This study aims to examine the relationship between HR factors and environmental performance of selected ISO 14001 certified manufacturing firms in Seethawaka Export Processing Zone in Sri Lanka.

This study is worthwhile as it has both theoretical significance as well as empirical significance. From the theoretical perspective the results and findings are expected to contribute to green HRM literature in Sri Lankan context. From the practical perspective, the researchers believe that the results of this study will help to understand the importance of HR factors for the manufacturing firms to ensure the environmental sustainability. Finally, overall findings of the study will be useful for organizations which are practicing greening. It also provides useful reference for future research in these topics in Sri Lanka.

Review of Literature

This section of the paper presents the review of literature. Refer to Exhibit 1 that gives the meanings of the concepts used for this study.

Exhibit 1. Meanings of the Concepts

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Training</td>
<td>Green training is defined as the “systematic process to improve the environmental knowledge, skills and attitudes of employees in order to achieve the environmental goals of the organization” (Opatha, 2009; Thevanes and Arulrajah, 2016).</td>
</tr>
<tr>
<td>Green Performance Management</td>
<td>Green performance evaluation is defined as “a systematic process of identifying, measuring, influencing and developing green job performance of the employees in the organisation in relation to the set norms and standards (green-related criteria) for a particular period of time in order to achieve various purposes” (Opatha, 2009; Opatha, 2013; Opatha and Arulrajah, 2014).</td>
</tr>
</tbody>
</table>
Green performance management refers to “a system of evaluating activities of employees in the process of environmental management” (Jabbar and Abid, 2014).

Green Rewarding

Green rewarding refers to “a system of monetary and non-monetary workplace rewards for those who contribute to the firm’s environmental management goals” (Jabbour, Santos, and Nagano, 2010).

Management Commitment

Management commitment is defined as the “respondent’s perception of top management’s environmental commitment to support for environmental initiatives of organization” (Banerjee, Iyer, and Kashyap, 2003).

Environmental Performance

Environmental performance was defined as a “firm’s effectiveness in meeting and exceeding society’s expectations in the concern over the natural environment” (Judge and Douglas, 1998).

Relationship between Green Training and Environmental Performance

Green training is considered as the one of the critical factors to ensure the success of environmental management of organization (Jabbour and Santos, 2008). Hence, organizations are in a necessity to provide the green training to all levels of employees. Green training is highly recommended for the employees to create the environmental awareness in the initial process for implementing the environmental initiatives and practices (Perron, Cote, and Duffy, 2006). Green training plays a key role by developing employees’ green competencies and attitudes to ensure their active participation in the environmental initiatives of organizations (Thevanes and Arulrajah, 2016). Further, Thevanes and Arulrajah (2020) stated that green training activities make a constructive and cost-effective contribution to foster the environmental behaviours of employees to successfully confront the environmental challenges of the organizations. In addition, green training is also treated as a motivation factor to enhance the employees’ green performance which leads to enrich the overall environmental performance of an organization. Compared with traditional training, green training can not only improve employees’ productivity in their current jobs but also enhance employees’ responsibility towards product lifecycles by considering environmental influences (Cantor, Morrow, and Montabon, 2012).

An empirical study conducted by Opatha and Kottawatta (2020b) in Sri Lankan context, also confirmed that employee feelings toward environmental protection and development lead to present the behaviors of preservationist, conservationist, non-polluter and maker. Through environmental or green training organizations can influence employee feelings positively towards environmental protection and that may lead to improve environmental performance of the organization. Further, Joshi and Dhar (2020) revealed that green training influences the organizations’ green creativity both directly and indirectly which is highly fruitful in achieving the superior environmental performance. Moreover, ISO 14001 environmental management standards also mandated the environmental training to the employees. Thus, contemporary organizations take more efforts to manage the environmental issues by using training and education programmes to create and retain environmental performance culture within the organizations.
(Renwick, Redman, and Maguire, 2013) which paves the way to enrich the employees’ accountability and responsibility to achieve their environmental goals. According to the above literature, this study establishes that green training has a positive relationship with environmental performance of the organization as the first hypothesis of this study:

**Hypothesis 1:** There is a positive relationship between green training and environmental performance of the organization.

### Relationship between Green Performance Management and Environmental Performance

Measuring the employees’ green performance is a critical part of green HRM which plays an important role in developing the green performance of employees (Arulrajah et al., 2015, Opatha, 2019). Green performance management involves with assessing employees’ green performance and delivering feedback on their green performance (Jabbour and Santos, 2008; Zibaras and Coan, 2015). Thus, green performance management can be considered as the foundation to create a green culture that will drive the organization towards environmental excellence. Organizations are increasingly required to focus more on green performance appraisal due to the reason, this practice provides the strategy that assesses employee’s job performance based on green-related standards and consists of an unconnected element for progress on greening in the performance feedback talk (Jabbour, Santos, and Nagano, 2010). Customizing performance management system to acknowledge employees’ green behaviour, will positively enhance their perception of task meaningfulness, and motivate them to produce extra discretionary effort and display positive attitudes and commitment while handling environmentally related issues (Grobelna, 2019). Further, green performance management system may boost employees’ environmental understanding of their environmental targets and responsibilities (Pham et al., 2020). According to Renwick, Jabbour, Muller-Camen, Redman, and Wilkinson (2015), communication of green schemes to all levels of employees, set green targets, goals and responsibilities for employees and include the green performance indicators for employees and etc. are considered as the powerful green performance management practices to accelerate the green performance of employees. According to the above literature, this study establishes that green performance management has a positive relationship with environmental performance of the organization as the second hypothesis of this study:

**Hypothesis 2:** There is a positive relationship between green performance management and environmental performance of the organization.

### Relationship between Green Rewarding and Environmental Performance of the Organization

Green rewarding can be considered as an effective practice to achieve the organization’s environmental goals through appreciating the employees’ green concern and effort in the form of financial and non-financial rewards. Green rewarding motivates and stimulates the employees to fulfill their environmental responsibilities with high level of environmental commitment and involvement (Govindarajulu and Daily, 2004). The use of environmental
rewards and recognition is seen to have a significant impact on employee willingness to generate eco-initiatives (Renwick et al., 2013).

Further, researchers suggested that organization can incorporate certain green rewarding practices such as green benefits (e.g., providing green cards and green product), monthly managerial bonuses for employees for good environmental management, executive compensation for managers for their green commitment, recognition based rewards in environmental management for employees (e.g., public recognition, awards, paid vacations) which are highly fruitful in motivating employees to actively participate in the environmental initiatives of organizations.

The individuals’ perception of equality and satisfaction is influenced by their evaluation of the interchange between employee green performance and the firm’s intrinsic and extrinsic rewards (Pinzone, Guerci, Lettieri, and Redman, 2016). However, it is important to maintain the differences in pay among employees by representing differences in green performance levels. It has been argued that employees may feel more motivated by non-financial rewards (e.g., recognition and praise) than the financial benefits (Jabbour, 2011). Hence, organizations need to pay more attention on incorporating more non-financial green awards to ensure the employees’ satisfaction which paves the way upscale the overall environmental performance of the organization. Therefore, this study proposes the third hypothesis:

Hypothesis 3: There is a positive relationship between green rewarding and environmental performance of the organization.

Relationship between Management Commitment and Environmental Performance of the Organization
Several studies emphasized the importance of management commitment in achieving superior environmental performance (Zibarras and Coan, 2015; Robertson and Barling, 2013; Ronnenberg, Graham, and Mahmoodi 2011). In general, managers are playing a major role in determining the success or failure of organization. In this sense, top management is a strong internal political force that can drive the environmental sustainability of organization (Banerjee, Iyer, and Kashyap, 2003). Top management is responsible and accountable for creating and retaining the green culture within the organization (Govindarajulu and Daily, 2004). Top management commitment could help environmental management system implementation, because it allows commitment of resources such as time, money and staff (Tinsley, 2002). In addition, top management has the necessity to adapt the environmental management system in order to satisfy the stakeholders of the organization. Robertson and Barling (2013) stated that top managers’ personal pro-environmental behaviours directly influenced on employees’ pro-environmental behaviour. Further, top managers have the power to transmit the environmental values to the employees which pave the way to enhance the environmental excellence of organizations (Ones and Dilchert, 2013). According to the above literature, this study establishes that management commitment has a relationship with environmental performance of organization.
Hypothesis 4: There is a positive relationship between management commitment and environmental performance of the organization.

Hence, based on the literature review, this paper proposes a conceptual model that shows the relationship between HR factors and environmental performance of organization (see Figure 1).

Figure 1. Conceptual Framework

(Source: Developed for this study purpose)

Method

Study Design
This study was based on the scientific approach as it focuses on examining the effect of four independent variables on one dependent variable. Purpose of the study was analytical and predictive as it tested hypotheses. Extent of researcher interference was minimal because studying these variables was done when they normally occurred without manipulating or controlling any variable. Study setting was non-contrived as the study was carried out in the natural environment without creating an artificial environment. Research strategy was survey as it involved collecting primary data through the use of a questionnaire. Unit of analysis was individual: employees of selected manufacturing firms in Seethawaka Export Processing Zone in Sri Lanka. Time horizon was cross-sectional as data collection was done at one point in time to answer the research questions.

Data Collection
The empirical data for the current study were collected from selected ISO 14001 certified manufacturing firms in Seethawaka Export Processing Zone in Sri Lanka. The primary data were collected through a questionnaire from 165 respondents (35 managers and 130 employees) at selected manufacturing firms. This study depends on primary data. The data of this study were collected from the respondents through structured questionnaire. The
A questionnaire contained questions relating to HR factors and environmental performance of the organization.

**Instrument**

Variables namely green training, green performance management, green rewarding and management commitment (HR factors) were measured with twenty-seven items from Kaur (2011) and Tang, Chen, Jiang, Paillé, and Jia (2018). Environmental performance of organization was measured with six statements derived from Kaur (2011). Accordingly, reliability tests reveal Cronbach’s alpha of 0.79 and 0.80 for the data of the variables HR factors and perceived environmental performance respectively. All scales have achieved acceptable coefficient alphas of at least 0.70 (Koonce and Kelly, 2014).

**Data Analysis Techniques**

Statistical Package for Social Sciences (SPSS) was used to analyze the primary data collected from the respondents. Correlation analysis was conducted to examine the relationship between the variables (Jahangir and Begum, 2008). According to Sekaran (2000), the correlation coefficient value \( r \) ranging from 0.10 to 0.29 is considered weak, from 0.30 to 0.49 is considered medium and from 0.50 to 1.0 is considered strong.

**Findings of the Study**

**Profile of the Respondents**

The gender distribution of the respondents is 43.6% males and 56.4% females. The results revealed that the respondents are young, with 67.3 percent between 25 and 35 years. The results also revealed that 83.6 % respondents have the work experience below 5 years, 15.8 % of the respondents have work experience between 5 and 10 years and 0.6 % of the respondents have the experience above 10 years. Among the respondents, 21.2 % were managers and 78.8% were employees.

**Descriptive Analysis of the Variables**

Descriptive statistics are used to describe the basic feature of the data in a study. The descriptive statistics in the current study are displayed in Table 1.

**Table 1. Descriptive Statistics of the Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Training</td>
<td>4.034</td>
<td>0.651</td>
</tr>
<tr>
<td>Green Performance Management</td>
<td>4.185</td>
<td>0.654</td>
</tr>
<tr>
<td>Green rewarding</td>
<td>4.081</td>
<td>0.597</td>
</tr>
<tr>
<td>Management Commitment</td>
<td>3.840</td>
<td>0.510</td>
</tr>
<tr>
<td>Environmental Performance</td>
<td>4.086</td>
<td>0.568</td>
</tr>
</tbody>
</table>

(Source: Survey Data)

Descriptive statistics of the study revealed that, there were high level of HR factors namely green training, green performance management, green rewarding implemented in the
selected manufacturing firms and managers have the high level of commitment to protect the natural environment. Further, results revealed that there was a high level of environmental performance recorded in the surveyed manufacturing firms.

**Relationship between Human Resource Factors and Environmental Performance**

The correlation analysis is a statistical method that is used to discover if there is a relationship between two variables or datasets, and how strong that relationship may be. The findings of the correlation analysis in the current study are displayed in Table 2.

| Table 2. Relationship between Human Resource Factors and Environmental Performance |
|---------------------------------|-------------------------------------------------|-----------------------------|
|                                  | Environmental Performance                        |                            |
| Green Training                   | Pearson Correlation                             | 0.633                       |
|                                 | Sig. (2-tailed)                                  | 0.000                       |
| Green Performance Management    | Pearson Correlation                             | 0.685                       |
|                                 | Sig. (2-tailed)                                  | 0.000                       |
| Green Rewarding                 | Pearson Correlation                             | 0.711                       |
|                                 | Sig. (2-tailed)                                  | 0.000                       |
| Management Commitment           | Pearson Correlation                             | 0.729                       |
|                                 | Sig. (2-tailed)                                  | 0.000                       |

**Correlation is significant at the 0.01 level (2-tailed)**

(Source: Survey Data)

Correlation analysis illustrates that green training has a strong positive correlation with environmental performance of organization. Correlation analysis also shows that there is a strong positive correlation between green performance management and environmental performance of organization. Further, correlation analysis indicated that green rewarding has strong positive correlation with environmental performance of organization. In addition, correlation analysis revealed that there is a strong positive correlation between management commitment and environmental performance of organization. As all the relationships of variables namely green training and environmental performance (H1), green performance management and environmental performance (H2), green rewarding and environmental performance (H3), and green training and environmental performance (H4), reveal as positive (Table 2), the results confirm that H1, H2, H3 and H4 should be accepted. This result indicates that to reach environmental performance, the manufacturing organizations can use HR factors such as green training, green performance management, green rewarding and management commitment to enhance the employees’ green competencies and motivate their employees.

**Discussion and Conclusion**

This study aims to examine the relationship between HR factors and environmental performance of the organization. Our results provide substantial support for the proposed model. The empirical findings revealed that HR factors such as green training, green performance management, and green reward management have the significant and direct influence on the environmental performance of the organization. Organization can apply
these HR factors in order to enrich the green performance of employees via developing their green abilities, motivation to do work and involvement in available opportunities leading to enhance the environmental performance of organization, which ultimately contributes to the overall environmental sustainability of organization. Green training contributes to enhance the employees’ green competencies and attitudes which are required to perform their environmental tasks, duties and responsibilities of the job.

Further, green performance management is considered as one of the effective green HRM practices to achieve the environmental performance of organizations which can be accomplished via assigning environmental targets and responsibilities to each and every employee as well as providing the feedback based on their green performance achievements. In addition to these, green reward management is highly fruitful in motivating the employees by providing monetary and non-monetary green benefits for individual contribution for the organizational environmental achievement. In addition to these HR factors, management commitment can also be treated as the deacon to reach the environmental sustainability, as well as managers are the exemplary roles to the employees to guide them through their green attitudes and behaviors.

In overall findings of the study revealed that HR factors namely green training, green performance management, green reward management and management commitment have the ability to contribute to the environmental performance of organization. This finding is consistent with previous researches (e.g. Zibarrassa and Coan, 2015; Islam et al., 2020; Luu, 2020; Joshi and Dhar, 2020; Pham et al., 2020; Ababneh, 2021) that indicated HR factors can increase the environmental performance of organization. The findings also serve as empirical evidence for various conceptual and theoretical studies on the subject in Sri Lankan context (e.g., Opatha, 2013; Opatha and Arulrajah, 2014; Arulrajah et al., 2015; Opatha and Kottawatta, 2020).

Limitations and Direction for Future Research

Despite the interesting findings in this study, a number of limitations should be acknowledged. First of all, data were obtained from the selected manufacturing companies in Sri Lanka in a quite small sample (N=165). Therefore, future studies may consider collecting deeper data from the respondents. Another limitation is the use of cross-sectional design in the study. The data were gathered at one time point, and therefore no conclusion can be taken about causal relations. The study is based only on quantitative research approach, where the qualitative research approach will be effective to get more explanation regarding the objectives of the study. Future studies should be done to investigate the antecedent variables related to the implementation of green HRM in an organizational context.

References


Jahangir, N. and Begum, N. (2008), The Role of Perceived Usefulness, Perceived Ease of Use, Security and Privacy, and Customer Attitude to Engender Customer


