


Motivational characteristics


and eco-efficiency attitude among workers at the Peruvian Public University

Características motivacionales y actitud hacia la ecoeficiencia en trabajadores de la universidad pública peruana


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Abstract

The investigation was aimed at establishing the association between the motivational characteristics and the eco-efficiency attitude among workers at the Peruvian public university. The study was carried out on the basis of the quantitative methodology, similarity corresponds to the type of correlational descriptive study with a sample of 148 participants. The data collection instruments included the Labor Motivation Questionnaire and the Ecoefficient Attitude Questionnaire, composed in each case by 30 Likert-type items. According to the results, the motivational characteristics tend to favor the motivation of workers, the majority of them present a high disposition for the efficient use of resources and through the approach of Chi Cuadrado, an asymptotic (bilateral) significance is obtained below the level of significance ($p < 0.05$). It was concluded that there is dependence between the motivational characteristic variables with the attitude towards eco-efficiency in university workers. In that sense, motivational characteristics could help predict the attitude towards eco-efficiency.

Key Words: Conservation, attitude, motivation, saving, efficiency.

Resumen

La investigación se orientó a establecer la asociación entre las características motivacionales y la actitud hacia la ecoeficiencia en los trabajadores de la universidad pública peruana. El estudio se realizó en base a la metodología cuantitativa, asimismo corresponde al tipo de estudio descriptivo correlacional con una muestra de 148 participantes. Los instrumentos de recolección de datos fueron el Cuestionario de Motivación Laboral y el Cuestionario de Actitud Ecoeficiente, compuestos en cada caso por 30 ítems de tipo Likert. Según los resultados, las características motivacionales tienden a favorecer la motivación de los trabajadores, la mayoría de ellos presentan una alta disposición hacia el uso eficiente de los recursos y mediante la prueba de Chi Cuadrado se obtuvo una significación asintótica (bilateral) inferior al nivel de significancia ($p < 0,05$). Se concluyó que existe dependencia entre las variables características motivacionales con la actitud hacia la ecoeficiencia en los trabajadores universitarios. En ese sentido, las características motivacionales podrían ayudar a predecir la actitud hacia la ecoeficiencia.

Palabras clave: Conservación, actitud, motivación, ahorro, eficiencia.



Organizations are undergoing a change and constant transformation, due to globalization and market demands, which could affect employees¹. Therefore, a person to develop in a work area requires the use, in the first place, of knowledge, capacities, attitudes and abilities; As a result, the location allows you to position yourself in a specific area².

According to Cortés³, motivation is a multi-causal phenomenon, originated by different sources, such as the types of incentives, recognition, promotions, work itself, the needs of people, the goals and objectives that are held, the work conditions, the salaries, etc. On the other hand, motivation is considered as behavior aimed at achieving goals and incentives⁴. It includes a combination of intellectual, physiological and psychological processes that decide, at a given moment, with what force to act and in what direction the energy is directed⁵. Similarly, it can be considered as the willingness of people to do something, what conditions the skill needed to carry out an activity and satisfy some need⁶. Other studies consider motivation as a coordinated group of actions, which reflects the personality of the individual⁷, as an element that all individuals need to achieve goals in any aspect of life⁸.

In the work environment, the motivation has been the object of an extensive analysis, in which it can be distinguished from the groups of motivators: The extrinsic, which are outside the subject and belong to the material and social environment and the intrinsic ones, which are present in the execution work and depending on the characteristics of the position and the worker^{9,10}.

In this understanding, these motivating groups can guide the behavior of a productive as well as an unproductive attitude among workers because there is the possibility of considering motivation as a moment, the mental period that is manifested when there is in the person stimulation because of aspects internal as well as external, the ones that will be fundamental to conduct, conserve and maintain the conduct and the behavior of the task carried out¹¹.

When the motivation is oriented towards the fulfillment of the purposes and goals designed in the institution, there would be a need to comply with three indicators that serve as fundamental components that must be taken into account in the organizational scope, such as: the effort, understood as the daring, the impulse and the willingness to start, continue, complete a task; secondly, the objectives, which are the purposes and intentions that conform to the ideal of the organization; finally, the needs, considered as the insufficiencies that must be covered so that they do not become threats¹².

The importance of motivation at work provides a suitable climate, encourages, encourages and stimulates workers so that they improve their performance, in addition, to cover their needs achieves that the internal stimuli of the employees are oriented to a positive aspect, this suits in an important factor because it allows both the institution and the worker to benefit¹². Therefore, the motivation would become a necessary component to carry out the process oriented to the adminis-

tration of an organization, being part of the stage of direction or execution oriented to the administration of the people in the work environment¹³.

Regarding the care of the environment, it is one of the primordial elements of human action, for which there would be relevance of the actions that aim to preserve or limit the environmental damage¹⁴. The university context is conducive to the transmission of technical information for the care of the environment, being the eco-efficiency a tool that relates outputs and inputs in such a way that the smaller the inputs used, the more efficient the process will be¹⁵.

Eco-efficient educational institutions are spaces where the entire educational community is committed to improving the environment of their surroundings, being one of the steps to carry out the compilation of information on water consumption, energy, solid waste generation, species existence and green areas, among others, how to identify practices contrary to eco-efficiency in energy, water and paper handling; it will be the basis for the elaboration of the ecoefficiency diagnosis, which will serve as a reference for the current situation of what would be observed as difficult in the fortress¹⁶.

Eco-efficiency translates into actions aimed at providing benefits and services, considering the protection of the environment, allowing to satisfy human needs and providing quality of life, while reducing environmental impacts, as a result of the increasingly efficient use of resources and the energy¹⁷. It implies an efficient use of resources, which leads to a lower production of waste and contamination, as well as the reduction of operating costs¹⁸.

To a large extent, it is primarily based on creating more benefits and services using fewer resources and generating less contamination, or, in other words, creating more value with less impact or doing more with less¹⁹. For eco-efficiency, nature has economic value for its consequences on health and other environmental services in which sustainable management and development are sought, as well as the prudent use of natural resources so that they can continue to be exploited indefinitely²⁰.

Therefore, having a balanced and healthy environment to enjoy a life of warmth does not depend solely on the governments of turn or on the institutions dedicated to environmental preservation, as well as on the multiple actors that make up society²¹. If you can therefore decide that eco-efficiency in the soil is a need for environmental order, it is also an imperative for efficient and effective management, therefore, it can initially be applied in three fundamental areas: electrical energy, water, solid waste, especially the paper²².

This way, it adds a new value to the production of goods and services: sustainability, therefore, an institution is eco-efficient when: efficiently uses existing resources (water, energy, soil, green areas and biodiversity, etc.) and reduce the environmental impact of your activities such as waste accumulation, storage, contamination²³ and promoting a cleaner production, through the more efficient use of resources and the application of techniques for the reduction, recycling and

reuse of by-products²⁴. This way, the practice of eco-efficiency not only strengthens sustainable development, but also increases organizational competitiveness due to the reduction of energy consumption, the volume and toxicity of waste generated, and the waste of resources²⁵.

Finally, the purpose of the research was to establish the association between the motivational characteristics and the attitude towards eco-efficiency in the workers of the Peruvian public university.

Materials and methods

The research was carried out based on the quantitative methodology, it also corresponds to the type of correlational descriptive study, without performing the manipulation of the variables and cross-sectional, because the collection of information was carried out in a single period of time.

As for the population, it was made up of 240 participants, also by performing a simple random sampling, a sample of 148 was obtained. As for the environment, the study was carried out entirely at the Universidad Nacional Amazónica de Madre de Dios, located in the Madre de Dios region, Peru.

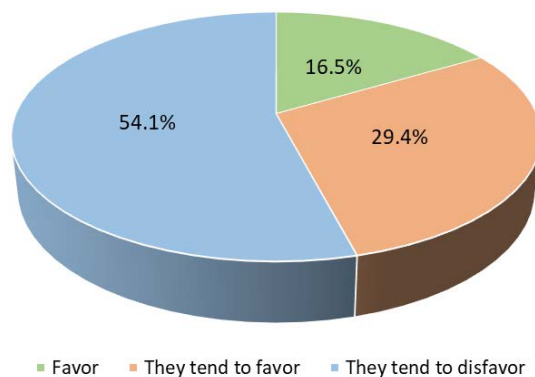
For the collection of information, the questionnaire for work motivation composed of 30 items with an evaluative scale of: totally agree (3), agree (2), disagree (1) and totally disagree (0) were considered as instruments. Its psychometric properties were determined through the process of validity and reliability. In this sense, it was established through the expert judgment technique that the inventory had an adequate level of content validity (Aiken's $V = 0.921$). On the other hand, the reliability was found through a pilot test carried out on 25 students and through it was determined that the inventory had an adequate level of reliability ($\alpha = 0.880$). Likewise, to collect data about the eco-efficient attitude of the workers, it was considered to apply the questionnaire composed of 30 items with a Likert-type scale: always (3), sometimes (2), rarely (1), never (0). Its metric properties were also determined through the content-based validity and reliability process, and it was found that the scale had an adequate level of content validity (Aiken's $V = 0.802$) and reliability ($\alpha = 0.820$).

The statistical analysis was divided into two parts, the first of which consisted in describing the consolidation of the motivational characteristics in Peruvian university workers, while the second part described the disposition of the attitude towards eco-efficiency in Peruvian university workers, to for this purpose, the circular diagram was used as part of the descriptive statistics, to specify the percentages. Due to the fact that in the investigation the association between two variables was analyzed using the Chi Square test and to identify the directionality, the Gamma test was applied²⁶.

Results and discussion

According to the strengthening of motivational characteristics in university workers (Figure 1), it is distinguished that 54.1% tend to favor motivation, 29.4% of these tend to disfavor the strengthening of workers' motivation while, only 16.5% favor the motivation of workers.

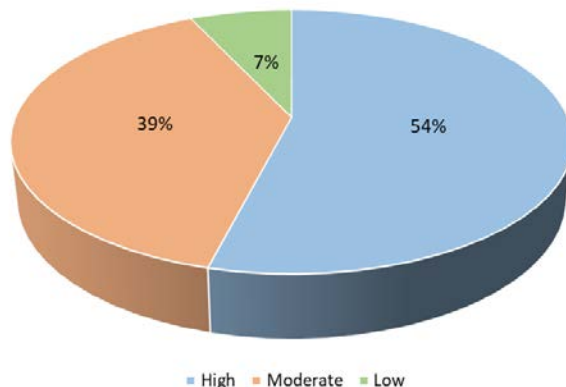
Figure 1. Strengthening of motivational characteristics in university workers.



The results obtained in terms of the variable related to motivational characteristics would be similar to the findings of Palma²⁷, determining that the total score of the average motivation is 56.70, which indicates a good level of motivation; as well as the results of Hernández⁴, reflect that 57.1% of the population has a good motivation and 31.4% high; Cornejo & Cornejo²⁸ identified that the majority of university workers had an average between very high and high, Zuta²⁹ identified that 50% of university workers consider that their level of motivation is good; Seijas et al.³⁰ identified that motivation at the high and very high levels represent 39%, unlike the 32% that was located at the regular level. These antecedents support a line sequence through the years that would allow us to understand that the motivation for the case of the university servers, presents higher percentages in the levels considered positive, differentiating from a possible tendency to low motivation.

In relation to the attitude towards eco-efficiency of university workers (Figure 2), it can be seen that 54% have a high disposition towards the efficient use of resources, promoting less production of waste and pollution, 39% have a moderate disposition and 7% of the sample has a low disposition.

Figure 2. Attitude towards eco-efficiency in university workers



The data recorded in Figure 2 would be supported by the conclusions raised by Mantilla et al.¹⁸ because the consumption of energy, water and other resources is due to the type of careers that the faculties host, being the engineering ones with the highest consumption due to the fact that they have laboratories and equipment that must use resources most of the time. This information is supported by the results of Advíncula et al.³¹, in part of the highest rate of water consumption, the Faculty of Forestry Sciences corresponds to 12.25 (L/person/day), and a large amount of water may be consumed to carry out the processes. Regarding the perception of eco-efficiency, the descriptive results of Alva³² indicated 55.4% oriented to being good.

Table 1 describes the existence of a predominance in the tendency to favor the characteristics of the individual, job position and employment situation. This would represent the possible existence of an impulse that would mediate the strengthening of motivation in university workers, while the comparison of the percentages in the levels: tendency to disfavor and favor would not have much variation in the percentage of each of the dimensions. Regarding the dimensions of the variable attitude towards eco-efficiency, it is distinguished that saving energy and water predominate in the percentage at the high level; while in the dimensions savings and reuse of materials and waste management, a decrease in percentage of the high level is shown and an increase in the moderate level compared to the first two dimensions.

Table 1. Percentage according to the dimensions of the variables.

Variable Motivational characteristics	Levels					
	Trend to disfavor		Trend to favor		They favor	
Dimensions	n	%	n	%	n	%
Characteristics of the individual	38	25.7	87	58.8	23	15.5
Job characteristics	43	29.1	79	53.4	26	17.6
Characteristics of the employment situation	39	26.4	85	57.4	24	16.2
Variable Attitude towards eco-efficiency	Levels					
	Low		Moderate		High	
Dimensions	n	%	n	%	n	%
Energy saving	10	6.8	52	35.1	86	58.1
Water saving	5	3.4	48	32.4	95	64.2
Savings and reuse of materials	20	13.5	55	37.2	73	49.3
Waste management	17	11.5	61	41.2	70	47.3

Regarding the inferential part, the results shown in Table 2 indicated, through the Chi Square test, that the asymptotic significance (bilateral) was lower than the level of significance ($p < 0.05$), which would indicate the existence of dependence between the motivational characteristic variables with the attitude towards eco-efficiency in university workers. Likewise, using Somers' d test, it was found that the intensity of association between both variables was medium; while through the Gamma test it was concluded that the motivational characteristics could help predict the attitude towards eco-efficiency.

Table 2. Association tests between the motivational characteristic variables and the attitude towards eco-efficiency.

Tests	Coefficients	Value
Pearson chi-square d for Somers gamma	Asymptotic significance (bilateral)	0,000
	Symmetry	0,563
	directionality	0,635

According to Table 3, the asymptotic significance (bilateral) of the Chi Square test was also lower than the level of significance ($p < 0.05$), which would indicate the existence of dependence between the characteristic dimensions of the individual, the job of work and the employment situation with the attitude towards eco-efficiency in university workers. In the same way, the application of the Somers d test confirmed that the intensity of association between the dimensions of the motivational characteristics variable and the attitude towards eco-efficiency was medium; Finally, with the results of the Gamma test, it was concluded that the characteristics of the individual, the job and the employment situation could help predict the attitude towards eco-efficiency.

Table 3. Association tests between the dimensions of the motivational characteristics variable and the attitude towards eco-efficiency.

Dimensions	Attitude towards eco-efficiency		
	Tests	Statistics	Value
Characteristics of the individual	Pearson chi-square d for Somers gamma	Asymptotic significance (bilateral)	0,000
		Symmetry	0,428
		directionality	0,491
Job characteristics	Pearson chi-square d for Somers gamma	Asymptotic significance (bilateral)	0,000
		Symmetry	0,539
		directionality	0,618
Characteristics of the employment situation	Pearson chi-square d for Somers gamma	Asymptotic significance (bilateral)	0,000
		Symmetry	0,495
		directionality	0,569

Conclusion

In relation to the strengthening of motivational characteristics, it was distinguished that 54.1% tend to favor, 29.4% of these tend to disfavor and 16.5% favor the strengthening of motivation in workers. Regarding the attitude towards eco-efficiency of university workers, it can be seen that 54% have a high disposition towards the efficient use of resources, promoting less production of waste and pollution, 39% have a moderate disposition and 7% of the sample had a low disposition. On the other hand, it was determined by means of the Chi-square test that the asymptotic significance (bilateral) was lower than the level of significance ($p < 0.05$), which would indicate the

existence of dependence between the motivational characteristic variables with the attitude towards eco-efficiency in university workers with a media association. Likewise, it was concluded that motivational characteristics could help predict the attitude towards eco-efficiency.

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