

Article

Impact of Green Training on Environmental Performance through Mediating Role of Competencies and Motivation

Eiad Yafi ^{1,*}, Shehnaz Tehseen ² and Syed Arslan Haider ²¹ Malaysian Institute of Information Technology, Universiti Kuala Lumpur, Kuala Lumpur 50250, Malaysia² Department of Management, Sunway University, Bandar Sunway, Selangor Darul Ehsan 47500, Malaysia; shehnazt@sunway.edu.my (S.T.); haidershah24@gmail.com (S.A.H.)

* Correspondence: eiad@unikl.edu.my

Abstract: This work aims to examine the impact of green training on green environmental performance through the mediating role of green competencies and motivation on the adoption of green human resource management. The convenience sampling technique was employed to collect data through an online survey undertaken at public and private universities in Malaysia. The analyses were conducted using the Statistical Package for the Social Sciences (SPSS) v.25 and Smart PLS v.3 software, with the aim of testing the predefined hypotheses. It was revealed that green training has a significant impact on green environmental performance, and all six dimensions of green competencies, namely, skills, abilities, knowledge, behavior, attitude and awareness, were also green motivations. Both green competencies and motivations positively and significantly mediated the relationship between green training and environmental performance.

Keywords: green training; green environmental performance; green competencies; green motivation



Citation: Yafi, E.; Tehseen, S.; Haider, S.A. Impact of Green Training on Environmental Performance through Mediating Role of Competencies and Motivation. *Sustainability* **2021**, *13*, 5624. <https://doi.org/10.3390/su13105624>

Academic Editor: Carla Maria Marques Curado

Received: 9 February 2021
Accepted: 26 April 2021
Published: 18 May 2021

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1. Introduction

In recent years, management scholars have exhibited interest in environment protection and sustainable development. Environmental issues are viewed as among the most important societal challenges of the world [1]. Due to the recent COVID-19 pandemic [2,3], many sectors were closed worldwide, including education institutes, constructions, and international flights, thus leading to a major worldwide economic downturn. In this study, we provide preliminary results on how this economic downturn will affect the education sector and green environmental performance (GEP) as a new development strategy in organizations [4]. Therefore, companies prefer green training (GT), as an economically sustainable and environmentally friendly approach, in their attempts to be green [5]. Among green human resource management (GHRM) practices, green training is a process of on-the-job training and further education designed to integrate the goals and objectives of environmental management, which has drawn great interest [6]. Essentially, green training has been identified as key to addressing independent barriers to environmental protection and promoting their acceptance in the workplace. This produces positive results for both organizations and employees.

This subject is of great strategic importance in order to develop a sustainable organization [7]. Therefore, a high number of research studies are being carried out in various fields of management for this purpose and new literatures have surfaced in the field of green marketing [8], green accounting [9], green retailing [10], and green supply chain management [11]. Thus, management scholars are contributing their best efforts toward developing a sustainable environment, but comparatively less interest has been shown by human resource management scholars and experts. This had made it tough to highlight and put forward human resource issues related to GHRM [12]. Academic staff have a significant impact on the process of improving the sustainability of campuses due to their knowledge, technical skills, and direct relationship with officials (managers) and

subordinates (students) of universities [13]. Thus, it is crucial to support and promote the ethics of academic staff in order to achieve lasting progress in the working of the university environment.

GHRM is an important tool through which an effective development strategy on the implication of the organization's sustainable plans could be made [14]. GHRM has now started gaining its due attention from researchers all over the world because it provides benefits for organizations/companies, such as but not limited to environmental performance [15] and sustainable performance [16], and also motivates individuals to come up with green innovations and green ideas. Creativity also has a positive effect on an employee's commitment towards working in the environment at the workplace [17,18]. GHRM incorporates environmental awareness within the entire HRM process of hiring, training, rewarding and building green employees who understand and value environmental values, practices, and programs. In addition, modern researchers who support the role of human resources in environmentally friendly work have focused on environmentally sound behavior as a key factor in the effective implementation of environmental policies in the workplace [19].

This study aims to empirically test how green training impacts environmental performance through a mediating role of green competencies (GC) and green motivation (GM). The resource-based view (RBV) of the firm, natural resource-based view theory (NRBV) and ability motivation opportunity (AMO) theoretical lenses were used in the context of the educational sector, to study how green training directly and indirectly affects green environmental performance [20]. Although the relationship between green training and GEP has previously been established in the manufacturing sector of developed countries, such as the USA [21], Palestine [22], and China [7], they were only for large and small-sized firms. The establishment was not for SMEs and this relationship has not been analyzed in the context of Malaysia. Developed and developing countries both differ in their culture and economic conditions [23]. This study is an opportunity for researchers to identify the contrasting conditions related to GHRM practices and organizational environmental management policies in Malaysian public and private universities. Our study aims to contribute to the advancing literature of GHRM in education, in the context of increased pressure from stakeholders, to consider both buildings and environment during a pandemic.

2. Literature Review

2.1. *The Impact of Green Training on Green Environmental Performance*

It had been previously indicated that the overall development of behavioral traits, attitude, skills, and knowledge of employees influences a stoppage in cooperation towards the environment [24], which falls under the common umbrella of training and development. A previous study showed that green training helped in the preparation of different and multi-talented employees through the improvement of knowledge, competencies, and skills required for innovation and this improved the performance of an organization [25]. Furthermore, the performance of an organization is greatly influenced by the level of training of the workforce [11]. Training instills knowledge and skills in employees, which are important towards achieving different goals and objectives of an organization inclusive of an enhanced performance. A cross-sectional study [26], on the relevance of employee skills and competencies on employee productivity, described that an organization's performance is the outcome of all the firm's operations. Here, performance can be broadly assessed by analyzing the current behavior of the firm, especially concerning its general efficiency and effectiveness.

As per the given recommendations of RBV of the organizations, competitive improvement/benefits are dependent on the factors that influence an organization's strategic resources (both human and physical), which are valued, uncommon and hard to emulate by competitors in the market (e.g., [27]). According to the RBV theory, there is a clear link between green human resource management and environmental performance [28,29]. Here, the main objective of GHRM is to provide training and growth, as well as encourage

and provide new chances to demonstrate superior job behavior for firms to sustain a competitive advantage and better performance in comparison to their rivals [20]. These tangible/intangible resources of the organization are combined to form higher order resources. Such higher order approaches give a competitive advantage to firms and can be termed as competencies. These competencies are viewed from three different perspectives: physical capital, human capital and social capital. Researchers have emphasized that green training is very effective in achieving greater sustainability and consistency concerning the performance of the environmental management system [30]. In a quantitative study [31], it was concluded that one of the major strategies or mechanisms for preventing climate change is through green training, since it encourages the systematic development of low carbon products by different businesses. Thus, the first hypothesis is established based on the above arguments.

Hypothesis 1 (H1): *Green training is positively associated with green environmental performance.*

2.2. The Mediating Role of Green Competencies between Green Training and Green Environmental Performance

GHRM is associated with the use of different human resource management strategies towards ensuring the sustainable use of organizational resources to achieve different strategic goals and objectives [18]. According to the RBV, an organization solely survives on the availability of human, physical, and organizational resources [32]. In this case, for an organization to thrive and attain higher sustainability and a competitive advantage, human resources must be highly competent, and able to execute the different duties and responsibilities that influence business and environmental sustainability [33]. Various studies have revealed that the different elements of GHRM, such as green awareness (GAW), green skills (GS), green behaviors (GB), green attitude (GAT), green knowledge (GK) and green abilities (GAB), are essential in promoting the need for environmentalism [34]. Studies by Osborne et al. [35] and Malik et al. [36] confirmed that green training enhances the GAW, GS, GB, GAT, GK and GAB of employees towards improving their performances in an organization. Additionally, the resource-based theory explained that the resources of an organization that are recognized as specialized and non-replicable, are a source of numerous opportunities for heterogeneity that helps in enhancing the competitiveness of an organization [36–38]. An organization's environmental strategy is highly dependent on the different competencies which function as key environmental-based capabilities that help improve green environmental performance.

A number of empirical studies have revealed that the extent to which organizations engage in eco-friendly activities is a very strong indicator of eco-performance that aims at reducing the negative impact of their activities on the environment [39]. The negative influence of the firm's activities on the environment can be reduced, provided employees possess the necessary green competences or skills [34]. The study explained that organizational environmental performance involves participating in different initiatives that aim at positively influencing the environment [40]. Furthermore, a study revealed that green competencies encompass different aspects of resource conservation, environmental protection, and outdoor skills, practice skills, style and awareness, conscientiousness as an element of individual attitude, and knowledge to enhance environmental sustainability, among others [41]. Possession of key green competences enable employees to engage in the most constructive activities that improve the positivity of GEP [42].

The ability of green training to enhance GEP is greatly influenced by the nature of green competencies acquired by the employees. A study conducted by [19] revealed that it is crucial for organizations to actively engage in specialized and customized green employee training for improved GEP. According to the ability–motivation–opportunity theory, different organizational interests are met by establishing an effective human resource system that offers proper opportunities and platforms to skilled and competent employees who, in turn, play a key role in improving environmental performance [38]. Hence, based on the above discussions, the following hypotheses were formulated.

Hypothesis 2 (H2): *Green training is positively associated with green competencies.*

Hypothesis 3 (H3): *Green competencies are positively associated with green environmental performance.*

Hypothesis 4 (H4): *Green competencies mediate the relationship between green training and green environmental performance.*

2.3. The Mediating Role of Green Motivation between Green Training and Green Environmental Performance

The ability–motivation–opportunity theory is a very essential theoretical paradigm in GHRM as it clearly explains the impact of human resource systems on the behavior performance of employees at the organizational level [38]. According to prior studies, green training and development are among the most effective GHRM practices that help in ensuring the continual growth of green management in most organizations. Evidence shows that environmental or green training is one of the most essential tools for developing human resources, whereby it motivates employees, enabling them to be more productive and committed to improving GEP [7]. A study found that there is a positive relationship between the different aspects of green training and the stimulation of employees' knowledge and attitude towards addressing different environmental concerns [28]. Additionally, green training helps to create a positive attitude, takes a more proactive approach on different greening initiatives, and consequently builds competencies in employees which reduces waste and saves energy.

A former study revealed that a green motivating system is very important in inspiring or encouraging people towards becoming committed to ensuring proper environmental management [17]. Furthermore, a study concluded that an effective motivating system should greatly focus on rewarding the most productive employees as a way of motivating them to maintain high productivity levels [43], which doubles as a motivating factor for less committed employees. A green reward system is more concerned with aligning an organization's human resource system to different green policies and practices used by a particular organization. Therefore, organizations should always ensure that their green reward systems are compatible with existing green policies and practices [31]. Prior studies also noted that motivating or rewarding systems in an organization should be designed to prioritize the production of different green initiatives in the workplace and improve lifestyles of the employees, which consequently reduce the prevalence of carbon footprints. The AMO theory asserts that the different abilities, attitude, motivation, and opportunities of the employees are very important towards an improved organizational performance [38].

Several studies in the past have confirmed a positive and significant relationship between different GHRM practices and positive organizational and environmental performances [34,44]. Different GHRM practices that may include green recruitment, green motivation, and green training play a key role in improving the competitive advantage and overall organizational performance [45,46]. According to Tulsi et al. [4], employees should be rewarded based on their willingness to remain committed to an eco-friendly culture that is concerned with environmental protection or conservation. Rahim et al. [47] indicated that there are different types of reward systems that organizations can apply to enhance skills acquisition and consequently, motivate employees towards improving on GEP. Green rewards can be in various forms such as financial-based environmental management rewards such as cash or premiums, non-financial based environmental management rewards, and recognition-based rewards such as daily praises, and positive rewards such as feedback, among many others [48]. Additionally, these rewards help to instill a sense of recognition among employees, which are a source of motivation towards engaging in different eco-initiatives and other green practices [49]. According to the AMO theory, motivating activities performed by one person can greatly stimulate another person to train and focus on achieving the same level of success as the motivator [50]. It is therefore important for organizations to focus on developing programs that can help to effectively

stimulate employees towards performing different green duties to achieve a great GEP. Therefore, we have developed the following hypotheses, as presented in Figure 1.

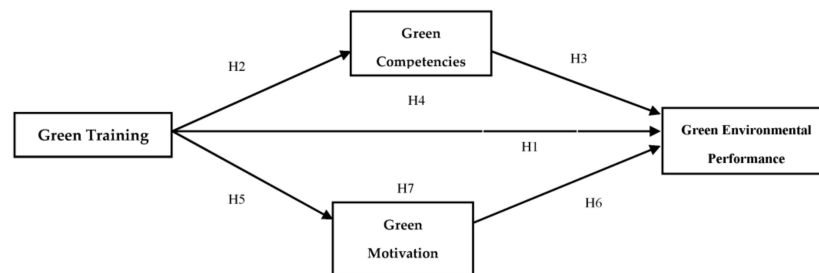


Figure 1. Conceptual model of the study.

Hypothesis 5 (H5): Green training is positively associated with green motivation.

Hypothesis 6 (H6): Green motivation is positively associated with green environmental performance.

Hypothesis 7 (H7): Green motivation mediates the relationship between green training and green environmental performance.

2.4. Research Model

The current study examines the direct impact between green training and green environmental performance, along with considering the mediating role of green competencies (GC) and green motivation (GM). In this research model (Figure 1), green training is an independent variable and green environmental performance is a dependent variable. Lastly, competencies (GC) and green motivation are a mediator.

3. Research Methodology

3.1. Sample and Procedure

The current research was a quantitative study and exploratory in nature. Explanatory research determines the “why” and “how” a relationship occurs in a specific circumstance. Therefore, a causal/relational study was directed towards deciding the effect of green training (GT) on green environmental performance (GEP). Five major research universities in Malaysia have implemented campus management programs, organized by the Institute for Environment and Development (LESTARI) and designed to enhance academic sustainability and integrate researchers and policy makers [51–53]. The convenience sampling technique was used to collect data from different public and private universities located in Malaysia. The current study was a field study because participants (i.e., professors, lecturers, admin staff and tutors working in different public and private universities) were approached during their working hours. This was to ensure their availability while in their respective organizations and to fill the questionnaires without any hesitation or fear.

Fuller et al. [54] have stated various research studies which were of time horizon—a cross-sectional and a longitudinal study. Moreover, the current investigation was cross-sectional, as the information was assembled within 10 months (March 2020 to December 2020). Collection of data was performed through self-administered questionnaires and digital questionnaires (prepared through Google Docs), due to the COVID-19 pandemic. This was to ensure that the maximum number of respondents could participate in the survey. Approximately 400 questionnaires were circulated and after the exclusion of incomplete responses, 305 questionnaires were considered for further analysis. The response rate was quite encouraging, at 76.25%, despite it taking place during the crisis. Respondents comprised of 60.3% males, while 39.7% were females. The majority of the samples fell within the ages of 20 to 40 years old. With respect to educational level, large numbers of respondents were Master and PhD degree holders. Additionally, the majority of the respondents had a job tenure of 4 to 10 and more than 10 years.

3.2. Measures

The questionnaire used in the collection of data was adopted from various reliable sources to measure four variables. Questionnaires were administered in the English language and developed using a Likert scale that ranged from 1 to 5, where 1 represented “strongly disagree” while 5 represented “strongly agree”. The questionnaire consisted of 55 items in total. Regarding the independent variable, a 6-item scale [14] was used to analyze green training. Furthermore, the dependent variable, green environmental performance, was measured using a 5-item scale [55]. Two mediators were used, while the first green competencies variable was the second order construct and was based on 39 items [56]. The second mediator, green motivation, was based on a 5-item scale [14]. In the current study, a pilot testing of 50 questionnaires was performed to validate the reliability of each instrument. Reliability was measured through Cronbach’s alpha which gives a reliable or internal consistency of a construct. Internal consistency means that all items in a construct measure the same concept. Its value lies between zero and one. The general rule was that if the Cronbach alpha value was 0.70 or higher, it was considered good [57]. Table 1 portrays the Cronbach alpha value of each construct.

Since the same respondents were used to collect data for all variables, common method variance (CMV) could occur in the data. CMV occurred, although some of the procedural remedies, such as a cover letter to ensure respondents’ confidentiality, definition of unfamiliar terms, having concise and simple questions, etc., were used to reduce the issue of CMV [58]. Additionally, the statistical remedy of “Correlation Matrix Procedure” (CMP), introduced by Bagozzi et al. [59], was utilized to analyze the CMV’s affect through latent variables’ correlation. Based on this procedure, CMV was not found because the correlation between the principal variables was less than 0.90. Likewise, a full collinearity assessment approach was used to examine the issue of CMV [60].

Table 1. Measurement model.

| Constructs | Items | FL | α | CR | AVE | Author |
|--------------------|-------|--------|----------|--------|--------|--------|
| Green Training | GT1 | 0.8530 | 0.8696 | 0.9051 | 0.6245 | [14] |
| | GT2 | 0.8491 | | | | |
| | GT3 | 0.8408 | | | | |
| | GT4 | 0.8356 | | | | |
| | GT5 | 0.8559 | | | | |
| | GT6 | 0.4007 | | | | |
| Green Competencies | | | | | | |
| Green Knowledge | GK1 | 0.8286 | 0.8195 | 0.8808 | 0.6490 | [56] |
| | GK2 | 0.7659 | | | | |
| | GK3 | 0.8164 | | | | |
| | GK4 | 0.8102 | | | | |
| Green Skills | GS1 | 0.7217 | 0.7766 | 0.8566 | 0.5994 | |
| | GS2 | 0.7834 | | | | |
| | GS3 | 0.7992 | | | | |
| | GS4 | 0.7901 | | | | |
| Green Abilities | GAB1 | 0.7707 | 0.8658 | 0.9032 | 0.6512 | |
| | GAB2 | 0.8046 | | | | |
| | GAB3 | 0.8013 | | | | |
| | GAB4 | 0.8300 | | | | |
| | GAB5 | 0.8269 | | | | |
| Green Attitude | GAT1 | 0.7589 | 0.8672 | 0.8974 | 0.5317 | |
| | GAT2 | 0.7973 | | | | |
| | GAT3 | 0.7853 | | | | |
| | GAT4 | 0.7957 | | | | |
| | GAT5 | 0.5824 | | | | |
| | GAT6 | 0.8063 | | | | |
| | GAT7 | 0.8039 | | | | |
| | GAT8 | 0.8039 | | | | |
| | GAT9 | 0.3957 | | | | |

Table 1. Cont.

| Constructs | Items | FL | α | CR | AVE | Author |
|---------------------------------|-------|--------|----------|--------|--------|--------|
| Green Behavior | GB1 | 0.7355 | 0.9333 | 0.9423 | 0.5582 | |
| | GB2 | 0.7345 | | | | |
| | GB3 | 0.7863 | | | | |
| | GB4 | 0.7665 | | | | |
| | GB5 | 0.7020 | | | | |
| | GB6 | 0.7431 | | | | |
| | GB7 | 0.8183 | | | | |
| | GB8 | 0.7849 | | | | |
| | GB9 | 0.7534 | | | | |
| | GB10 | 0.6209 | | | | |
| | GB11 | 0.8085 | | | | |
| | GB12 | 0.7734 | | | | |
| | GB13 | 0.6593 | | | | |
| Green Awareness | GAW1 | 0.8461 | 0.8570 | 0.9034 | 0.7009 | |
| | GAW2 | 0.8685 | | | | |
| | GAW3 | 0.7739 | | | | |
| | GAW4 | 0.8570 | | | | |
| Green Motivation | GM1 | 0.8519 | 0.9140 | 0.9357 | 0.7443 | [14] |
| | GM2 | 0.8658 | | | | |
| | GM3 | 0.8380 | | | | |
| | GM4 | 0.8731 | | | | |
| | GM5 | 0.8842 | | | | |
| Green Environmental Performance | EP1 | 0.8962 | 0.9056 | 0.9310 | 0.7310 | [55] |
| | EP2 | 0.8758 | | | | |
| | EP3 | 0.7064 | | | | |
| | EP4 | 0.9024 | | | | |
| | EP5 | 0.8784 | | | | |

Abbreviations: Factor Loading (FL), Cronbach's Alpha (α), Composite Reliability (CR) and Average Variance Extracted (AVE).

Partial Least Squares–structural equation modeling (PLS–SEM) consists of two components. The first component is termed as a measurement model (or outer model) that shows the relationship of constructs with their indicators. The second component is called the structural model (or inner model) that exhibits the relationship of one construct to another construct [61]. Constructs are either exogenous or endogenous. Exogenous constructs are independent variables, and no arrow is pointing towards it. Endogenous constructs are those that are explained by other variables (i.e., arrows are pointing towards them). If an endogenous construct is positioned in the middle of two variables, it becomes an independent variable [62]. The measurement model can be assessed by examining indicator loadings or weights (depending upon whether the construct is formative or reflective), composite reliability, multicollinearity, convergent and discriminant validity. Next, assessment of the Structural Model was performed by examining the values of Coefficient of Determination (R^2), path coefficients and Predictive Relevance (Q^2) and effect size (f^2) [63].

4. Results

4.1. Measurement Model Analysis

Since the green competencies construct is a reflective second order construct, as shown in Figure 2, a two-stage process was implemented. Initially, outer loadings of indicators of the reflective construct (i.e., first order construct) were examined. Only items that met the required criteria were retained. Finally, scores of latent variables of all lower order constructs were derived to obtain single items to determine the validity of the reflective construct (i.e., second order construct). Figure 2 represents the initial path model estimation for the outer loadings. Table 1 represents outer loadings for every item, Cronbach's alpha, Composite Reliability and Average Variance Extracted of constructs prior to the removal of the items.

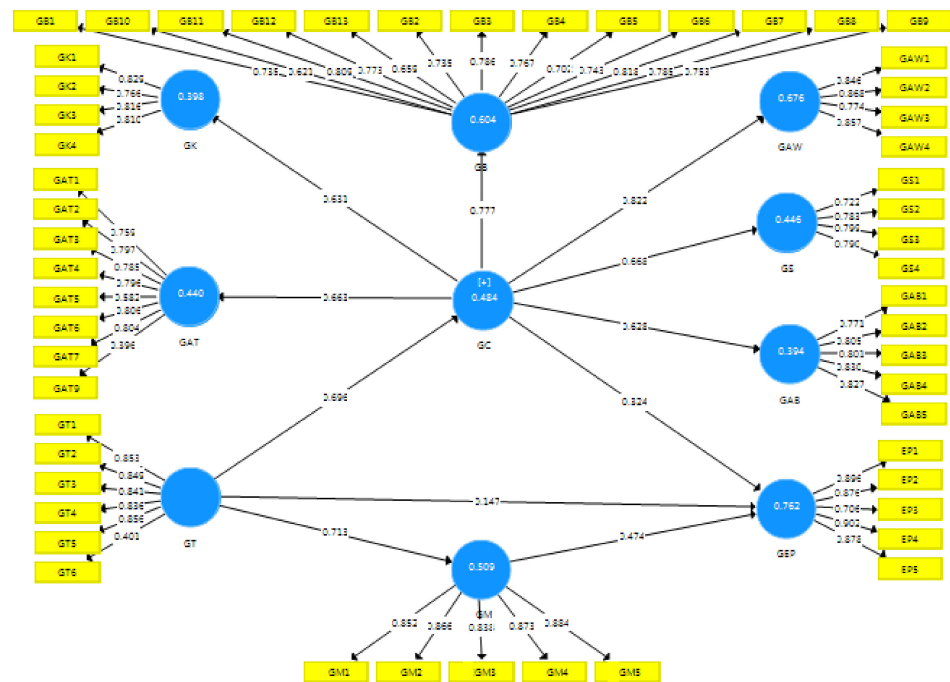


Figure 2. Measurement model analysis.

When an item of a construct is related to other items of the similar construct, it is known as convergent validity [61]. It can be assessed by outer loadings, Composite Reliability and Average Variance Extracted (AVE). In general, the value of outer loadings needs to be greater than 0.70 [64]. Those items whose outer loadings lie in the range of 0.40 to 0.70 should be removed only if deleting them increases composite reliability or AVE [61]. Thus, all estimations of factor loadings, CR and AVE were greater than the suggested cut off criteria; therefore, Table 1 shows that the measurement model has convergent validity.

A construct is said to have discriminant validity if it distinguishes itself from other constructs within a model (i.e., both constructs are not assessing the same phenomenon). The concept of heterotrait–monotrait (HTMT) ratio [65] is the average correlation of the indicators among different constructs and their related constructs. According to research [66,67], models with constructs that are conceptually similar have a threshold level of 0.90, while constructs that are unrelated to each other have a threshold value of 0.85 or lower. From Table 2, it can be observed that not a single value was greater than 0.85. Hence, the discriminant validity was established.

Table 2. Heterotrait–monotrait Ratio (HTMT).

| Constructs | GM | GEP | GC | GT |
|------------|--------|--------|--------|--------|
| GM | 0.8627 | | | |
| GEP | 0.8379 | 0.8550 | | |
| GC | 0.7813 | 0.7600 | 0.7093 | |
| GT | 0.7131 | 0.7103 | 0.6215 | 0.7903 |

Abbreviations: Green Training (GT); Green Environmental Performance (GEP); Green Competencies (GC); Green Motivation (GM).

4.2. Assessment of Second Order Construct

After assessing and establishing the validity of the first order constructs, the second order construct was assessed for the multicollinearity of items and examination of the outer weights along with their significance [63,68]. For the assessment of second order constructs, the authors in [68] suggested a two-stage method. Firstly, the latent variable scores of the lower order components were obtained. After scores of the latent variables at the first stage were obtained, the scores of all variables were used as items of GC. The

measurement model of GC was assessed based on the suggestions of [68] and findings were reported in Table 3. We employed inner VIF values to examine the issues of collinearity. Multicollinearity occurs when two or more items of a construct are highly correlated and is measured through the “Variance Inflation Factor” (VIF) [68]. A value greater than 5 indicates a multicollinearity issue. The reflective construct was examined with respect to collinearity. Therefore, it was estimated that the GAW, GS, GB, GAT, GK and GAB constructs for collinearity were included as predictors of green competencies (GC). The VIF values of second order reflective dimensions shown in Table 3 depict that there were no issues of collinearity. Reflective indicators were evaluated by their outer weights. Moreover, the significance of the weights was tested through bootstrapping. Figure 2 shows the weights of indicators along with their significance. It can be observed from Table 3 that outer weights of GAW, GS, GB, GAT, GK and GAB were significant.

Table 3. Outer weights and variance inflation factor values.

| Relationship between Constructs | Original Sample | Sample Mean | Standard Deviation | T Statistics | VIF | p Values | LLCI 5.0% | ULCI 95.0% |
|---------------------------------|-----------------|-------------|--------------------|--------------|--------|----------|-----------|------------|
| GAB <- GC | 0.1761 | 0.1753 | 0.0197 | 8.9199 | 3.9034 | 0.0000 | 0.1412 | 0.2065 |
| GAT <- GC | 0.1798 | 0.1790 | 0.0194 | 9.2766 | 3.8071 | 0.0000 | 0.1470 | 0.2093 |
| GAW <- GC | 0.4383 | 0.4394 | 0.0376 | 11.6702 | 2.4154 | 0.0000 | 0.3824 | 0.5048 |
| GB <- GC | 0.2481 | 0.2473 | 0.0154 | 16.0683 | 2.5697 | 0.0000 | 0.2221 | 0.2724 |
| GK <- GC | 0.1560 | 0.1550 | 0.0183 | 8.5154 | 2.4897 | 0.0000 | 0.1234 | 0.1836 |
| GS <- GC | 0.1733 | 0.1727 | 0.0168 | 10.3084 | 2.7116 | 0.0000 | 0.1434 | 0.1996 |

Abbreviations: Green Awareness (GAW); Green Skills (GS); Green Behaviors (GB); Green Attitudes (GAT); Green Knowledge (GK); Green Abilities (GAB), Green Competencies (GC).

4.3. Assessment of Structural Model

The evaluation of the structural model, also known as the inner model, was performed after evaluating the measurement model. The inner model illustrates how constructs are related to each other in a research framework [64]. The structural model was assessed on the basis of significance of the path coefficients, Coefficient of determination (R^2), Effect size (f^2) and Predictive relevance (Q^2) [61]. However, prior to the assessment of structural model, it was important to check the multicollinearity of the inner model, as it can distort the results. Path coefficients are the hypothesized relationships that link the constructs, and their values ranged from -1 to $+1$ [64]. Values near to $+1$ represent a strong positive relationship, while near to -1 represent a strong negative relationship. The significance of path coefficients can be obtained through bootstrapping. Figure 3 shows the path coefficients along with their significance and t-values.

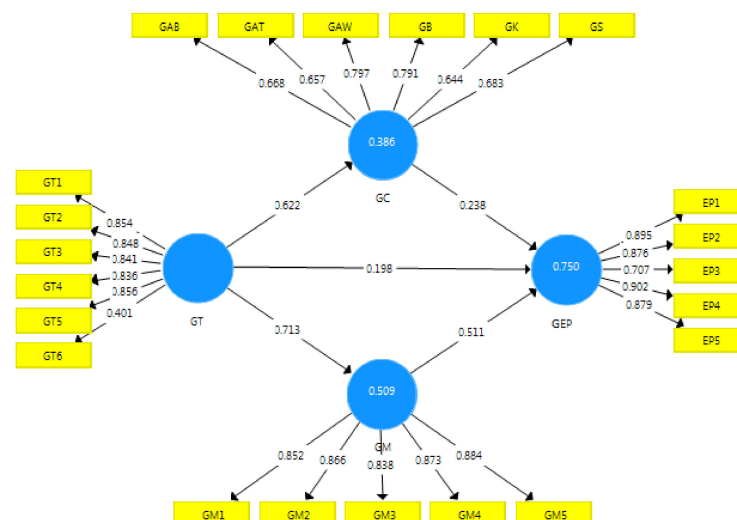


Figure 3. PLS path analysis of (n = 5000 bootstrapped samples).

Figure 3 and Table 5 show that GT was positively associated with GEP and their relationship is significant. The path coefficient ($\beta = 0.1981$, $t = 5.3161$) shows that a one-unit change in GT leads to a 19.81% change in GEP. The path coefficient ($\beta = 0.6216$, $t = 19.563$) between GT and GC is also significant and shows that a one-unit change in GT leads to a 62.16% change in GC. Likewise, the relationship between GT and GM was also significant ($\beta = 0.7131$, $t = 24.00$). Moreover, the relationship between GM and GEP was also positive and significant ($\beta = 0.511$, $t = 9.213$). Coefficient of Determination (R^2) is a measure of predictive accuracy of a model [69], whereby the value of R^2 exhibits the combined effect of exogenous latent variables on endogenous latent variables and its value ranged from 0 to 1 [61]. The higher R^2 values indicated greater explanatory power. R^2 values of 0.75, 0.50 and 0.25 are considered as large, moderate and weak, respectively [69]. Table 4 shows the values of R^2 . The value of R^2 for GEP was 0.7495, which is considered large and reflected that 74.95% of variation in GEP was elucidated by GT, GC, and GM. Similarly, the R^2 value for GM was 0.5086 and GC was 0.3963, thus both were considered as moderate, while 50.86% of variation in GM and 39.63% of variation in GC were explicated by GT.

Table 4. Coefficient of determination.

| Constructs | R^2 | R^2 Adjusted | Q^2 |
|------------|--------|----------------|--------|
| GM | 0.5086 | 0.5069 | 0.3757 |
| GEP | 0.7495 | 0.7470 | 0.5412 |
| GC | 0.3863 | 0.3843 | 0.1569 |

Abbreviations: Green Environmental Performance (GEP); Green Competencies (GC); Green Motivation (GM).

Effect Size (f^2) demonstrates how much the value of R^2 fluctuates if a specific exogenous construct was omitted from a model to determine the omission's influence on the endogenous constructs [61]. An f^2 value greater than 0.35 represents a large effect size. A value that lies in the range of 0.15–0.35 represents a medium effect size, whereas a small effect size was considered if the value varied between 0.02 and 0.15. Table 4 revealed that for independent constructs, GT has a large effect size while mediator constructs have medium effect sizes. Predictive relevance (Q^2) is a method to evaluate the predictive relevance of the inner model [64]. The blindfolding technique was utilized to obtain the value of Q^2 while the value of omission distance (D) was taken as 7. A cross-validated redundancy approach was used to measure predictive relevance [61]. A value greater than zero shows the predictive relevancy of the model, while values less than zero depict a lack of predictive relevancy [65]. In Table 4, the Q^2 values of endogenous constructs were greater than 0, hence depicting predictive relevancy of the model.

Mediation analysis is the phenomenon that explains the relationship between independent and dependent constructs [61]. For our study, the objective of mediation analysis was to test Hypotheses 4 and 7. Smart PLS 3 was used to perform an analysis of mediation through bootstrapping. To test whether GC and GM possess the characteristics of mediators, this study followed a procedure in [61]. Finally, the model proposed and validated that for this study, it was hypothesized that GC and GM would mediate the relationship between GT and GEP. As described in Table 5, the indirect effect of GT on GEP is positive and significant, while through mediators, the GC is ($\beta = 0.147$, $p < 0.05$) and also with a lower limit confidence interval value of 0.1035. Additionally, using bootstrapping, the lower limit confidence intervals were 0.1035 and 0.1948, respectively, which shows that “zero” does not exist between both confidence intervals. The current result revealed that the indirect effect through GC was less than the direct effect, which indicated partial mediation. However, the GM as a mediator ($\beta = 0.364$, $p < 0.05$) and the lower limit of 0.2943 and the upper limit of 0.4369 showed that there exists no zero between both confidence intervals. Furthermore, the indirect effect of GM was more than the direct effect, thus it is reflected as a full mediation. Hence, all hypotheses were accepted.

Table 5. Results of the structural equations model.

| Hypotheses/ Relationship between Variables | S. D | T Value | Direct Effect | Indirect Effect | Total Effect | f ² Value | p Value | LLCI 5.0% | ULCI 95.0% | Remarks |
|--|--------|------------|------------------|-----------------------------|-----------------|-------------------------|---------|--------------|---------------|-----------|
| H1 GT -> GEP | 0.0373 | 5.3161 | 0.1981 | 0.0754 | 0.7102 | 0.0754 | 0.0000 | 0.1343 | 0.2578 | Supported |
| H2 GT -> GC | 0.0318 | 19.5638 | 0.6216 | 0.0860 | 0.6216 | 0.6295 | 0.0000 | 0.5713 | 0.6751 | Supported |
| H3 GC -> GEP | 0.0459 | 5.1765 | 0.2375 | | 0.2375 | 0.0860 | 0.0000 | 0.1619 | 0.3148 | Supported |
| H4 GT -> GC -> GEP | | 5.3815 | | 0.6216 × 0.2375 = 0.1476 | 0.3457 | | 0.0000 | 0.1035 | 0.1948 | Supported |
| H5 GT -> GM | 0.0297 | 24.0017 | 0.7131 | | 0.7131 | 0.7349 | 0.0000 | 0.6635 | 0.7610 | Supported |
| H6 GM -> GEP | 0.0555 | 9.2136 | 0.5111 | | 0.5111 | 0.3181 | 0.0000 | 0.4180 | 0.6002 | Supported |
| H7 GT -> GM -> GEP | | 8.3708 | | 0.7131 × 0.5111 = 0.3644 | 0.5625 | | 0.0000 | 0.2943 | 0.4369 | Supported |

Abbreviations: Green Training (GT); Green Environmental Performance (GEP); Green Competencies (GC); Green Motivation (GM). Standard Deviation (S.D).

5. Discussion

The primary purpose of conducting this research was to uncover the association of green training and green environmental performance through the mediating role of green competencies and green motivation. This study supports and advances the GT literature by formulating and validating a green competencies model. Specifically, a higher-order model which comprises different dimensions of green competencies—green awareness, green skills, green behaviors, green attitudes, green knowledge and green abilities—was investigated. It has been suggested that organizations will benefit from competitiveness such as environmental performance, financial success, and social well-being when organizations act on environmentally responsible approaches (green HRM) [6]. This study therefore found that green training is positively related to green environmental performance. Other researchers have also acknowledged the importance of green training for achieving an effective environmental performance [17,47,70]. In order to make environmental performance a key part of an organization's culture, the education industry needs to provide green training to improve their environmental awareness and knowledge.

Likewise, the results for the second hypothesis showed the positive and significant impact of green training with green competencies. The finding of this hypothesis is also consistent with other studies that have also found this relationship under various conditions [56,71]. As a result, universities need to foster green competencies through adequate green training, which emphasizes employee sensitivity towards environmental protection and sustainable development, as well as plays a major role in building an organizational citizenship behavior towards the environment in the workplace [71]. Similarly, the results of the third hypothesis revealed the positive and significant influence of green competencies with green environmental performance which is also congruent to earlier studies [28]. This means that the knowledge of employees regarding green practices assists the organization to achieve superior environmental performance. The results of our fourth hypothesis revealed the mediating influence of green competencies for the impact of GT on GEP. Although this result is new in the context of the education industry, many researchers have found the mediating influence of green competencies under various contexts [14].

In addition, the finding of the fifth hypothesis shows the positive and significant influence of green training and green motivation. The motivation of employees is essential for employers to ensure they have a positive workforce in the workplace. Inherent and extrinsic motivations are two forms of motivation. Intrinsic motivation occurs when employees are motivated to implement green behavior for their own happiness and satisfaction, while extrinsic motivation happens when employees are motivated to do something to receive the organization's rewards [72]. Correspondingly, the sixth hypothesis-oriented results showed a positive and significant mediating role of green motivation on the relationship between green training and green environmental performance. Thus, employees would be able to achieve green environmental performance once they are motivated to do so. Overall, the obtained results supported all direct and indirect hypotheses and have several practical implications.

The current study offers several key suggestions to leaders and managers on how to make GM happen and leverage it for superior environmental performance to beat rivals in the market. Firstly, we suggest that investing in environmental management is beneficial to earn a good image in the eyes of stakeholders, as the latter have become more demanding and are pressurizing firms to go green in all their processes, products and/or services. The current results propose that firms should emphasize and reinforce GC and GM, which are necessary for implementing GT practices. Furthermore, it is suggested that GT practices need a developmental culture and flat organizational structure to support and enhance GEP for a sustained competitive advantage. The findings of this study provide evidence-based implications for university participants of limited value and their contributions to the various green training processes on green environmental performance. The current data will guide policymakers on GHRM practices at the university, to help create an environmentally friendly behavior that protects the environment. Employee competencies and motivation can emphasize the university's natural environment to generate a positive attitude for employees to engage in improving environmental performance. It is necessary to make green training a part of their job's requirement and to also to make the training easy and enjoyable for employees so that they have the intention to engage in environmental performance. Most importantly, organizations need to communicate policies, procedures and practices in ways that employees take interest in and would have a positive attitude towards them.

Training programs to increase environmental awareness and knowledge are important because highly skilled workers can then be involved in environmentally friendly behavior. Organizations must not only make policies and communicate them to employees but also provide resources to the workers and reward them. An organization's positive environmental action will motivate employees to make a greater effort to support the university's environmental programs. Similarly, opportunities for green competencies can help policymakers to use the skills and expertise of academic staff in providing solutions to environmental problems faced on campus. Environmental awareness campaigns performed by companies enable employees to identify the importance of environmental sustainability. Furthermore, when volunteers perform environmental activities in their official day-to-day activities, actively participate in university-sponsored environmental events, remain aware of the university's environmental programs, and encourage colleagues to behave in a way that protects the environment, this is considered voluntary, unorganized and excessive behavior.

6. Limitations and Future Directions

Although certain data were generated to fill the research gaps in the literature, there are a few limitations in this research as selected aspects were not able to be covered. Due to the COVID-19 pandemic, data collection was a challenge as professors and lecturers were not willing to make time to fill in the questionnaire. Additionally, the current study focused on a cross-sectional data collection method; however, in future research, a longitudinal data collection method can also be useful. The sample size of this research study was medium, as it focused on the educational sector in Malaysia. Therefore, future research can test this research model in diverse fields of knowledge with a larger sample size and compare the results with the findings of this study. Additionally, only two mediators were attempted; future research can enhance the model through further exploration of GHRM practices and their impact on other variables such as green innovation and employee environmental beliefs. The study of these variables may consider alternate mediating and moderating factors such as cultural barriers, performance or complexity.

Author Contributions: E.Y. developed paper draft, S.T. collected data and wrote the literature review section, S.A.H. analyzed data and wrote data analysis section. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical approval was not required for this study as participants consents was sought before participating in the survey and Participants don't belong to any vulnerable groups.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest: The authors declare that they have no competing interests.

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