# 11 Do Green HRM Practices Matter in Shaping Sustainable Performance Among ISO 14001-Certified Malaysian Manufacturing Firms? A Mixed-Method Approach

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## 11.1 Introduction

Human well-being, economic growth, and sustainability depend on how well we manage the environment (Kahle and Gurel-Atay 2013). It is factual that sustainability is vital for the manufacturing industry to address major environmental issues. Carbon emission ($CO_2$) from manufacturing firms results in harmful outcomes such as global warming, climate change, water and air pollution, and degradation of environmental performance (IEA 2015). Recently, a good number of studies provide evidence that there is pressure on manufacturers to improve environmental, social, and economic performance due to environmental awareness, the commitment of the government to climate change, and the emphasis of stakeholders (Ghazilla et al. 2015). The increase in $CO_2$ emission from manufacturing firms results in major atmospheric pollution, solid wastes, and reduction in environmental performance (Statistics 2015). The degradation of the environment as an outcome of industrial production creates an imbalance between economic and environmental performance (Khan et al. 2017a, b) because manufacturing firms are more considerate towards economic and financial gains while they ignore environmental and social aspects.

Sustainable performance (SP) is vital for manufacturing firms in reducing the imbalance between economic, environmental, and social performance (Maletič

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et al. 2016). It is quite challenging for firms to implement environmental initiatives and green HRM practices. Similarly, Malaysian manufacturing firms are facing barriers in adopting green initiatives and need to implement sustainable practices as indicated by several studies (Nordin et al. 2014). Only 18% of companies have ISO 14001 certification according to FMM (2015), and environmental performance has reduced significantly in the past 10 years (EPI 2016). Therefore, ineffective environmental policies of the government and industrial wastes are primarily responsible for the degradation in the environmental performance of Malaysia (Khan et al. 2017a, b). Hence, manufacturing firms must adopt sustainable HRM practices to ensure environmental protection and performance to address environmental problems (IEA 2015). A further aspect of sustainable HRM is the concept of green human resource management (GHRM), which was initially introduced by Renwick and his collogues. GHRM is a relatively new area of research that integrates traditional HRM practices and environmental management (EM) making HRM practices sustainable (Jabbour 2015; Renwick et al. 2013). The Eleventh Malaysian Plan (EMP) focuses on the sustainability agenda to improve sustainable performance.

Green human resource management aims to ensure sustainable performance (SP) and long-term survival of corporate sustainability. Most of the previous studies evaluated green HRM based on qualitative approaches (e.g., Ahmad 2015; Jabbour and de Sousa Jabbour 2016), while only a few have employed quantitative and empirical approaches (O'Donohue and Torugsa 2016). Thus, future studies need to empirically address this gap. According to Renwick et al. (2013), there is a need to integrate the fields of HRM and environmental management that result in green HRM. Hence, future studies should examine the impact of GHRM practices (selection and recruitment, training, and rewards) on environmental and organizational performance. GHRM involves specific HR policies and practices that create a balance between sustainable performance dimensions (economic, social, and environment) and financial performance to enhance overall sustainable performance. Accordingly, this study investigates the relationship between GHRM practices and sustainable performance. Moreover, this study also investigates the relationship between GHRM sub-dimensions, e.g., green selection and recruitment, green training and development, and green assessment and rewards, and sustainable performance, among Malaysian manufacturing firms that are ISO 14001-certified.

## 11.2 Review of Literature on Green Human Resource Management (HRM) Practices

The topic of green HRM is a relatively new area of research, and the term (GHRM) itself originated from the seminal work of Renwick and his colleagues (Renwick et al. 2008, 2013). The GHRM literature is largely dominated by western studies, so it is quite significant for future research to investigate the concept of GHRM in the context of Asian countries (Renwick et al. 2013) to fill this gap. Various contemporary scholars have researched to enhance their understanding of green HRM (Khan et al. 2017b; Renwick et al. 2013). Some have defined it based on the basic aspects

of sustainability and environment such as Renwick et al. (2013), who define GHRM as integration of HRM and environmental objectives, while most authors defined green HRM based on HR policies and practices to meet the environmental objectives of an organization. This study refers to green HRM as the integration of environmental aspects in HRM practices to achieve environmental objectives, which is quite similar to the definition provided by Jabbour (2013): "Green HRM is concerned with the systemic, planned alignment of typical human resource management practices with the organization's environmental goals."

There is a growing need for the integration of literature on HRM and environmental management (Renwick et al. 2013) as research in this field is interdisciplinary and originates from sustainable HRM themes linked to performance management (Jabbour 2015). Globally, researchers have investigated HRM on the managerial perspectives to achieve environmental agenda for organizations (Khan et al. 2017b), while green HRM practices are also important for employees to align their environmental goals with the organizations' environmental strategy (Renwick et al. 2008). Therefore, to expand such a framework, it is a prerequisite that HRM practices, e.g., recruitment, training, appraisal, and reward systems, should be aligned with environmental strategy and prudent objectives (Jabbour 2013). The integration of environmental management and HRM is yet to be explored comprehensively (Khan et al. 2017a, b) as there should be synergy among the HR system and its environmental strategy within an organization. Consequently, an organization needs to adopt green HRM practices (Opatha and Arulrajah 2014) to meet a long-term sustainability agenda. This research mainly studies three key practices, i.e.:

First, green recruitment and selection, which refers to an organized activity that includes the environmental dimension, aiming at hiring motivated applicants with environmental knowledge for current and future job opportunities.

Second, green training and development, which means educating employees about environmental objectives and training them on how to save energy and reduce waste output. Thus, green organizations should train employees with green practices and also educate them on green values to achieve sustainable performance (O'Donohue and Torugsa 2016).

Third, green assessment and rewards that are vital for providing useful feedback and fostering firm environmental outcomes. Manufacturing companies have established environmental objectives for evaluating employee's environmental performance.

### 11.2.1 Sustainable Performance (SP)

Manufacturing organizations are facing growing demands from stockholders, shareholders, and regulatory bodies to address environmental issues and improve their corporate sustainability performance (Ghazilla et al. 2015). Organizations need to overcome the sustainability challenges resulting from an imbalance between

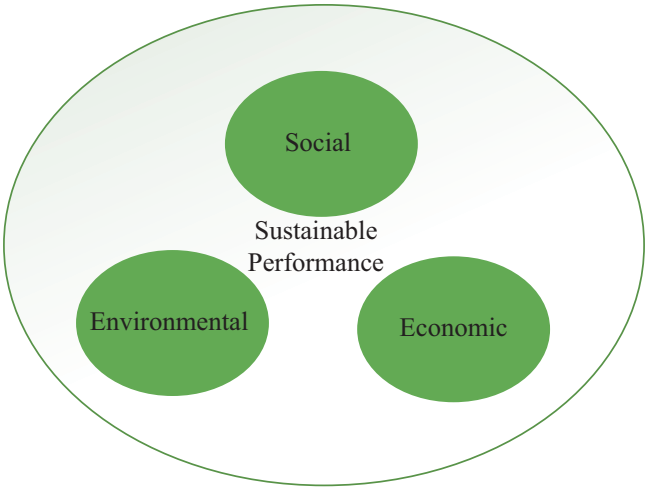


**Fig. 11.1** Sustainable performance dimensions

economic, environmental, and social perspectives (Maletic et al. 2015), to accomplish sustainable performance (Nicolăescu et al. 2015). The concept of the triple bottom line (TBL) was proposed by Elkington (1994), which integrates with the three viewpoints, i.e., social, environmental, and financial. Currently, organizations use the TBL framework for evaluating sustainable performance; thus, the TBL approach can be applied to integrate sustainable performance (SP).

While sustainable performance (SP) integrates performance based on social and environmental aspects with economic dimensions, a few studies point to the limitations of TBL's measurement, for non-systemic approaches and compliance mechanisms (Sridhar and Jones 2013). Based on the primary assumption of TBL, performance should not be evaluated based on the economic dimension only (Fauzi et al. 2010). SP should consist of three measurement elements, namely, (i) economic, (ii) social, and (iii) environmental as illustrated in Fig. 11.1, and to achieve greater SP, organizations need to reduce the imbalance between these three dimensions through synergetic integration; otherwise, the outcome of SP may be negatively affected.

### 11.2.2 Hypothesis Development – Green HRM Practices and Sustainable Performance

GHRM practices are vital for improving performance (Tang et al. 2017), and companies should align HRM practices with the objectives of environmental management to achieve sustainability performance. GHRM is vital for the well-being of employees and organizational performance (Renwick et al. 2013); while traditional HRM practices only focus on the economic performance of an organization, green HRM practices focus on environmental performance along with organizational performance (Tang et al. 2017). Developing literature on GHRM emphasizes that a set

of integrated HRM practices including recruitment, performance appraisal, learning and development, rewards, and employment relations can build a more environmentally sustainable workplace culture (Renwick et al. 2013). Based on previous literature, this study proposes the following hypotheses:

H1: Green HRM practices are positively related to sustainable performance (SP).
H1a: Green recruitment and selection are positively related to SP.
H1b: Green training and development are positively related to SP.
H1c: Green assessment and rewards are positively related to SP

### 11.2.3 Research Model and Theoretical Foundation

The proposed model for the current study consists of GHRM practices (green selection and recruitment, green training and development, green assessment and rewards) as exogenous variables and SP as the endogenous variable as shown in Fig. 11.2.

This study uses ability, motivation, and opportunity (AMO) as the underpinning theory which was proposed by Appelbaum (2000) to examine the relationship between HRM practices and organizational performance. However, some studies also used other theoretical conceptualizations, i.e., resource-based view (RBV) and contingency theory (CT), to examine HRM and performance relationships as the AMO framework has established foundations in industrial/organizational psychology literature (Paauwe 2009). Similarly, as compared with the two other theories, i.e., RBV and CT, the AMO theory is applied predominantly considering the effects of GHRM practices on firm performance (Boselie et al. 2005). In support of this,

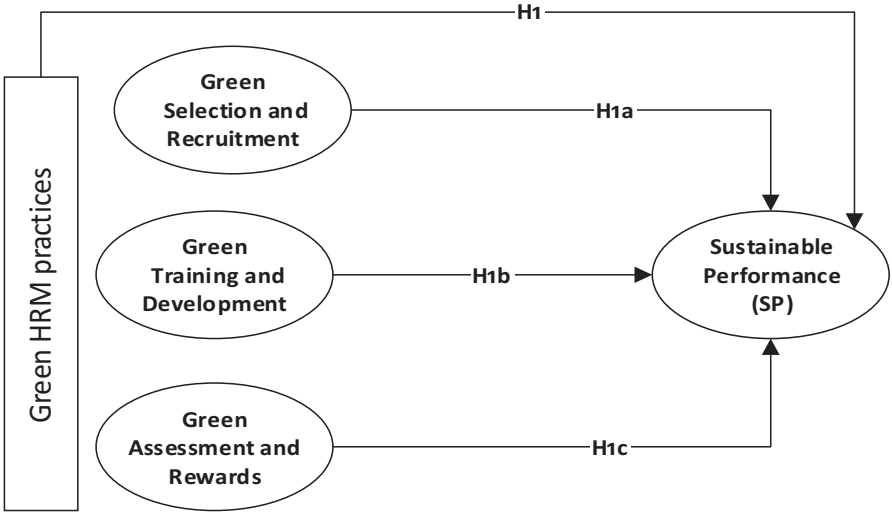


**Fig. 11.2** Proposed research model

more than half of the articles published after the year 2000 have adopted the AMO framework (Paauwe 2009). According to the prime assumption of AMO theory, practices such as ability (selective hiring, training, education, and developing talented staff), motivation (incentive system, performance-based payments), and opportunity (involving employees in EM initiatives) positively affect discretionary behavior (Boxall and Purcell 2003), which ultimately leads to high performance (Renwick et al. 2013).

## 11.3 Mixed-Method: Explanatory Sequential Design

The purpose of this study is twofold. Firstly, this study investigates the direct relationship between green HRM practices (green selection and recruitment, green training and development, green assessment and rewards) and sustainable performance (SP). Secondly, this study bridges theoretical and empirical gaps based on the previous literature. The current study uses explanatory sequential design, which is composed of two phases, i.e., quantitative and qualitative proceeding sequentially. An explanatory sequential design based on sequential time orders more priority and value to quantitative data (Creswell et al. 2003). This design is more effective in the case of unexpected results from the quantitative part. One of the main strengths of this design is explaining quantitative results with qualitative findings. Conversely, this design needs sufficient time, financial resources, and researcher skills, which is considered as a major disadvantage (Wisdom and Creswell 2013). Figure 11.3 displays the application of explanatory sequential design which consists of quantitative and qualitative methods based on the complementarity approach for the current study. The quantitative method began with quantitative data collection and its analysis through the structural equation modelling (SEM) technique using AMOS 22. Subsequently, qualitative data was collected through semi-structured interviews and analyzed through thematic analysis using NVivo 11. Both the methods, i.e., quantitative and qualitative, used sequential order and were completed separately. However, during the final stage of the research, the quantitative results were explained and complemented with qualitative results using a complementarity approach (Creswell 2013) to better understand and address the research objectives. The next section discusses the quantitative phase in detail.

### 11.3.1 Quantitative Method Survey Instruments

This research employed probability sampling. Primary data was collected using standard questionnaires from a sample of 248 ISO 14001-certified manufacturing firms listed in standards achieved by the category of Federation of Malaysian Manufacturers (FMM) Directory 2015. The study used standard questionnaires as survey instruments composed of four latent variables, GHRM practices, and sustainable performance and measured and operationalized the GHRM practices using a 12-item survey instrument designed with a 5-point Likert scale adopted from

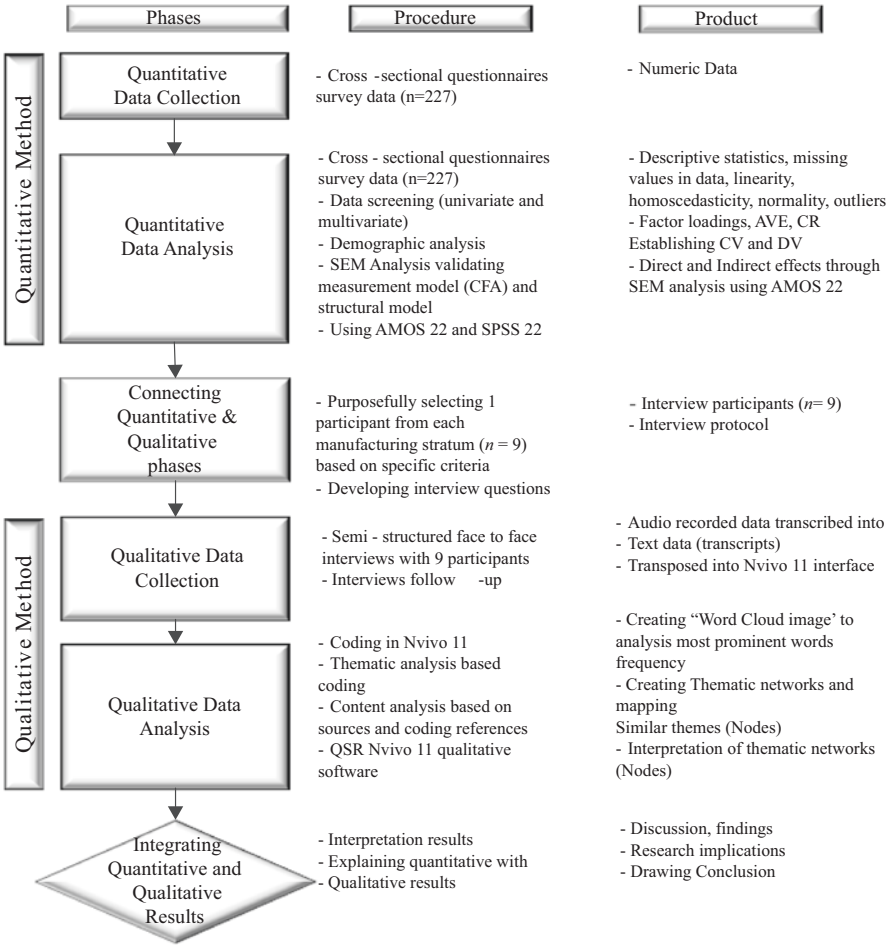


**Fig. 11.3** Application of explanatory sequential mixed-method design

Jabbour (2011). The triple bottom line (TBL) approach was used to measure organizational performance beyond profit consideration including social and environmental aspects. This study used a 13-item measurement scale developed by Maletič et al. (2014) in measuring sustainable performance based on three dimensions, i.e., economic, social, and environment, with a 5-point Likert scale.

## 11.4 Quantitative Data Analysis and Results

Quantitative data was analyzed through structural equation modelling (SEM) technique using AMOS. SEM analysis assumptions were fulfilled such as univariate and multivariate normality, linearity and homoscedasticity, and multicollinearity.

Initially, a total of 350 self-administrated questionnaires (SAQs) were distributed among managers of ISO 14001-certified manufacturing firms in Malaysia. In response, 248 questionnaires were returned indicating a 71% response rate. Besides, normality tests confirmed that 21 cases had normality issues. Thus, 227 questionnaires were used for further SEM (Bryman and Bell 2015). Descriptive statistics analysis reported that a total of nine manufacturing groups participated in this study including (1) food, beverages, and tobacco, (2) chemical including petroleum, (3) electrical and electronics, (4) fabricated metals, (5) machinery, (6) plastic, (7) transport, (8) rubber, and (9) other industries as shown in Table 11.1.

To perform SEM analyses, the measurement model was initially analyzed by assessing standardized factor loadings, as well as the validity and reliability of each construct. Measurement of second-order constructs required error term on each dimension, as indicated in Fig. 11.4 (R1−R8). To achieve a good model fit, some adjustments were required, such as removing all items with a factor loading of less than 0.50 (Hair et al. 2010). After items such as ECOP02 and ECOP05 for which the standardized loadings were < 0.50 item loadings were removed, the model was

**Table 11.1** Company background

| Company background | N | % | Cum % |
|---|---|---|---|
| Industry | | | |
| Food, beverages, and tobacco | 56 | 22.6 | 20.6 |
| Chemical including petroleum | 36 | 14.5 | 37.1 |
| Electrical and electronics | 45 | 18.2 | 55.3 |
| Fabricated metal | 25 | 10.0 | 65.3 |
| Machinery | 21 | 8.5 | 73.8 |
| Plastic | 16 | 6.5 | 80.3 |
| Transport | 20 | 8.0 | 88.3 |
| Rubber | 18 | 7.3 | 95.6 |
| Others | 11 | 4.4 | 100 |
| Total | 248 | 100 | |
| Number of employees | | | |
| 0–50 | 27 | 10.9 | 10.9 |
| 50–100 | 35 | 14.1 | 25.0 |
| 101–250 | 58 | 23.4 | 48.4 |
| 251–500 | 43 | 17.3 | 65.7 |
| 501–1000 | 67 | 27.0 | 92.7 |
| 1000+ | 18 | 7.3 | 100 |
| Total | 248 | 100 | |
| Year of establishment | | | |
| Before 1970 | 09 | 3.6 | 3.6 |
| 1971–1980 | 23 | 9.3 | 12.9 |
| 1981–1990 | 30 | 12.0 | 24.9 |
| 1991–2000 | 78 | 31.5 | 56.4 |
| 2001–2009 | 62 | 25.0 | 81.4 |
| 2010–2016 | 46 | 18.6 | 100 |
| Total | 248 | 100 | |

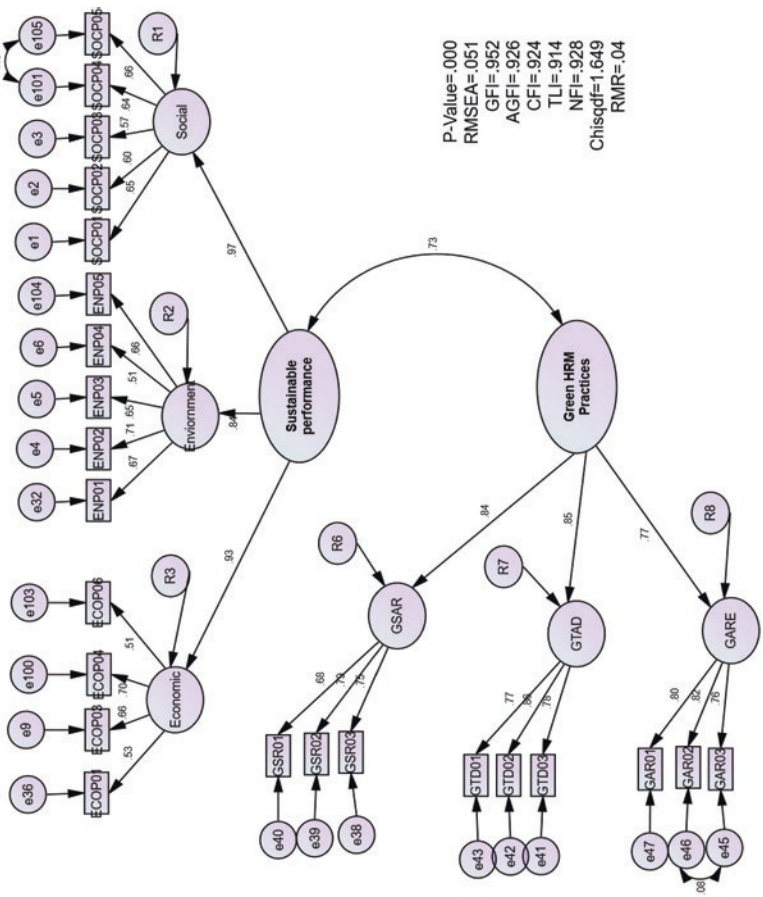


**Fig. 11.4** Second-order measurement model

revised. Besides, the error term e104 had to be correlated with e105 and e46 with e45. The goodness-of-fit values after making these adjustments were significantly improved, as shown in Fig. 11.4, i.e., CMIN/DF = 1.649, GFI = 0.952, AGFI = 0.926, CFI = 0.924, TLI = 0.914, NFI = 0.928, REMSA = 0.051, and RMR = 0.040, with the P-value of 0.000.

The proposed model was also evaluated in terms of convergent validity (CV), which was done by substantiating three basic criteria. First, all standardized loading estimates should be statistically significant with a value of 0.50 or higher, indicating that all items converge on their respective constructs. Second, the average variance extracted (AVE) must be at least 0.50, as this is indicative of adequate convergence. Third, construct reliability (CR) of 0.7 or higher is needed, as this indicates good reliability. All these criteria were met, thus confirming that the CV assumption was not violated in this study (Sekaran and Bougie 2016). All standardized factor loadings are reported in Table 11.2, where their respective values exceeded 0.50 (ranging from 0.674 to 0.959). Moreover, the AVE values ranged from 0.625 to 0.822, whereas the CR values ranged from 0.832 to 0.93, thus providing sufficient evidence of internal consistency and validity.

The extent to which a construct is truly distinct from other constructs was measured by discriminant validity. Discriminant validity assumption is violated if the value of correlation among exogenous variables exceeds the square root of the

**Table 11.2** Convergent validity

| Constructs | Dimensions | Items | Factor loading | Factor loading | CR | AVE |
|---|---|---|---|---|---|---|
| Sustainable performance (SP) | Economic | ECOP06<br>ECOP04<br>ECOP03<br>ECOP01 | 0.514<br>0.694<br>0.663<br>0.535 | 0.899 | 0.933 | 0.822 |
| | Environmental | ENP05<br>ENP04<br>ENP03<br>ENP02<br>ENP01 | 0.655<br>0.521<br>0.651<br>0.708<br>0.658 | 0.859 | | |
| | Social | SOCP05<br>SOCP04<br>SOCP03<br>SOCP02<br>SOCP01 | 0.688<br>0.742<br>0.574<br>0.592<br>0.644 | 0.959 | | |
| Green human resource management practices (GHRMP) | Green selection & recruitment | GSR03<br>GSR02<br>GSR01 | 0.741<br>0.786<br>0.697 | 0.872 | 0.857 | 0.667 |
| | Green training & development | GTD03<br>GTD2<br>GTD01 | 0.785<br>0.862<br>0.771 | 0.814 | | |
| | Green assessment & rewards | GAR03<br>GAR02<br>GAR01 | 0.775<br>0.838<br>0.798 | 0.760 | | |

**Table 11.3** Discriminant validity

| | CR | AVE | SP | GHRMP |
|---|---|---|---|---|
| SP | 0.933 | 0.822 | **0.907** | |
| GHRMP | 0.857 | 0.667 | 0.730 | **0.817** |

*SP* Sustainable performance, *GHRMP* green human resource management practices

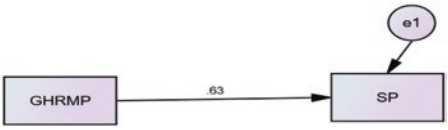


**Fig. 11.5** Collective green HRM practices and sustainable performance. *SP* Sustainable performance , *GHRMP* green human resource management practices

average variance extracted (AVE). As shown in Table 11.3, AMOS output confirmed that the square root of AVE value (shown in the diagonal and represented in bold) is greater than the inter-construct correlation value. Thus, the assumption of discriminant validity is not violated. As the measurement model has been confirmed, the structural model was assessed next, to test the proposed hypotheses.

This study used structural equation modelling (SEM) to evaluate the structural model performance after validating second-order measurement models. Although the aim was to test all research hypotheses, in the sections below, the focus is on the three sub-hypotheses related to the relationship between green HRM practices (GSR, GTD, and GAR) and SP, respectively. According to H1, green HRM practices relate positively to sustainable performance (SP). Structural model results confirmed a direct positive relationship between GHMRP and SP, with the path coefficient value $b = 0.440$, critical ratio $t = 12.698$, and $p = 0.000$, as shown in Fig. 11.5.

As evidenced by structural model results shown in Fig. 11.6 H1a: green selection and recruitment are related positively with sustainable performance with path coefficient value $b = 0.630$, critical ratio $t = 12.698$, and $p = 0.\ 000$. Likewise, H1b: green training and development were also confirmed to have a positive relationship with sustainable performance path coefficient value $b = 0.201$, critical ratio $t = 2.983$, and $p = 0.000$. However, H1c: green assessment and rewards were not significantly related to sustainable performance with path coefficient value $b = 0.094$, critical ratio $t = 1.504$, and $p = 0.\ 133$.

AMOS output as results indicate a good model fit such as Chisqdf = 30.054, GFI = 0.983, CFI = 0.978, TLI = 0.912, and NFI = 0.977, REMSA = 0.043, RMR = 0.036 with P value 0.000. In the next section, all three sub-hypotheses are discussed separately. Table 11.4 summarizes the structural model results and sub-hypotheses.

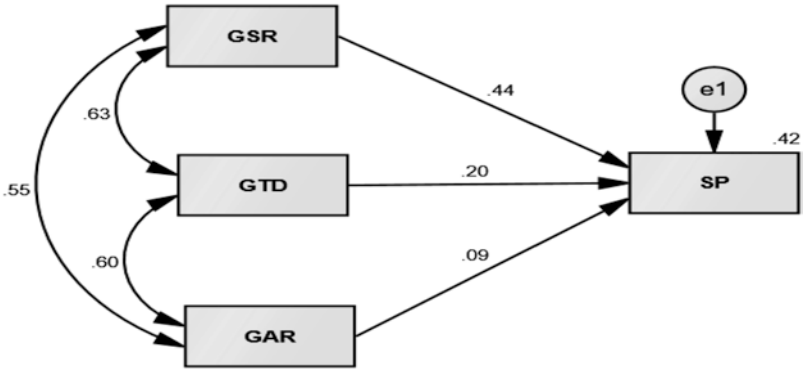


**Fig. 11.6** Individual green HRM practices and sustainable performance

**Table 11.4** Structural model hypotheses summary

| S. No | Sub-hypothesis | S.E. | C.R. | P | Results |
|---|---|---|---|---|---|
| H1 | GHRMP➔SP | 0.630 | 12.698 | 0.000 | Accepted |
| H1a | GSR➔SP | 0.437 | 6.782 | 0.000 | Accepted |
| H1b | GTD➔SP | 0.201 | 2.983 | 0.003 | Accepted |
| H1c | GAR➔SP | 0.094 | 1.504 | 0.133 | Rejected |

*SP* Sustainable performance, *GSR* green selection and recruitment, *GTD* green training and development, *GAR* green assessment and rewards

### 11.4.1 Qualitative Data Analysis and Results

Semi-structured interviews were conducted with HR managers from ISO 14001-certified Malaysian manufacturing firms registered with FMM (2015). Purposive sampling was employed, and in total, nine participants were interviewed. Initially, interviews were recorded in the MP3 Audio gadget and later transcribed into Microsoft word document, which was uploaded as a file in NVivo 11. The main purpose of qualitative data analysis was to explore the basic and organizing themes within themes on green HRM practices and sustainable performance. First, word frequency analysis was performed to examine the most frequent words in the text. Next, data were coded in NVivo 11, and nodes were created. Finally, thematic network analysis was performed to explore basic, organizing, and global themes (Attride-Stirling 2001). NVivo 11 uses the terminology of nodes, where basic themes represent child nodes and, organizing, and global themes are represented by parent nodes. In total, nine (9) HRM managers from ISO 14001-certified manufacturing firms were interviewed. One manager was selected from each manufacturing firm stratum including (1) food, beverages, and tobacco, (2) chemical including petroleum, (3) electrical and electronics, (4) fabricated metals, (5) machinery, (6) plastic, (7) transport, (8) rubber, and (9) others. Manufacturing firms selected for interviews were mainly located in the central region (Kuala Lumpur, Selangor) and the southern region (Malacca, Johor Bahru) of peninsular Malaysia. This study

employed a thematic network as a sophisticated qualitative technique step-by-step guide for thematic analysis (Attride-Stirling 2001). The thematic network is a tool for qualitative analysis to explore themes from the interview transcripts and organize them into a graphical representation. The thematic network consists of three stages: (a) reduction of the text, (b) exploration of the text, and (c) integration of exploration.

## 11.5 Mixed-Method Key Findings and Discussion

To achieve the targeted objective, this study proposed hypothesis H1: GHRM practices are positively related to sustainable performance. Besides, three sub-hypotheses such as H1a: Green selection and recruitment are positively related to sustainable performance, H1b: Green training and development are positively related to sustainable performance, and H1c: Green assessment and reward are positively related to sustainable performance were considered. The main hypothesis H1 was accepted. Similarly, two sub-hypotheses including H1a and H1b were also accepted. Results of H1, H1a, and H1b are consistent with the findings of Tang et al. (2017). However, only H1c sub-hypothesis was not supported as green assessment and rewards are not effective individually for explaining sustainable performance. Previous studies highlighted the reasons for making rewards more effective to improve environmental performance along with economic performance in achieving sustainable performance. Green compensation schemes should be associated with the performance of environmental objectives. Besides, poorly designed incentives may cause employees to avoid reporting environmental problems for the fear of being punished (del Brío et al. 2007). Companies should align HRM practices with the objectives of environmental management to enhance environmental sustainability (Jose Chiappetta Jabbour 2011).

### 11.5.1 Green HRM Practices and Sustainable Performance

The first probing interview question was, “In your opinion what are the important green HRM practices that explain the sustainable performance of the company?”. Based on thematic analysis, three prominent green HRM practices include (1) green recruitment and selection, (2) green training and development, and (3) green assessment and rewards. Child nodes for green recruitment and selection were, e.g., selection criteria should be linked with environmental objectives, using green strategy to attract employees, and applicant knowledge about environmental aspects of the job. Similarly, child nodes for green training and development include environmental training as a priority, using environmental elements in training, and providing green programs. Finally, child nodes for green assessment and rewards are emerged as financial, non-financial, and rewards should be linked with environmental performance. All these sub-themes emerged to better understand and explain the concept of green HRM. Output generated through thematic analysis is shown in Fig. 11.7.

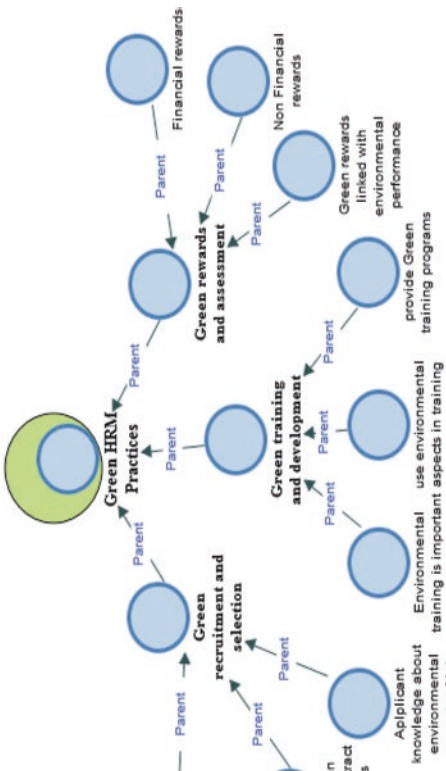


**Fig. 11.7** Green HRM practices themes

Three sub-themes underpinned as a child node for each theme emerged (green recruitment and selection, training and development, assessment and rewards) that lead to the parent node, i.e., green HRM.

### 11.5.2 Assessment of Sustainable Performance Among Manufacturing Firms

The last part of thematic analysis explores sub-themes and their respective child nodes of sustainable performance as a central theme among ISO 14001-certified Malaysian manufacturing firms. Based on thematic analysis, three key themes including (1) economic performance, (2) environmental performance, and (3) social performance emerged. Child nodes for economic performance were return on investment (ROI), sales growth, and market share. Child nodes for environmental performance were efficiency and consumption of raw materials, the percentage of recycled materials, and resource consumption. Similarly, child nodes for social performance were employee satisfaction and motivation, employee training, education and safety, and turnover ratio. Figure 11.8 shows NVivo 11 output of the thematic analysis, explaining the sub-themes of sustainable performance and their child nodes.

### 11.5.3 Recommendations and Implications

This study brings several important implications for managers and manufacturing organizations. Manufacturing firms should implement GHRM practices to improve sustainable performance by reducing the imbalance between economic and

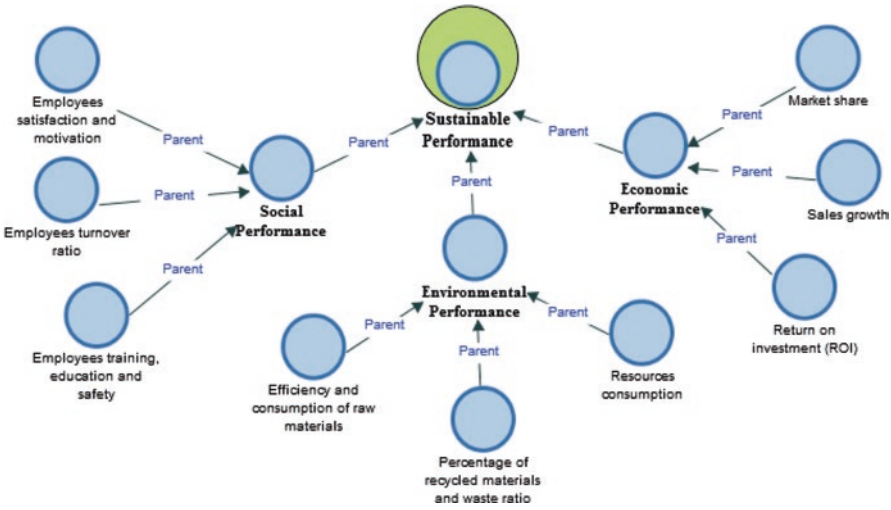


**Fig. 11.8** Assessment of sustainable performance

environmental performance as suggested by Khan et al. (2017a). Green HRM practices (selection and recruitment) can also be used as an effective tool to build a green image and attract new talent for organizations. Manager's appraisal should be accountable for environmental performance outcomes as argued by Renwick et al. (2013). Currently, only 18% of manufacturing firms have EMS (ISO 14001) certification in Malaysia (FMM 2015) which is miserably low as compared to the most developed OECD countries. Thus, the findings of this study are quite relevant for Malaysia Environmental Performance Index (EPI), Global Environmental Performance Index (EPI), National Policy on the Environment (DASN), and Compendium of Environment Statistics Malaysia (CESM), to protect the environment from industrial waste and to strength environmental regulations.

## 11.6 Conclusion

This study makes a significant contribution in addressing important gaps identified in the literature on green HRM and provides a comprehensive insight into the sustainable performance of Malaysian manufacturing firms. By using the statistical techniques, this study established a direct positive relationship between green HRM practices and sustainable performance (SP) within ISO 14001-certified firms. To have a good outcome, one hypothesis and three sub-hypotheses are explored. Consequently, the major themes of green HRM practices emerged in explaining SP based on three dimensions, namely, economic, social, and environmental. This study makes a novel contribution to the field of green HRM and sustainable performance and recommends policy implications for Malaysian manufacturing firms that are the major engines for sustainable development and future growth of the economy.

**Chapter Takeaways/Lessons**

1. To highlight the importance of sustainability issues within manufacturing organizations in the Asian context.
2. To demonstrate the application of green HRM practices and how they can improve sustainable performance among Malaysian manufacturing firms.
3. To illustrate that by only employing green HRM practices, one cannot guarantee sustainability and organizational performance. Thus, the adoption of ISO 14001 certification is also one of the integral parts in addressing sustainability issues.
4. To highlight that the integration of both green HRM practices and ISO 14001certification helps manufacturing firms to minimize the imbalance between economic and environmental performance in improving overall sustainable performance.
5. To illustrate the application of mixed-method research design in green HRM practices and sustainable performance in manufacturing organizations.

**Reflection Questions**

1. Why is sustainability important for manufacturing organizations?
2. What are the key, green HRM practices that have been applied in Malaysian manufacturing firms?
3. How can manufacturing firms mitigate the imbalance between economic and environmental performance in achieving sustainable performance?
4. What are the major issues for manufacturing firms in adopting green HRM practices and ISO 14001 certification?
5. Why is mixed-method research design more effective as compared to mono-method research in the field of green HRM?

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