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Original article

Indicator system to evaluate the management of training for sustainable tourism management

Sistema de indicadores para evaluar la gestión de la capacitación para el turismo sostenible

Sistema de indicadores para avaliar a gestão do treino para a gerência do turismo sustentável

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ABSTRACT

Sustainable tourism is a paradigm for the organizations and regions that promote its achievement. However, the growth of tourism activity must not be detrimental to the natural and sociocultural environment of tourist destinations, which is why it is necessary to promote its sustainability. The objective of this work was to design a system of indicators in terms of process, results and performance that made it possible to evaluate, at the local level, the management of training in favor of sustainable tourism. Different research methods, procedures and techniques were used to obtain the proposed system of indicators. With the application of the system of indicators in the locality of Viñales, Pinar del Río, an evaluation superior to the initial one was achieved, obtaining an overall evaluation of Acceptable and an advance in the economic indicators related to live work as an expression of the development of competences for sustainable tourism.

Keywords: training; competencies for sustainable tourism; indicators.

RESUMEN

El turismo sostenible constituye un paradigma para las organizaciones y regiones que impulsan su consecución. No obstante, es preciso que el crecimiento de la actividad turística no vaya en detrimento del entorno natural y sociocultural de los destinos turísticos, por lo que se hace necesario fomentar su sostenibilidad. Este trabajo tuvo como objetivo diseñar un sistema de indicadores en términos de proceso, resultados y desempeño que permitió evaluar, a escala local, la gestión de la capacitación en función del turismo sostenible. Se utilizaron diferentes métodos, procedimientos y técnicas de investigación que permitieron obtener el sistema de indicadores propuestos. Con la aplicación del sistema de indicadores en la localidad de Viñales, Pinar del Río, se logró una evaluación superior a la inicial, obteniéndose una evaluación global de Aceptable y un avance en los indicadores económicos relativos al trabajo vivo como expresión del desarrollo de las competencias para el turismo sostenible.

Palabras clave: capacitación; competencias para el turismo sostenible; indicadores.

RESUMO

O turismo sustentável é um padrão para as entidades e regiões que promovem sua realização. Entretanto, é necessário que o acréscimo da atividade turística não seja lesivo ao ambiente natural e sócio-cultural dos destinos turísticos, razão pela qual é necessário impulsionar sua sustentabilidade. O objetivo deste trabalho foi projetar um sistema de indicadores em termos de processo, resultados e desempenho que permitisse a avaliação, em nível local, da gestão do treino em termos de turismo sustentável. Foram utilizados diferentes métodos, procedimentos e técnicas de pesquisa para obter o sistema de indicadores proposto. Com a aplicação do sistema de indicadores na localidade de Viñales, Pinar del Río, foi realizada uma avaliação superior à inicial, obtendo-se uma avaliação geral de Aceitável e um avanço nos indicadores econômicos relacionados ao trabalho vivo como expressão do desenvolvimento de competências para o turismo sustentável.

Palavras-chave: treino; habilidades de turismo sustentável; indicadores.

INTRODUCTION

Sustainable tourism appeared in the geographical debate in the 1990s, following the popularization of the terms "sustainability" and "sustainable development" after the 1992 Rio Conference to describe an ideal tourism development that does not involve negative environmental and social impacts.

The definitions analyzed in the specialized literature (Alcívar Vera & Bravo Acosta, 2017; Castro Alfaro & Marrugo Salas, 2018; Condor Bermeo, 2018; Lalangui et al., 2017; Proaño Ponce et al., 2018), have in common several elements that characterize sustainable tourism, such as: there must be harmony between the economy, nature and society; local culture, traditions, nature and heritage must be respected; the income derived from tourism activity must be reverted towards local development; there must be systemic work between all the actors involved in tourism activity; and it must be considered as a viable development model, which guarantees the needs of present and future generations.

Educating for sustainability is a systematic process aimed at building competencies in managers and workers, committed to the permanent search for the best possible relationships between society and its environment, taking as a reference the principles of sustainable development. According to Pimentel de Oliveira (2018), through education, it is possible to train citizens committed to the future, aware of the importance of environmental maintenance and supportive in the redistribution of the economy.

In this context, the training of local stakeholders that influence tourism is a way to develop competencies aimed at the sustainability of this activity, which will guarantee a performance in accordance with the principles of sustainable tourism.

It is also important to point out the need to design the training from the required levels and topics with an order and logic that facilitate learning and are consistent with the work of the various actors in the development they seek. An excellent reality would be the incorporation of the great majority of the actors of the same locality to the training process so that these spaces become the place and the moment of growth of a human group willing to dialogue, to share their ideas, knowledge and experiences for learning and the collective construction of a new knowledge and ways of doing that they apply in their daily work, building bridges and common codes that make them function as a whole in function of all and with all (Mirabal Patterson, 2006).

Hence, the fundamental role of training in the approach to the paradigm of sustainable tourism, taking into account that the emphasis of training actions is not only to address individual capacities or skills, or to prepare professionals for the market, but to introduce into the heart of the educational act the problems of society, from the local to the global scale, fostering collective responsibility and thus enhancing the transformative and liberating character that education can have (Novo, 2009).

The concept of competencies for sustainable tourism, defined by Vargas Fernández and Cuesta Santos (2018), is assumed for the present work, as the synergetic set of knowledge, skills, attitudes, values, aptitudes, experiences and motivations that are articulated in the performance for the achievement of sustainable tourism, from the management of natural, economic and socio-cultural resources, as a contribution to the satisfaction of tourists and the elevation of the quality of life of the local inhabitants.

It is important to highlight the term "synergetic" in the above definition, since it is not a matter of the "sum of its components", but of the necessary integration among them that allows assuming the holistic approach of competence as a whole that occurs in the bio-psycho-social unit constituted by the person who works and who must manifest these competencies.

Different types of competencies can be found in the literature on the subject, which are classified in different ways by various authors such as: Cuesta Santos (2018), Vélez Bedoya et al. (2018), Juárez Martínez and González Fernández (2018), Ramón Pineda et al. (2019), Carrizosa Prieto (2019), Pugh and Lozano (2019), Álvarez Benítez and Asensio Muñoz (2020). Those with the highest degree of consensus are: generic competencies, also called transversal, intermediate, generative or general competencies, and specific competencies (technical or specialized).

For their part, Vargas Fernández and Cuesta Santos (2018) define generic competencies for sustainable tourism as those common competencies for managers and workers linked to tourism activity that enable them to act in line with its sustainability. On the other hand, they define as specific competencies for sustainable tourism the competencies that managers and workers linked to tourism activity should possess in a differentiated manner, according to the role they play in each organization, in such a way that they contribute to the sustainability of tourism.

The study of several works related to the evaluation of the impact of training in different contexts and for dissimilar purposes has shown the need to develop a system of indicators in terms of process, results and performance to evaluate the management of training for sustainable tourism, determining

the impact of training actions on the desired level of competencies, as an expression of integration with marked influence on the performance of community members, managers and workers of the state and non-state sector linked to tourism activity in order to contribute to its sustainability.

MATERIALS AND METHODS

Different research methods, techniques and procedures were used during the research. As a general theoretical method, dialectical materialism was used to assess the evolution of research in the field of training impact evaluation, and the systemic method was used to support the proposed system of indicators.

Primary and secondary sources of information were used to verify the scientific problem in localities with tourist vocation in the province of Pinar del Río, Cuba, fundamentally in the locality of Viñales, which constitutes the main tourist destination of this province. As part of the primary sources, a survey was applied to managers and workers of the state sector and to lessors to determine their perception about sustainable tourism and thus their level of knowledge, attitudes, values and motivations on this matter.

It was also necessary to resort to secondary sources of information available in the locality and in the organizations involved, such as: 1) local development strategy; 2) strategy for the improvement of cadres and substitutes; 3) training strategies for the actors involved; 4) reports of the workshops held with lessors and state actors on topics related to tourism activities, among others.

In order to carry out the research, the organizations with the greatest influence on tourism activity were taken into account from the total number of organizations in the locality, defining the following selection criteria:

- The entities and facilities that provide services for tourism in Viñales, both hotel and non-hotel, since most of them offer or are associated with certain natural and/or socio-cultural attractions
- The economic, social, political and mass organizations that have the greatest influence on the development of tourism activity, by supporting it, from the point of view of insurance, as actors in the care and conservation of the environment, as promoters of the culture of the locality, as well as those responsible for the training of local citizens and the provision of health services to the population

- The rental houses for national and international tourism that have more than 10 years, uninterruptedly, in the exercise of the rental activity

Based on the application of these criteria, 39 state organizations and 57 non-state organizations (lessors) were selected as the study population.

To determine the sample size, simple random sampling was used, obtaining a total of 28 state organizations and 36 non-state organizations. Subsequently, a stratified random sampling was carried out, dividing the sample by strata based on the number of state organizations previously determined. Two groups were taken into account (managers and workers), to which different techniques were applied in order to ascertain the considerations of each group. In the rental houses, it was worked with the landlord (self-employed tenant), since he/she is the one who has the most command over the activity he/she performs.

The documentary review carried out and the results of the application of the aforementioned techniques, together with the analysis of the state of the art on the analyzed topic, allowed obtaining sufficient elements for the design of the system of indicators proposed in this research, highlighting that there are limited actions implemented, both in the state and non-state sectors, in terms of increasing the competencies of managers and workers towards sustainable tourism. Accordingly, the evaluation of the impact of the training management process is not at the desired level, which led to the development of the system of indicators.

RESULTS AND DISCUSSION

Some technologies (methodologies, procedures, systems) on the evaluation of the impact of training, including the definition of indicators for this purpose, were analyzed. These technologies proposed by authors such as Muñoz Carine and Rodríguez Piña (2017), López Boudet et al. (2017), Guerra Castillo (2021), Stable Rodríguez and Núñez García (2021), served as a reference for the development of the system of indicators proposed in this research, by determining their main methodological contributions and limitations.

Their review and comparison was based on the following criteria: 1) the levels or phases, 2) the moments in which the impact of training should be evaluated, 3) the essential approaches, 4) the main methodological contributions and 5) the main limitations of each.

The study of these technologies made it possible to assess the evolution of research in the field of training impact evaluation. There was coincidence in the levels or phases of this process, namely: reaction, learning, results and impact, which have become classic elements of the process, of a rather static nature and which constitute the main methodological contributions of the technologies studied. Another common element is related to the moments in which the impact of training actions should be evaluated: before, during and after, a question that allows structuring the process in order to achieve a better organization.

The main limitations analyzed and which served as the basis for the proposed system of indicators in this work are as follows:

- Some consider economic aspects exclusively
- They are basically focused on the individual employee's performance
- Not all use indicators to evaluate the impact of training
- Some have management by competencies at their core, but do not establish how to determine and evaluate competencies. They only measure training courses given within the same organization. It is not clear how to replicate the proposal in other organizations
- They do not take into account how to evaluate the contribution made to the development of competencies for sustainable tourism, based on the training process implemented

Results of the diagnosis in localities with a tourist vocation in Pinar del Río

In order to carry out the diagnosis, the organizations of Viñales that had the greatest influence on tourism activity were taken into account, following the criteria set out in previous sections.

In addition, through a documentary review, it was possible to confirm that in other localities with a tourist vocation in the province of Pinar del Río, there is a set of limitations that hinder progress towards sustainable tourism.

From the analysis and the results of the diagnosis carried out, the following general regularities can be derived:

- There are limited compentencies for sustainable tourism among managers and workers in the state sector linked to this activity, as well as among lessors, which has an impact on the application of the sustainability paradigm

- The different local stakeholders do not consider themselves an integral part of the tourism activity, which limits the possibilities of integration of all organizations as an important step to promote change towards sustainable tourism
- In the diagnosis of learning needs, they only take into account those aspects related to the improvement of very specific activities and linked to the functions of the worker in his/her job, lacking topics aimed at increasing the competencies of the personnel
- The topics included in the training strategies of the stakeholders involved do not consider aspects related to sustainable tourism or other related topics
- The training received by managers and their substitutes in the localities analyzed is insufficient to raise their awareness of the importance of sustainable tourism and their role in the decision-making process aimed at its efficient management
- The scope of the environmental education programs for the local communities and for the actors and decision makers of the territory does not show the desired results for an environment such as those diagnosed
- They do not have scientifically argued tools that contribute to evaluate the impact of the training actions they carry out in terms of sustainable tourism at the local level

Indicator system to evaluate the management of training for sustainable tourism management

The impact of training for sustainable tourism is conceived as the process by which the impact of training actions on the desired level of competencies is determined, as an expression of integration with marked influence on the performance of community members, managers and workers in the state and non-state sector linked to tourism activity in order to contribute to its sustainability.

In order to plan and follow up the training action and thus be able to determine its impact, this process is divided into three fundamental moments: before, during and after the training, taking into account the use of techniques such as surveys, document review, group work, among others.

In the "pre-training" stage, a forecast of the potential impact of the training is established through a set of elements or indicators related to the diagnosis of needs for sustainable tourism competencies, the budget for training and the level of motivation to learn about this topic (process indicators). In addition, indicators of results and performance expected from the implementation of training actions for sustainable tourism are also established.

The second stage: "during the training" is the moment when all the actions included in the plan are executed and its effectiveness is evaluated, taking into account the correspondence of this plan with the needs and interests of those involved in the process.

Finally, the "post-training" stage makes it possible to assess whether the proposed objectives were met and to adopt any adjustments or adaptation in future plans. It is checked whether the indicators established in the first stage were modified, whether the expectations of those involved were met and whether there was a transfer of knowledge to other managers and workers in the state and non-state sector and members of the community.

In summary, in order to measure the impact of training management for sustainable tourism, a system of indicators grouped into process indicators, result indicators and performance indicators is proposed (Table 1).

- Process indicators: Indicators that allow the optimization of training management, by determining its strengths and weaknesses in aspects such as the need for sustainable tourism competencies, motivation to learn, the level of execution of the training budget, among others
- Indicators of results: Indicators that allow measuring the results (outputs) derived from the training process for sustainable tourism, in order to determine the achievement of the proposed objectives
- Performance indicators: Indicators to measure the performance of the actors involved in the training process as an expression of competencies for sustainable tourism

Table 1. System of indicators to evaluate the management of training for sustainable tourism

Indicator	Calculation expression	Target	Rating scale
Process indicators			
1- Level of motivation to learn about sustainable tourism (GMapTS)	$GMapTS = \frac{AS + S}{T} * 100$ *where:* AS: Total of Highly Satisfactory Responses	To show the degree of motivation of managers and workers of the state and non-state sector linked to tourism activities, as well as	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 %

	S: Total Satisfactory responses T: Total responses	community members to learn new aspects related to sustainable tourism.	Satisfactory > -90 % Highly Satisfactory
2- Index of generic competency gaps for sustainable tourism of managers (IBCGTSd)	$IBCGTSd = \frac{\sum_{i=1}^{n} IBCGTSdi}{n}$ *where:* IBCGTSdi: Index of generic competency gaps for sustainable tourism of manager i n: Total managers	Determine the existing gap between the current level of generic competencies for sustainable tourism of managers linked to the tourism activity and the required level.	- < 30 % Highly Satisfactory - Between 30 and 45 % Satisfactory - Between 46 and 70 % Acceptable > -70 % Deficient
a) Gap index of generic competencies for sustainable tourism of manager i (IBCGTSdi)	$IBCGTSdi = \left(1 - \frac{NACGTSdi}{NRCGTSdi}\right) * 100$ *where:* NACGTSdi: Current Level of Generic Competencies for Sustainable Tourism of the manager i NRCGTSdi: Required Level of Generic Competencies for Sustainable Tourism of manager i		
3- Index of generic competency gaps for sustainable tourism of state sector workers (IBCGTSt)	$IBCGTSt = \frac{\sum_{j=1}^{n} IBCGTStj}{n}$ *where:* IBCGTStj: Index of generic competency gaps for sustainable tourism of the state sector worker j n: Total number of workers in the state sector	Determine the existing gap between the current level of generic competencies for sustainable tourism of state sector workers linked to the tourism	- < 30 % Highly Satisfactory - Between 30 and 45 % Satisfactory - Between 46 and 70 % Acceptable

a) Index of generic competency gaps for sustainable tourism of state sector worker j (IBCGTStj)	$IBCGTStj = \left(1 - \frac{NACGTStj}{NRCGTStj}\right) * 100$ *where:* NACGTStj: Current Level of Generic Competencies for Sustainable Tourism of the state sector worker j NRCGTStj: Required Level of Generic Competencies for Sustainable Tourism of the state sector worker j	activity and the required level.	> -70 % Deficient
4- Index of Specific Competency Gaps for Sustainable Tourism for Managers (IBCETSd)	$IBCETSd = \frac{\sum_{i=1}^{n} IBCETSdi}{n}$ *where:* IBCETSdi: Index of specific competency gaps for sustainable tourism of manager i n: Total managers	Determine the existing gap between the current level of specific competencies for sustainable tourism of managers linked to the tourism activity and the required level.	- < 30 % Highly Satisfactory - Between 30 and 45 % Satisfactory - Between 46 and 70 % Acceptable > -70 % Deficient
a) Gap index of specific competencies for sustainable tourism of manager i (IBCETSdi)	$IBCETSdi = \left(1 - \frac{NACETSdi}{NRCETSdi}\right) * 100$ *where:* NACETSdi: Current Level of Specific Competencies for Sustainable Tourism of the manager i NRCETSdi: Required Level of Specific Competencies for Sustainable Tourism of manager i		
5- Index of specific competency gaps for sustainable tourism of state	$IBCETSt = \frac{\sum_{j=1}^{n} IBCETStj}{n}$ *where:* IBCETStj: Index of specific competency gaps for sustainable tourism of the state	Determine the existing gap between the current level of specific competencies for sustainable tourism of state	- < 30 % Highly Satisfactory - Between 30 and 45 % Satisfactory

sector workers (IBCETSt)	sector worker j n: Total number of workers in the state sector	sector workers linked to the tourism activity and the required level.	- Between 46 and 70 % Acceptable > -70 % Deficient
a) Index of specific competency gaps for sustainable tourism of state sector worker j (IBCETStj)	$IBCETStj = \left(1 - \frac{NACETStj}{NRCETStj}\right) * 100$ *where:* NACETStj: Current Level of Specific Competences for Sustainable Tourism of the state sector worker j NRCETStj: Required Level of Specific Competences for Sustainable Tourism of the state sector worker j		
6- Level of execution of the training budget (NePresC)	$NePresC = (CCr / PresCplan) * 100$ *where:* CCr: Actual Training Cost PresCplan: Planned Training Budget	To show the extent to which training funds have actually been used.	- < 60 % Deficient - Between 60 and 70 % Acceptable - Between 71 and 85 % Satisfactory > -85 % Highly Satisfactory
Results indicators			
7- Level of satisfaction with the training received (NsCrec)	$NsCrec = \frac{AS + S}{T}$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses	Determine the level of satisfaction of the participants with the training actions received.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81

a) Level of satisfaction with the planning of the modules delivered (NsPlan)	$NsPlan = \frac{AS+S}{T} * 100$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses		and 90 % Satisfactory > -90 % Highly Satisfactory
b) Level of satisfaction with the quality of the activities provided (NsCal)	$NsCal = \frac{AS+S}{T} * 100$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses		
c) Level of satisfaction with teacher preparation (NsProf)	$Ns\,\mathrm{Pr}\,of = \frac{AS+S}{T} * 100$ *where:* AS: Total of Highly Satisfactory Responses S: Total Satisfactory responses T: Total responses		
d) Level of satisfaction with materials and other learning resources used (NsMRap)	$NsMRap = \frac{AS+S}{T} * 100$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses		
e) Level of satisfaction with the evaluation system applied (NsSev)	$NsSev = \frac{AS+S}{T} * 100$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses		

8- Index of State Sector Workers Participating in Training (ITPCap)	$ITPCap = (TPR/TPP) * 100$ *where:* TPR: Actual Participating Workers TPP: Planned Participating Workers	Show the percentage of state sector workers who participate in training with respect to those expected to participate.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
9- Index of executives participating in training (IDPCap)	$IDPCap = (DPR/DPP) * 100$ *where:* DPR: Actual Participating Officers DPP: Planned Participating Directors	Show the percentage of managers who participate in the training with respect to those expected to participate.	- < 60 % Deficient - Between 60 and 80% Acceptable - Between 81 and 90% Satisfactory > -90 % Highly Satisfactory
10- Index of non-state sector workers Participating in Training (ICPCap)	$ICPCap = (CPR/CPP) * 100$ *where:* CPR: Non-state sector workers actual participants CPP: Non-state sector workers planned participants	Show the percentage of non-state sector workers who participate in training with respect to those expected to participate.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 %

			Highly Satisfactory
11- Level of Compliance with Training Actions (NCAC)	$NCAC = (ACR/ACP)*100$ *where:* ACR: Training Actions Performed ACP: Planned Training Actions	To show the degree of compliance with the actions foreseen in the training plan.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
12- Level of Application of what has been learned (NAAp)	$NAAp = \frac{AS+S}{T}*100$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses	Determine the level of application of what has been learned in the workplace, under sustainability criteria.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
13- Level of transfer of learned competencies (NTCap)	$NTCap = \frac{AS+S}{T}*100$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses	Determine the degree to which participants in the training process transfer the skills learned to other members of the organization.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory

			> -90 % Highly Satisfactory
14- Level of environmental awareness (NCAmb)	$NCAmb = \frac{AS + S}{T} * 100$ *where:* AS: Total of Highly Satisfactory responses S: Total Satisfactory responses T: Total responses	To show the level of environmental awareness acquired and/or developed through training activities related to sustainable tourism.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
Performance indicators			
15- Level of Generic Competencies for Sustainable Tourism of managers (NCGTSd)	$NCGTSd = \frac{\sum_{i=1}^{n} NCGTSdi}{n}$ *where:* NCGTSdi: Level of Generic Competences for Sustainable Tourism of the manager i n: Total managers	To show the level of generic competencies for sustainable tourism possessed by the managers linked to the tourism activity of the locality with respect to the competencies they should possess.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
a) Manager's Generic Competency Level for Sustainable Tourism i (NCGTSdi)	$NCGTSdi = (NACGTSdi / NRCGTSdi) * 100$ *where:* NACGTSadi: Manager's Current Level of Generic Competencies for Sustainable Tourism i NRCGTSdi: Required Level of Generic Competencies for Sustainable Tourism of manager i		

16- Level of Generic Competencies for Sustainable Tourism of state sector workers (NCGTSt)	$NCGTSt = \frac{\sum_{j=1}^{n} NCGTStj}{n}$ *where:* NCGTStj: Level of Generic Competences for Sustainable Tourism of the state sector worker j n: Total number of workers in the state sector	To show the level of generic competencies for sustainable tourism possessed by state sector workers linked to tourism activity in the locality with respect to the competencies they should possess.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
a) Level of Generic Competences for Sustainable Tourism of state sector worker j (NCGTStj)	$NCGTStj = (NACGTStj / NRCGTStj) * 100$ *where:* NACGTStj: Current Level of Generic Competencies for Sustainable Tourism of the state sector worker j NRCGTStj: Required Level of Generic Competencies for Sustainable Tourism of the state sector worker j		
17- Level of Specific Competences for Sustainable Tourism of managers (NCETSd)	$NCETSd = \frac{\sum_{i=1}^{n} NCETSdi}{n}$ *where:* NCETSdi: Level of Specific Competences for Sustainable Tourism of the manager i n: Total managers	To show the level of specific competencies for sustainable tourism possessed by the managers linked to the tourism activity of the locality with respect to the competencies they should possess.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
a) Level of Specific Competences for Sustainable Tourism of the manager i (NCETSdi)	$NCETSdi = (NACETSdi / NRCETSdi) * 100$ *where:* NACETSdi: Current Level of Specific Competencies for Sustainable Tourism of the manager i NRCETSdi: Required Level of Specific Competencies for Sustainable Tourism of manager i		

18- Level of Specific Competencies for Sustainable Tourism of State Sector Workers (NCETSt)	$NCETSt = \frac{\sum_{j=1}^{n} NCETStj}{n}$ *where:* NCETStj: Level of Specific Competences for Sustainable Tourism of the state sector worker j n: Total number of workers in the state sector	To show the level of specific competencies for sustainable tourism possessed by state sector workers linked to tourism activity in the locality with respect to the competencies they should possess.	- < 60 % Deficient - Between 60 and 80 % Acceptable - Between 81 and 90 % Satisfactory > -90 % Highly Satisfactory
a) Level of Specific Competences for Sustainable Tourism of the state sector worker j (NCETStj)	$NCETStj = (NACETStj/NRCETStj) * 100$ *where:* NACETStj: Current Level of Specific Competences for sustainable tourism of the state sector worker j NRCETStj: Required Level of Specific Competences for Sustainable Tourism of the state sector worker j		
19- Index of coincidence of generic competencies for sustainable tourism between the self-assessment of managers and the evaluation of their employees (ICGAdEt).	$ICGAdEt = \frac{\sum_{i=1}^{n} ICGAdiEtj}{n}$ *where:* ICGAdiEtj: Index of coincidence of the generic competencies for sustainable tourism between the self-assessment of manager i and the assessment of employee j. n: total number of managers	To show the degree of coincidence between the self-assessment given by managers and the assessment of their workers on the generic competencies for sustainable tourism.	= 100 % There is total coincidence. < 100 % managers' self-assessment of GCs is lower than the assessment of their employees. > 100 % managers'
a) Index of coincidence of generic	$ICGAdiEtj = \frac{CGAdi}{CGEtj} * 100$ *where:*		

competencies for sustainable tourism between the self-assessment of manager i and the evaluation of employee j (ICGAdiEtj).	CGAdi: Total Generic Competencies Self-assessed by manager i CGEtj: Total Generic Competencies Evaluated by worker j		self-assessment of the GCs is higher than the assessment of their employees.
20- Index of coincidence of generic competencies for sustainable tourism between employees' self-assessment and their managers' evaluation (ICGAtEd).	$ICGAtEd = \frac{\sum_{j=1}^{n} ICGAtjEdi}{n}$ *where:* ICGAtjEdi: Index of coincidence of generic competencies for sustainable tourism between employee j's self-assessment and manager i's assessment. n: total number of employees	To show the degree of coincidence between the self-assessment given by workers and their managers' assessment of generic competencies for sustainable tourism.	= 100 % There is total coincidence. < 100 % workers' self-assessment of the GCs is lower than the assessment of their managers. > 100 % employees' self-assessment of the GCs is higher than the assessment of their managers.
a) Index of coincidence of generic competencies for sustainable tourism between the self-evaluation of employee j and the evaluation of manager i (ICGAtjEdi).	$ICGAtjEdi = \frac{CGAtj}{CGEdi} * 100$ *where:* CGAtj: Total Generic Competencies Self-assessed by employee j CGEdi: Total Generic Competencies Evaluated by manager i		

21- Index of coincidence of the specific competencies for sustainable tourism between the self-assessment of managers and the evaluation of their employees (ICEAdEt)	$ICEAdEt = \frac{\sum_{i=1}^{n} ICEAdiEtj}{n}$ *where:* ICEAdiEtj: Index of coincidence of specific competencies for sustainable tourism between the self-assessment of manager i and the assessment of employee j. n: total number of managers	To show the degree of coincidence between the self-assessment given by managers and the assessment of their workers on the specific competencies of managers for sustainable tourism.	= 100 % There is total coincidence. < 100 % managers' self-assessment of CEDs is lower than their employees' assessment. > 100 % managers' self-assessment of CEDs is higher than their employees' assessment.
a) Index of coincidence of specific competencies for sustainable tourism between the self-assessment of manager i and the assessment of employee j (ICEAdiEtj).	$ICEAdiEtj = \frac{CEAdi}{CEEtj} * 100$ *where:* CEAdi: Total Specific Competencies of managers self-assessed by the manager i CEEtj: Total Specific Competencies of managers assessed by employee j		
22- Index of coincidence of specific competencies for sustainable tourism between the self-assessment of	$ICEAtEd = \frac{\sum_{j=1}^{n} ICEAtjEdi}{n}$ *where:* ICEAtjEdi: Index of coincidence of specific competencies for sustainable tourism between the self-assessment of employee	To show the degree of coincidence between the self-assessment given by the workers and the assessment of their managers about the specific competencies	= 100 % There is total coincidence. < 100 % workers' self-evaluation of the CET is lower than

employees and the assessment of their managers (ICEAtEd).	j and the assessment of manager i. n: total number of employees	of the workers for sustainable tourism.	the evaluation of their managers. > 100 % employees' self-assessment of the CET is higher than the assessment of their managers.
a) Index of coincidence of specific competencies for sustainable tourism between the self-evaluation of employee j and the evaluation of manager i (ICEAtjEdi).	$ICEAtjEdi = \frac{CEAtj}{CEEdi} * 100$ *where:* CEAtj: Total Specific Competencies of workers self-assessed by worker j CEEdi: Total Specific Competencies of the workers evaluated by the manager i		
23- Economic indicators	*From local stakeholders:* Productivity, Average monthly wage, Wage fund, Average wage-productivity correlation, Total tourism income (state and non-state sector). *From the locality:* Market production, sales, value added, material expenditure, wage fund, average number of workers, average monthly wage, productivity, average wage-productivity correlation.	To show the evolution of economic indicators of the actors involved and of the locality, as a result of the performance of managers and workers of the state and non-state sector, assessing the influence of training in their improvement.	It compares one year with respect to another.

Source: Own elaboration

Since the definition of competence is causally linked to superior performance, a group of economic indicators related to live work, linked to people at work, was used in the performance indicators.

To prove that competence increases, it is necessary to verify that good performance, yield or productivity increases, which would be the touchable or tangible counterpart that is immanent to the definition of competence - the behavioral component cannot be disregarded, notwithstanding the perceptual one. The above will make it possible to evaluate a Before level of performance or the level of activity, performance or productivity of these people and an After, with a certain expenditure of live work.

In addition, the transit between these two moments is analyzed for other labor and wage indicators, such as: average number of workers, average monthly wage, average wage-productivity correlation, among others. Indicators specific to tourism activity are also used: tourist income, average tourist stay and tourist occupancy level.

Once the above indicators have been determined, the evaluation of each of the groups and the overall evaluation is carried out, using the evaluative levels or categories: Highly Satisfactory, Satisfactory, Acceptable and Deficient. For this purpose, it is taken into consideration that the global evaluation of each group of indicators will be the minimum obtained by any of its indicators and the overall evaluation is determined by the minimum evaluation obtained in any of the three groups. To enrich it, the necessary qualitative evaluations are made, taking into account that the effects of the training are very broad.

The diagnosis of the problem in the town of Viñales and in others with tourist vocation in Pinar del Río made it possible to verify that the knowledge, values, attitudes and motivations of managers, workers and landlords about aspects associated with sustainable tourism are scarce, atomized and asystemic, which limits the application of the paradigm of sustainability in the field of tourist activity in these localities.

Process, results and performance indicators are obtained to facilitate the evaluation of the sustainable tourism training management process and its impact.

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Conflict of interest:

Authors declare not to have any conflict of interest.

Authors' contribution:

Tania Vargas Fernández designed the study, analyzed the data and prepared the draft.

Brígido García Páez was involved in the collection, analysis, and interpretation of the data.

All the authors reviewed the writing of the manuscript and approve the version finally submitted.

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