

# ANALYZING THE IMPACT OF GREEN TRAINING ON COMPETENCIES DEVELOPMENT USING PLS-SEM -CASE STUDY: CHIALI COMPANY

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## **ABSTRACT:**

This study aims to show the impact of green training on competencies development in Chiali company. We took a sample of 85 individuals who are distributed on different professional categories. After treating data of a sample of 79 individuals using SmartPLS3, the results show the following: There is a positive impact of training needs assessment on competencies development for Chiali company. Moreover, there is a positive impact of training design on competencies development for Chiali company, there is a positive impact of training effectiveness on competencies development for Chiali company, finally, there is a positive impact of training evaluation on competencies development for Chiali company.

**Keywords:** green training, training needs assessment, training design, training effectiveness, training evaluation, competencies development.

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## **1. INTRODUCTION:**

Green management, human management, has positive visions and guidelines, focuses on respecting people, communicating with them, knowing their aspirations and expectations and preserving resources. Awareness of green management has increased due to the negative impacts of environmental problems that the world is witnessing. and the growing shortage of resources, which has led to extensive study and research. To achieve effective methodologies in environmental preservation and develop concepts.

A sustainable economy to serve and make people happy. The need for green human resources practices emerged in response to initiatives by international organizations concerned with environmental issues, originating from business organizations that placed the environment and sustainable development among their main objectives and stipulated the need to preserve it, which is also one of the fundamental principles. components of quality of life and the need to reduce levels of environmental pollution and develop employee skills, while relying on green skills.

Hence, the researcher believes that human resources are one of the most important assets in organizations that play an important role in managing personnel affairs, and that the increased interest and orientation in green management globally and the focus on the part of business organizations may require them and their modern human resources managers to integrate the philosophy of green training into their mission. And its policies, and these practices will lead to enhancing workers' activity and health and increasing their productivity, that is, they will increase efficiency and reduce costs, and thus will increase competitiveness and encourage creativity in human resources management.

The green training and development process is defined as a set of mechanisms and work methods that are concerned with developing employees' skills in the proper use of resources, and participating in solving environmental problems through new ideas that reduce environmental degradation.

With increasing acceptance of reliance on people development in the workplace, practitioners have recently shown interest in green training and development issues (Chen and Chang, 2013; Song and Yu, 2018) because activities and processes concerned with environmental issues draw on a wide range of alternatives. Creativity in a green way (Mittal and Dar, 2016). However, green talent development in the private sector has been largely forgotten, due to the heavy focus on for-profit organizations (such as the service and manufacturing sectors). Given global indicators (the current scarcity of natural resources), some stakeholders have called for the study of green outcomes in private sectors because a range of strategies have been adopted for the green private sector at the global level through the provision of green services (Boenigk and Möhlmann, 2016).

In contrast, a group of studies have been conducted on the topic of green creativity among employees in the private sector. The current paper aims to fill this research gap by relying on green training as a strategic option for developing competencies in the Shiali Foundation. Specifically, as the most widely followed green practice (Jabbour, 2013), green training in the workplace can advance employees' knowledge, develop their skills, and build a conducive and healthy work environment that highlights the green philosophy (Talan and Sharma, 2019). Studies have indicated the impact of green training programs by showing that employees who benefit from development and training on green activities improve their environmental knowledge and awareness (Obaid and Alias, 2015). Following this type of literature, our expectation is that green training contributes to the creativity and green development of employees.

According to previous studies, green training is given attention as the most effective green HRM solution that improves environmental performance (Renwick et al., 2013) since training programs increase employee awareness; That is, they are aware of informal practices, such as saving energy to voluntarily reciprocate green behavior (Stefanelli et al., 2021). Some people interested in the green topic have proven that green training can contribute to behaviors demonstrated by the organization (Pinzone et al., 2019) because It can build a supportive activity context through appropriate interventions towards the successful implementation of green goals.

### **The study problematic:**

In light of the above, the problematic can be presented in the following question:

Chiali Company was chosen to study the impact of green training in the development of human competencies, which calls for answering the following research question:

What is the impact of the green training with its dimensions (training needs assessment- training design- training effectiveness- training evaluation) on competencies development in Chiali company?

In the light of the study question, it is obligatory to examine the following sub-questions:

The following sub-questions are emerged from the problematic:

Is there a statistically significant effect of the training needs assessment on the competencies development in Chiali company?

Is there a statistically significant effect of the training design on the competencies development in Chiali company?

Is there a statistically significant effect of the training effectiveness on the competencies development in Chiali company?

Is there a statistically significant effect of the training evaluation on the competencies development in Chiali company?

### **The study hypotheses:**

The main hypothesis and its sub-hypotheses are formulated as follows:

In order to response the research questions, we hypothesize:

### **The main hypothesis:**

The following sub-hypotheses are derived from the main hypothesis:

H01: There is a direct and statistically significant effect of the training needs assessment on the competencies development in Chiali company.

H02: There is a direct and statistically significant effect of the training design on the competencies development in Chiali company.

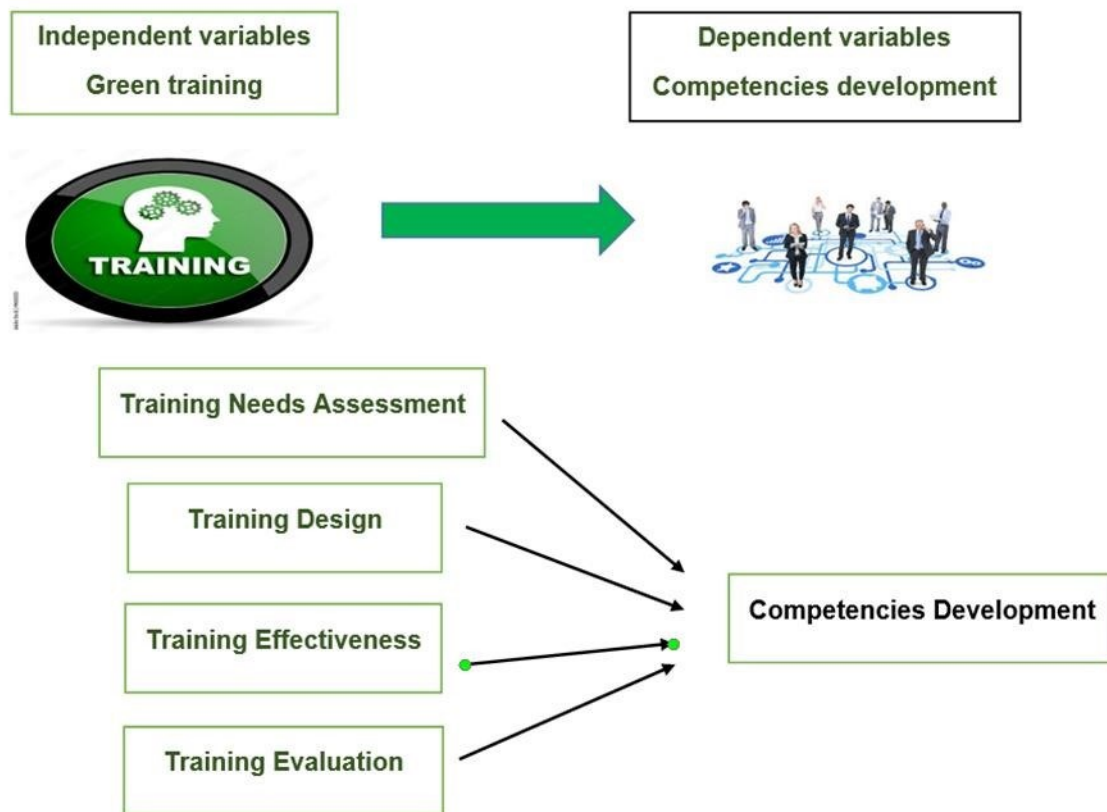
H03: There is a direct and statistically significant effect of the green effectiveness on the competencies development in Chiali company.

H04: There is a direct and statistically significant effect of the green evaluation on the competencies development in Chiali company.

H05: There is a direct and statistically significant effect of the green training on the competencies development in Chiali company.

In order to explain the study’s objective, as well as to establish the statistical hypotheses on the other hand, Figure 1 was planned to present the impact and relationships paths between the research variables as follows;

**Fig1. : The hypothetical study plan**



Source: prepared by the researchers

**The study importance:**

The importance of the study lies in the fact that it is one of the few studies that linked green training to developing human competencies and modeling the relationship between the two variables. Moreover, applying green training enables the organization to create value for itself, which increases the development of employees’ competencies, skills, and behaviors.

**Research objectives:**

The study tries to achieve the following:

Identifying the most significant conceptual and philosophical basics on that both green training and competencies development are based;

Determining the relationship between the green training with its dimensions (training needs assessment- training design- training effectiveness- training evaluation) and competencies development in Chiali company;

Modeling the relationship between green training and competencies development in Chiali company.

### **Objective of the study:**

The aim of this research is to highlight the impact of green training (training needs assessment- training design- training effectiveness- training evaluation) on competencies development in chiali company.

### **The study methodology and community:**

To answer the study questions and verify the validity of the hypotheses, the analytical and descriptive method was relied upon as one of the most important methods of scientific research, in addition to its appropriateness to the nature of the study.

The various definitions were presented and classified in the theoretical part. As for the practical aspect, information was collected using a questionnaire that was distributed to 85 employees at Chiali Company as a survey method, the results of which were analyzed using the SmartPLS program. The validity of the questionnaire was also verified through arbitration by specialized professors.

### **Previous studies:**

Some studies related to the subject of the study were reviewed as follows:

- Study (Tang, Ren, Jackson, 2018) entitled “Green Human Resource Management Research in Emergence: A Review and Future Directions”: This study aimed to determine the conceptual framework for the successive needs of companies from various activities for green human resources and related fields. A qualitative theoretical approach was used. By reviewing many previous studies, published articles and research in reputable scientific journals, the study concluded several results, including the most effective measure for demonstrating human resource management practices and their effects on performance for those organizations.
- A study (Tang et al., 2017) entitled “Green Human Resource Management Practices: Scope and Validity”: This study aimed to define the concepts of green human resource management practices, the extent of their powers, and the breadth of their application, and to work on developing an appropriate measure for them. Studying green human resources management practices in advanced business organizations. The exploratory analytical approach and the confirmatory factor approach were used by the researcher. To reach the objectives of the study, factors were identified that included recruitment, green selection, green training, green performance management, green wages and rewards, and green participation.
- Study (Yafi, others, 2021) The study sought to know the impact of green training on green environment performance through the mediating role of green competencies, motivation, and human resource management. Samples were taken and data was collected in the application from public and private universities in Malaysia. The study revealed that green training It has a significant impact on green environmental performance, and all dimensions of green competencies, which are skills, abilities, knowledge, behavior, motivations, and awareness. Green competencies and motivations

mediate positively and significantly in the relationship between green training and environmental performance.

- Study (Moradeke, others, 2021) This study sought to identify the impact of green training and development practices on environmental sustainability by studying the impact of developing green capabilities on environmental awareness, and studying the relationship between green culture and employees' commitment to the environment. Data was collected through Quantitative methods through 175 employees at WAMCO Nigeria plc. The study revealed that developing green capabilities has a significant positive impact on environmental awareness as an indicator of environmental sustainability; There is a positive relationship to green knowledge and employee commitment towards the environment. The study concluded that green training and development practices are real tools for enhancing employee awareness towards the general achievement of sustainable development goals.

- Study (Aljuboory&Eydan 2019): The main goal of this research is to build a sustainable health organization and develop sustainability business through green training. To achieve this goal, the researchers surveyed the opinions of a number of employees working in the Najaf Health Directorate. The study sample reached (155) individuals, the research reached a set of conclusions, the most important of which is that sustainability in a health organization is inevitable and not voluntary measures to involve community and environmental concerns. The research recommends adopting the concept of (green training) in annual training plans and increasing the number of green training programs in a way that enhances the sustainability of the health organization. .

## **2. THEORETICAL FRAMEWORK :**

**2.1 The concept of green training:** Green training or greening training is considered the most important key activity of green human resources management, which has direct contributions to harmful environmental impacts. The concept of the term “organizational environmental procedures” refers to all activities that revolve around the company and which aim to provide employees with the necessary information and enhance their sharing of powers according to daily work.

“Green training” is a manifestation of the outcomes of the environmental context, and is the result of a set of elements such as achieving the development of environmental skills, increasing awareness regarding sustainability and environmentally friendly knowledge, and promoting environmentally friendly behavior. This reflects our interest in what is called “green competencies”, which have a significant impact on the individual’s belief in preserving the environment. (Alola, Cobb, and Eno, 2020, p. 3). It is concerned with reducing its risks, and from that we can deduce the process of compatibility of green training with sustainable practices (Lamishhane, 2018, pp. 1-2).

Green training is planned and organized work to improve and change the skills, knowledge and attitudes of a worker or a group of workers through development and learning programs in order to reach effective and complete performance to the fullest extent (Al-Rashidi, 2016, p. 33).

Green training is the most effective focus of human resource management that contributes to enlightening high environmental performance (Wu & al, 2021, p. 02). According to the United Nations Program in 2011, technical and vocational education and training have an impact on the

process of knowledge, skills and competencies that individuals acquire, which will enable them in the future to contribute strongly to the development of the green economy, and to follow sustainable practices in various fields in their various work.

The green economy is also defined as “an economy that leads to modifying and increasing the wellbeing of social justice, including human beings themselves, while reducing and eliminating environmental risks and the problem of resource scarcity. (UNESCO-UNEVOC, 2017, p. 20)” That is, it reflects the ways in which It will develop employee skills, as well as the optimal use of resources, and emphasize in the future finding solutions to environmental difficulties and finding appropriate proposals for that. Green job training helps develop green knowledge and skills among workers in light of the shift towards a green economy ( Nasira and Al-Habib, 2016, p. 34).

**2.2 Characteristics of green training:** Green training differs from traditional training by a number of characteristics and features, which are as follows:

- The main feature of green training is its connection to the environmental aspect. It has a significant impact on the topic of sustainability, because it helps mitigate errors in training programs that enhance their competencies and direct their actions environmentally. (Rabah Al-Madhoun, 2023, p. 20).
- Green training within the organization proceeds in three distinct levels, starting at the senior management level, where needs are assessed, then the second tactical level of training. Finally, the operational level, where work is done to find sustainable solutions (Al-Saeedi and ThamerBedno, 2023, p. 115).
- Green training requires a set of environmental factors that help individuals learn and improve their performance towards green performance. We mention, but are not limited to, the appropriate organizational climate, training programs, training halls, trainer...

**2.3. Objectives of green training:** Green training works to develop the spirit of human relations in the green organization. This enables them to adapt and act in a green way, not to mention green training.

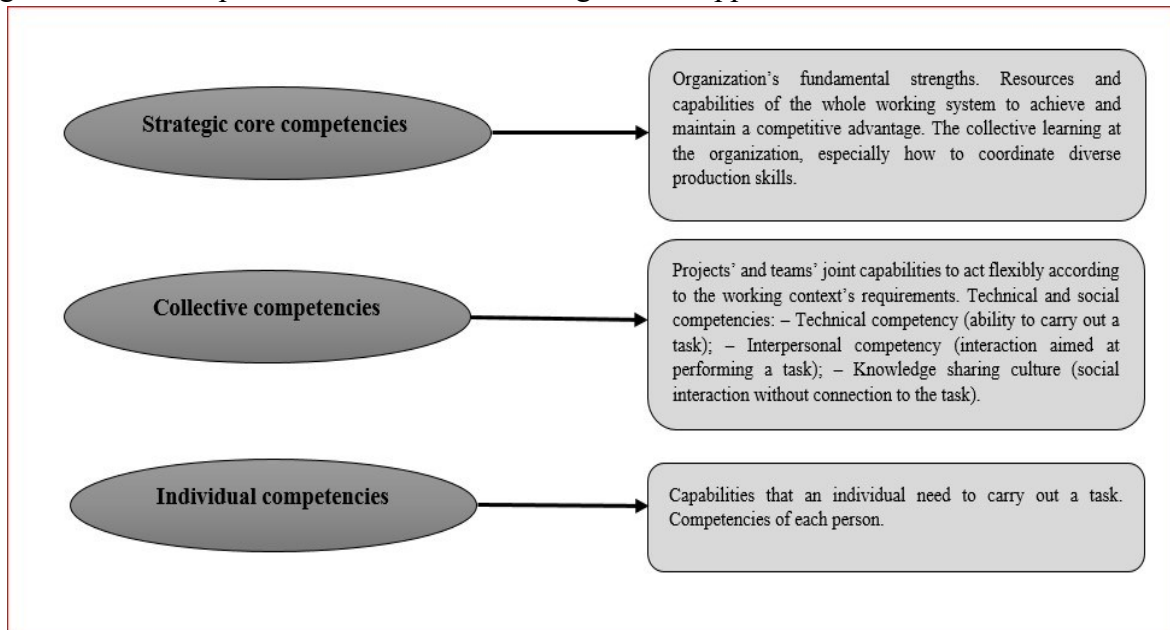
Green training helps draw the attention of employees and integrate their knowledge into the context of environmental issues, making them confident in environmentally friendly behaviors by protecting against pollution, finding energy sources, taking new paths to green initiatives, and constant awareness of the environment.

Green training evolves with complementary education designed to integrate environmental management objectives. The aim is to promote a sustainable organization by implementing green training. (Yaf, Tahseen, and ArslanHaider, 2021, p. 01).

The goal of green training is to move towards a green economy. This revolution is due to the recognition that the requirements of a green economy require a qualified workforce, called the “green workforce”.

**2.2. Core, Collective and Individual Competencies:**

Figure 2 depicts a model in which organizational competencies are described in terms of strategic core competencies, group competencies and individual competencies. Each element of the organizational competencies described in the figure also appears at different levels in the



organization

**Fig.2. : Strategic, core and individual competencies**

The concepts of strategic core competencies, collective competencies and individual competencies are defined as follows:

- (a) Strategic core competencies are considered the most important key factor in the organization's success. It represents the set of business functions performed by the company - on which the organization is based - and includes the competencies that lead to high performance. As for intellectual capital, strategic core competencies include a combination of human, structural and relational capital.
- (b) Collective competencies are competencies that represent the team spirit and include technical competencies related to team tasks and personal competencies related to the required synergy. It also indicates a culture of knowledge sharing within and between teams. Examples include:
- Methods of coordinating work;
  - Ways to use the individual competency team;
  - The method of communication among members within the organization. This is linked to the concept of shared space.
- (c) The subject of developing individual competencies is an essential factor for developing basic and collective competencies. However, managing individual competencies does not fall within the subject of this research (Kurz and bartram,2002).



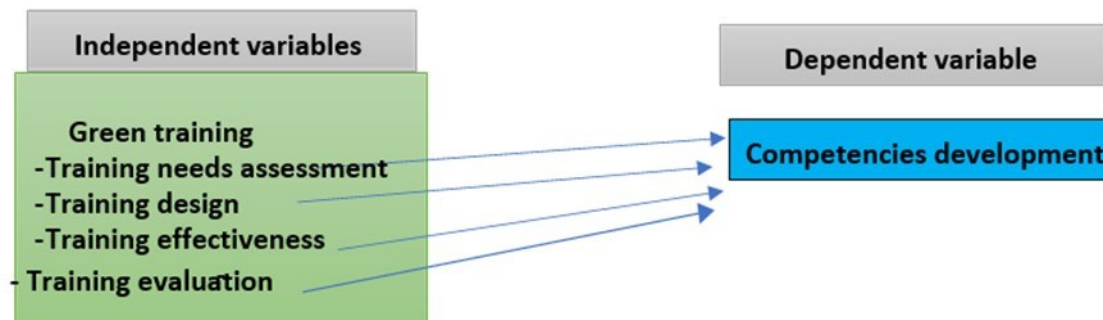
The proficiency levels in Figure 2 are not mutually exclusive. Because developing strategic core competencies will determine the needs for developing both collective and individual competencies in the future. Whereas individual competencies inevitably follow the basic and collective competencies of the team. Group or individual level competencies can also influence higher level competencies. Finally, it can be said that in a research and development organization, we can consider that distinctive individual competencies are the determining factor for the success of the entire organization .

## 2. METHOD AND PROCEDURES :

### 2.1. Research model :

The answer to the problem and the questions required the construction of a study model based on previous studies, as shown in Figure N° 1:

**Fig.2.**  
**Research model**



**Source:** by researchers based on previous studies and theoretical framework.

### 2.2. Population and sample of the study:

We procured a sample of 85 employees from the population presented by 193 employees, 79 of them who completely responded the questionnaires.

However, (06) questionnaires were invalid because the respondents did not completely answer them.

### 2.3. Data collection method :

We used the questionnaire as a tool to collect data and information. It contains of 02 sections:

the first section consists data of age, gender, years of experience, educational qualification and skilled level.

The second section contains of **21** items which are distributed to 05parts. A Likert scale of 1 (strongly disagree) to 5 (strongly agree) is applied to measure the responses. The first part comprises **04** items “**TNA\_1** to **TNA\_4**” explain the variable of training needs assessment. As for the second part, it addresses training design and contains **04** items also “**TD\_1** to **TD\_4**”. Despite the fact the third block (training effectiveness) contains **04** items “**TE\_1** to **TE\_4**”, and the fourth

part that mean training evaluation comprises 04 items “TEV\_1 to TEV\_4”, and the fifth part that explicate competencies development covers 05 items “CD\_1 to CD\_5”.

**2.4. Analysis Tools :**

In order to create data analysis and test the hypotheses, it is obligatory to use SmartPLS3.

The following statistical methods have been realized:

**Table 1.**

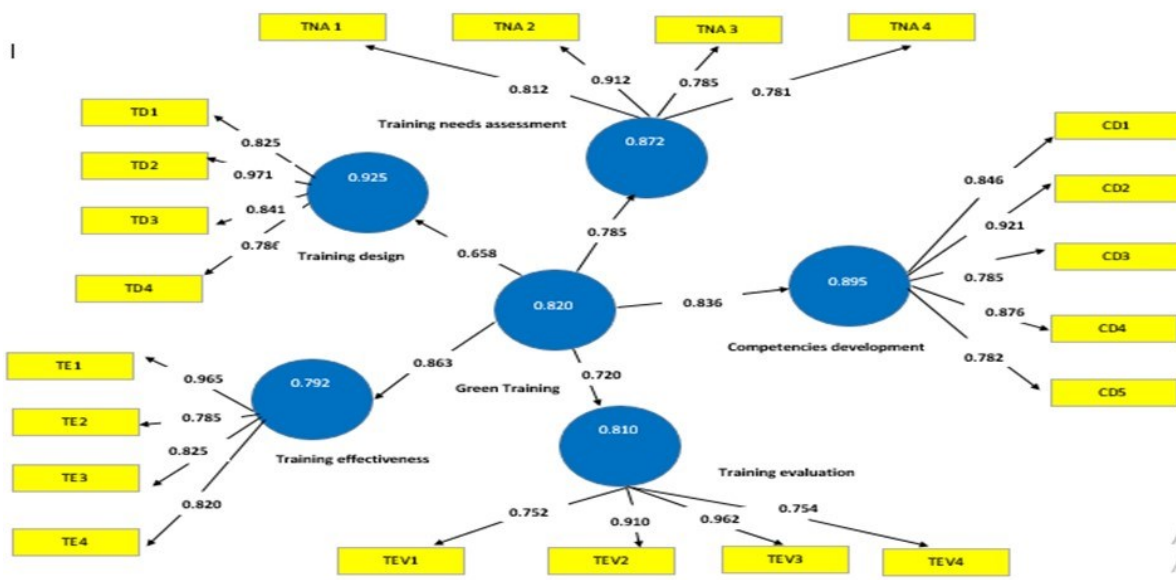
Assessment of the measurement model	Assessment of the structural model
Construct Reliability and Validity	Coefficient of Determination – R <sup>2</sup>
Fornell-Larcker Criterion	Effect size -f <sup>2</sup>
Heterotrait-Monotrait Ratio (HTMT)	Predictive relevance Q <sup>2</sup>
	Hypotheses Testing (Path Coefficient)

**3. STUDY RESULTS (ANALYSIS AND DISCUSSION):**

**3.1. Assessment of the measurement model:**

Reflective measurement model assessment contains inspecting the indicator loadings which recommended above 0.708.

**Fig.2. Items Factor loadings**



**Source:** By Authors based on SmartPLS3 output.

The figure above shows all items factor loading, it is evident that all values are superior to 0.7. Reliability for study that depends on recognized measures should be 0.70 or higher.

Table N°2 indicate Cronbach's Alpha values which range from 0.792 to 0.925, (Diamantopoulos, 2012, pp. 434-449; Drolet, 2001, pp. 196-204) consider that the reliability values between 0.70 and 0.90 range from “satisfactory to good”.

**Table 2.**  
Construct Reliability and Validity

	<b>Cronbach's Alpha</b>	<b>rho_A</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>
<b>Training needs assessment</b>	0.872	0,925	0,939	0,833
<b>Training design</b>	0.925	0,916	0,927	0,743
<b>Training effectiveness</b>	0.792	0,843	0,870	0,657
<b>Training evaluation</b>	0.810	0,863	0,887	0,676
<b>Competencies development</b>	0.895	0.825	0.874	0.896

**Source:** By Authors based on SmartPLS3 output.

Convergent validity is the degree to which the construct converges to explain the variance of its items.

All variables have an Average Variance Extracted AVE higher than 0.50 which is measured acceptable, it shows that the construct explains at least 50 % of the variance of its items. Also, Composite Reliability values range from 0.870 to 0.939 which demonstrate the internal consistency reliability.

#### 4.1.1 Discriminant Validity

##### Fornell-Larcker Criterion

In the structural model, Construct is empirically different from other constructs. (Fornell, 1981, pp. 39-50) proposed the traditional metric and suggested that each construct's AVE should be compared to the squared inter-construct correlation of that similar construct and all other reflectively measured constructs in the structural model.

The Table N°3 presenting that the value of each variable with itself is higher to the value of the same variable with the others.

**Table 3.**  
Fornell-Larcker Criterion

	<b>Training needs assessment</b>	<b>Training design</b>	<b>Training effectiveness</b>	<b>Training evaluation</b>	<b>Competencies development</b>
<b>Training needs assessment</b>	<b>0,917</b>				
<b>Training design</b>	0,521	<b>0,846</b>			
<b>Training effectiveness</b>	0,267	0,441	<b>0,814</b>		

<b>Training evaluation</b>	0,284	0,430	0,656	<b>0,839</b>	
<b>Competencies development</b>	0,791	0,759	0,819	0,819	<b>0,849</b>

Source: By Authors based on SmartPLS3 output.

### Heterotrait-Monotrait Ratio (HTMT)

The outcomes in the Table N°3 shows that all values of HTMT are inferior than 0.90. When HTMT value below 0.90 would suggest the existence of discriminant validity (Henseler, 2015, pp. 115-135).

**Table 4.**  
Heterotrait-Monotrait Ratio (HTMT)

	<b>Training needs assessment</b>	<b>Training design</b>	<b>Training effectiveness</b>	<b>Training evaluation</b>	<b>Competencies development</b>
<b>Training needs assessment</b>					
<b>Training design</b>	0,587				
<b>Training effectiveness</b>	0,275	0,474			
<b>Training evaluation</b>	0,310	0,454	0,785		
<b>Competencies development</b>	0,689	0,478	0,659	0,712	

Source: By Authors based on SmartPLS3 output.

## 4.2. Assessment of the structural model:

### 4.2.1. Coefficient of Determination – R<sup>2</sup>

(Chin, 1998, p. 8) proposed that the values of R<sup>2</sup> that above 0.67 considered high, however values ranging from 0.33 to 0.67 are moderate. But (Hair, 2011, pp. 139-151) appreciates that R<sup>2</sup> values of 0.75 and 0.50 and can be considered respectively substantial and moderate The Table N°5 shows the both R<sup>2</sup> values and variable clarification strength.

The dependent variable competencies development is explained 74.1%, 42.6%, 87.4% and 79.1% by the independent variables training needs assessment, training design, training effectiveness and training evaluation respectively.

**Table 5.**  
Coefficient of Determination

	<b>R Square</b>	<b>R Square Adjusted</b>	<b>Result</b>
<b>Training needs</b>	0,741	0,732	High

<b>assessment</b>			
<b>Training design</b>	0,426	0,416	Moderate
<b>Training effectiveness</b>	0,874	0,866	High
<b>Training evaluation</b>	0.791	0.789	High

Source: By Authors based on SmartPLS3 output.

#### 4.2.2. Tests Hypotheses and Path Coefficients

**Table 6.**  
Tests Hypotheses and Path Coefficients

Hypo		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
<b>H<sub>1</sub></b>	<b>Training needs assessment - &gt;competencies development</b>	0,643	0,638	0,187	3,341	<b>0,000</b>	<b>Supported**</b>
<b>H<sub>2</sub></b>	<b>Training design&gt;competencies development</b>	0,836	0,843	0,063	14,476	<b>0,000</b>	<b>Supported**</b>
<b>H<sub>3</sub></b>	<b>Training effectiveness- &gt;competencies development</b>	0,857	0,855	0,070	13,022	<b>0,001</b>	<b>Supported**</b>
<b>H<sub>4</sub></b>	<b>Training evaluation- &gt; competencies development</b>	0,838	0,863	0,074	15,077	<b>0,000</b>	<b>Supported**</b>
<b>H<sub>5</sub></b>	<b>Training evaluation- &gt; competencies development</b>	0,739	0,742	0,0869	13,117	<b>0,000</b>	<b>Supported**</b>

Source: By Authors based on SmartPLS3 output.

Based on this table, and according to the P-values which are less than 0.05 and the T Statistics values that higher to the T Value Table (2.042), there is a strong significant relationship between independent variables “training needs assessment, training design, training effectiveness and training evaluation” and competencies development in Chiali company.

#### 4.2.3. Effect size - $f^2$

This metric is the  $f^2$  effect size and is somewhat redundant to the size of the path coefficients.

**Table 7.**  
Effect size - $f^2$

	<b>Green training</b>	<b>TNA</b>	<b>TD</b>	<b>TE</b>	<b>TEV</b>
<b>Green training Result</b>		0,744	0,586	2,174	2,535
Large effect sizes					

**Source:** By Authors based on SmartPLS3 output.

(Cohen, 1988) appreciate that values higher than 0.35 depict large  $f^2$  effect sizes.

**4.2.4. Predictive relevance  $Q^2$ :** in order to measure the PLS path model's predictive accuracy, and according to (Geisser, 1974, pp. 101-107; Stone, 1974, pp. 111-147) the calculation of  $Q^2$  is more than indispensable. As shown in the table N°8,  $Q^2$  values higher than 0.25 and less than 0.50 depict medium predictive relevance of the PLS-path model.

**Table8.**  
Predictive relevance  $Q^2$

	<b>SSO</b>	<b>SSE</b>	<b><math>Q^2 (=1-SSE/SSO)</math></b>
<b>Green training</b>	682,000	682,010	
<b>Training needs assessment</b>	244,000	147,649	0,346
<b>Training design</b>	244,000	168,489	0,253
<b>Training effectiveness</b>	244,000	132,581	0,423
<b>Training evaluation</b>	244,000	118,474	0,477
<b><u>Competencies development</u></b>	<u>244,000</u>	<u>147,464</u>	<u>0,397</u>

**Source:** By Authors based on SmartPLS3 output.

## 5. CONCLUSION

Chiali Company, like other companies, always seeks to increase its intellectual and organizational capabilities in various operations by encouraging its employees to propose new ideas that are compatible with the green training programs that all employees have benefited from. The company also allocates a huge financial budget for research and development, in addition to updating new designs for green training and its various strategies, without neglecting to spread the culture of

using modern technologies as active methods in designing programs, in order to keep pace with the changes and developments taking place in the world. -There is a positive impact of green training on competencies development for Chiali company.

-There is a positive impact of training needs assessment on competencies development for Chiali company.

-There is a positive impact of training design on competencies development for Chiali company.

-There is a positive impact of training effectiveness on competencies development for Chiali company.

-There is a positive impact of training evaluation on competencies development for Chiali company.

-There is a positive impact of green training on competencies development for Chiali company.

Based on the previous research results, we propose a set of recommendations and proposals for Chiali Company as follows:

- Spreading the spirit of green training among employees.
- Encouraging the use of modern technology to increase environmentally friendly green competencies.
- Adapting the organizational structure and making it flexible and appropriate to encourage green training programs and develop competencies to increase high performance.

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