

Model of relationship of transformational leadership and university management

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Abstract

We propose to find the model of relationship between Transformational Leadership and University Management. The Inventory of Leadership Practices form was used (LPI) as well as a University Management (UG) scale, which consists of four dimensions: Research, Teaching, Extension and Support. These dimensions were applied to managers of 31 universities in Colombia.

To identify the global relationship model between university management and the dimensions associated with transformational leadership a multiple regression model was developed. Furthermore, in order to eliminate subjectivities, we applied the transformation test of ordinal scales in a new Redit-type scale until reaching the results.

Among the main findings, there is a model of direct and positive relationship between Transformational Leadership and University Management. We also found that the Enabling to Act dimension in Transformational Leadership is the one having the greatest impact in university management.

This work is the product of the doctoral thesis called "Theoretical Construct for University Management from the perspective of Transformational Leadership". presented for the UNY in Barquisimeto Bolivarian Republic of Venezuela.

Keywords: leadership; transformational leadership; university management; linear regression model of transformational leadership and university management.

Modelo de relación de liderazgo transformacional y gerencia universitaria

Resumen

Se propone encontrar el modelo de relación entre el Liderazgo Transformacional y la gerencia universitaria. Se utilizó el inventario de practicas de liderazgo (IPL), y una escala de gerencia universitaria (GU) que consta de cuatro dimensiones: Investigación, Docencia, Extensión y Apoyo, los cuales se aplicaron a directivos de 31 universidades en Colombia. Para identificación del modelo de relación global entre la gerencia universitaria y las dimensiones asociadas con el liderazgo transformacional, se desarrolló un modelo de regresión múltiple; además, para eliminar las subjetividades, se utilizó la prueba de transformación de escalas ordinales en una nueva escala Tipo Redit hasta alcanzar los resultados. Entre los principales hallazgos, se encontró que existe un modelo de relación directa y positiva entre el Liderazgo Transformacional y la gerencia universitaria, y que la dimensión de Habilidad para actuar en el Liderazgo Transformacional es la que tiene el mayor impacto en la gestión.

Palabras clave: liderazgo; liderazgo transformacional; gerencia universitaria; modelo de regresión lineal de liderazgo transformacional y gerencia universitaria.

1. Introducción

University management, defined as the set of skills, abilities and resources (support functions) that the institution

has to fulfill its mission statement -Research, Teaching and Extension-, through the processes of planning, organizing, directing, and controlling, which aims to lead the university towards sustainability and institutional development, is

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primarily facing two processes of organizational change. The first one is due to the phenomena of internationalization and globalization present since the end of the twentieth century, which according to [1] and the network of Ibero-American rectors presented by [2], are unavoidable for these institutions. The second process responds to the internal demands for improvement and efficiency in their processes in order to meet the growing demand for education while achieving the institutional accreditation [3].

In this sense, [4,5] agree that, among others aspects, leadership represents a greater impact in management, in the way that it defies the processes of change and transformation while involving everyone in the effective action. Regarding this specific topic, [6-8] have linked Transformational Leadership to people's satisfaction, organizational effectiveness and transformation processes; while [9,10], have shown that this type of leadership has a favorable impact on organizational climate, subordinates, students, and teachers, in universities.

Concerning the presence of this type of leadership in university management, [11] validate the hypothesis according to which transformational leadership is present in university management, since it includes dimensions such as modeling the way, enabling to act and inspiring a shared vision. In addition, their results highlight that in university management there are other behaviors, such as the establishment of interpersonal relationships and the motivation of followers. Despite this, they fail to show behaviors in university management such as challenging the process or encouraging the heart. Those qualities are expected to be found in a transformational leader. Thus it is recommended for university leaders to undertake training to achieve these skills.

The arguments presented allow us to propose the guiding hypothesis for this research:

H1: There is a positive relationship model between transformational leadership and university management.

In addition, due to the problems previously described, and in accordance with the results of the research developed by [11], this article aims to answer the question: what is the relationship model that exists between university management and transformational leadership? based on the aforementioned guiding hypothesis. It also aims to find the relationship between transformational leadership and university management, for which a quantitative methodological approach is proposed, using on the one hand the Inventory of Leadership Practices (LPI) by Kouzes and Posner; and on the other hand, the scale of university management developed by the authors of this article based on the opinion of university management experts. Both instruments were applied to 31 universities (14 public and 17 private), located in Colombia. For the analysis of the results, multivariate analysis techniques were used.

2. Theoretical context

To achieve the objectives that allow solving the research question, theoretical and conceptual referents are required on Kouzes and Posner transformational leadership model, and

on university management in its relationship with the mentioned type of leadership.

2.1. Transformational leadership theory by Kouzes and Posner

The transformational leadership style is one that creates positive changes in the followers, while the organization grows significantly, according to [12,3]. In the same way [7,13,14] agree that transformational leadership involves a strong identification between subordinates and their leader, since it integrates a shared vision of the future, surpassing the exchange of interests on contingent rewards.

Among the different transformational leadership approaches, according to [7] the [12] model was developed based on practical evidences, cases and surveys related to leadership processes, which identified five fundamental practices allowing leaders to achieve extraordinary things.

Their model is consolidated on the results of actions and achievements out of the ordinary reached by ordinary people. The five practices identified by these authors are summarized by [12] as follows:

2.1.1. Challenging the process

The willingness to take risks, be a pioneer and look for opportunities are three characteristics of the transforming leader. In terms of action, the transformative leader performs innovations and experiments to the extent, giving a sense of learning opportunity from the mistakes made. In relation to power, a transformational leader is prepared physically, mentally and emotionally to face any challenge that gets in their way.

2.1.2. Inspiring a shared vision

A transforming leader is characterized by their superlative efforts to discover and propose the future beyond regular expectations. With enthusiasm and communication as mediator instruments, a transforming leader incorporates the emotions of other people, so that they share the organizational vision as if it were their own. One of their qualities is to point out to their followers the way in which mutual interests can be achieved, an action that allows the leader committing everyone to the achievement of common objectives.

2.1.3. Enabling others to act

A transforming leader is characterized by getting the support and action from the people necessary to make things work. The leader also stand out because they indicate goals while creating relationships of mutual trust. Making their followers feel important is another relevant quality of a transforming leader.

2.1.4. Serving as a model

The values and beliefs of a transforming leader serve not only as the bases for their business, but also as the guidelines

for their actions, with which they set the example of how they expect others to behave. A transforming leader is able to synthesize big problems into small ones, in such a way that the followers can reach their own objectives.

2.1.5. Encouraging the heart

In difficult times, the leader is prepared to strengthen the spirit among their followers, in addition to recognizing people's persistence especially when the goal is difficult and ambitious. In the process of reaching the vision, followers require encouragement. The transforming leader lends their heart to others, recognizes individual contributions and celebrates accomplishments.

Inventory of Leadership Practices – LPI. According to [11], for the construction of this instrument the authors used quantitative and qualitative methodologies to set the questions. Also the case analysis and interviews were decisive in building the model. Nowadays, more than 60,000 people and 40 countries have enabled its validation, becoming one of the most recognized instruments in the academic field, specifically in the subject of leadership.

The form takes into account the five leadership practices proposed by [15] in their theoretical model, and is presented in English, Spanish, Portuguese and French; and according to [7], it has been applied in case studies in both private and government organizations.

The practices and their actions were translated into behaviors of the leaders, which can be observed or identified in a simple manner, allowing for the universality of the form. Besides, [7] states that "the instrument was developed under a strict psychometric methodology with the analysis of reliability, validity and standardization" (p.113), which offers guarantees to be used as an instrument in this research.

Another important argument, for which such instrument is recommended in this type of research, is that the Inventory of Leadership Practices has been adapted to contexts of senior management, middle management and employees, as well as for academic environments; which meets the objectives proposed here.

Regarding its content, the form starts with the title LPI evaluation, followed by short and simple instructions, the presentation of the rating scale that goes from 1 (almost never) to 10 (almost always), passing through 5 (neutral, occasionally). Then 30 questions are listed, in which the behaviors of the leader are described, corresponding to the five dimensions of leadership, as follows: Model the way, questions 1, 6, 11, 16, 21 and 26; -Inspire a shared vision, questions 2, 7, 12, 17, 22, and 27; -Challenge the process, questions 3, 8, 13, 18, 23 and 28; -Enable others to act, questions 4, 9, 14, 19, 24 and 29; - Encourage the heart, questions 5, 10, 15, 20, 25 and 30.

The LPI form can be purchased through the website <http://www.wiley.com/>

2.2. University management

Given that [16] states that the general objective of the university is to promote the development of the learning of individuals in the society, and thus to contribute to social

change from the educational practice; it can be stated that the management function is a combination between the technical and the scientific aspects. This coincides with [17], when he states that this management is the administration of human resources and talent, the achievement of efficiency, and the obtaining of scientific knowledge, to understand the university community and promote its development, integrating the participants, in such a way that the academic environment is articulated with the social and cultural ones, while obtaining the quality required in the mission processes of higher education.

In this sense, [18] state that "universities have the responsibility to create and put at the disposal of society relevant knowledge, to be thus at the forefront in the treatment of social political issues from the perspective of an institution with a responsible ethical management" (p.7), which implies that the university management emphasizes in the management of the knowledge that it generates in order to put it at the service of society, that is, university management is a service management, ethical and responsible with all its stakeholders.

Complementing the above, [19] provide university management with an integrating role for all participants in the organization, which articulates the academic with social and cultural environments, to obtain results associated with quality in higher education. In addition, they conclude that university management will be productive and effective, if it can demonstrate its capacity to lead, motivate, communicate, make decisions, and develop its organization in virtue of its three functions: Teaching, Extension and Research.

Finally, [3] relate university management to a continuous and interrelated process of planning, forecasting, integration and control activities; taking advantage of human talent and resources, to achieve the university objectives. In addition, they state that the events that occur in university management obey to certain patterns, whose regularity can be established with the observation of the actions of university managers. They define it as "the set of skills, abilities and artfulness available to the university to fulfill its mission dimensions - Research, Teaching and Extension, and its complementary functions, which are the responsibility of the managers, aiming at sustainability and institutional development" (p.32).

Taking into account this definition of university management and based on expert opinions, the authors of this article built a scale for university management -EGU-, including 32 variables distributed in four dimensions (8 for the extension dimension, 6 for the teaching dimension, 13 for the research dimension and 5 for the support dimension), complying with the criterion of validity of experts, which constitutes a novel instrument that allows evaluating the university management performance in a given moment.

3. Methodology

This research is assumed as a positivist rationalist, of a quantitative nature, which relies on the university management executives, defined as informant subjects given their responsibility in the management of the university.

To achieve the objectives set here, three phases were

developed as follows:

3.1. Phase 1

Analysis and clarification of secondary information, identification of dimensions and variables to measure, and selection and adaptation of the instruments for primary information collection: we chose to use Kouzes and Posner model to perceive the characteristics of Transformational Leadership present in University Management, given its benefits for this type of study, described in the theoretical framework, for which the LPI form in its Spanish version was acquired. Given that this form would be applied in a self-administered manner, it was necessary to adapt it following the guidelines of [20] and [21] for this type of techniques. Thus, the introduction, the general objective of the research, and the acknowledgments for participation in the research were adjusted; demographic, labor and organizational questions were added; and the initial instructions were included. In addition, the measurement of the variables was established using a scale of five levels, as follows:

	(1)	(2)	(3)	(4)	(5)
ITEM	Never	Seldom	Neutral	Almost always	Always

This measurement had already been used by [7], in which he characterized transformational leaders with the same LPI form, obtaining 0.87 in terms of reliability.

In the same way, the EGU form was selected, which allows to evaluate the level of management perceived by the same university managers in their performance in the university, under the same scale of five levels and 32 variables.

3.2. Phase 2

Gathering primary information. That included the selection of the 31 executives from the same number of universities in Colombia, as qualified informants chosen through intentional non-probabilistic sampling, fulfilling the requirements of [22], and using the criterion of experience in managerial positions in the different universities that agreed to contribute to the objectives of the project. Both the LPI and the EGU were applied to these executives in a period of three months.

3.3. Phase 3

Establishment of the relationship between university management and transformational leadership. In order to establish this relationship, and because tests were carried out using two forms -EGU and LPI-, we proceeded in the first instance to accept the results from the information gathered with the EGU form as follows:

- Both the multiplicity of the answers and the variability in the values according to the scale 1 to 5 were evidenced, in order to verify the randomness of the variables that compose it.

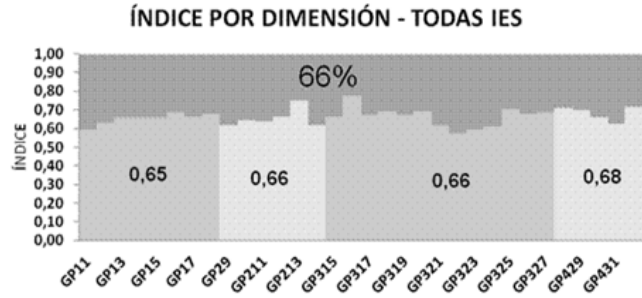


Figure 1. Achievement index for all universities.
Source: The Authors.

- The probability distribution was identified (32 questions adjusted with the Chi-Square statistic at a confidence level of 95%), which explains the scale, in order to accept the test that characterizes university management.
- The following step was to build the achievement index for university management, by using the average of the general results of the scale evaluation, question by question, and then dividing it by 5, which is the goal of progress.

Fig. 1 shows the total index for the level of progress of the university management for the universities participating in the sample (66%). It also shows each of the advances for every function developed by said management (65% Extension, 66% Teaching, 66% Research and 68% Support).

On the other hand, for the LPI form, we proceeded as follows:

The Cronbach Alpha index was calculated for the reliability analysis for the test, by using the following formula:

$$\alpha = \frac{K}{K-1} \left[1 - \frac{\sum S_i^2}{S_T^2} \right] \quad (1)$$

where

K : represents the number of items

S_i : indicates the variances

S_T : is the variance of the sum of the items

A value of 0.923, was obtained which indicates a highly reliable test and coincides with Mendoza approaches [7], in which he highlights its validation in more than 60,000 people with rates well above 0.8, and which is highly recognized among the world leadership academic circles. It should be noted that once the test is accepted, the description of the results for each question begins in a general way:

- The achievement index for transformational leadership was constructed by using the average of the overall results of the evaluation using the LPI form, question by question, and dividing it by 5, which is the goal of progress.

Fig. 2 shows the total index for the level of progress of Transformational Leadership perceived by university management in universities (54%), and each of the advances for the dimensions of such leadership: Modeling the Way, 55%; Inspiring a shared vision, 54%; Challenging the process, 52%; Enabling others to act, 54%; and Encouraging the heart 53%.

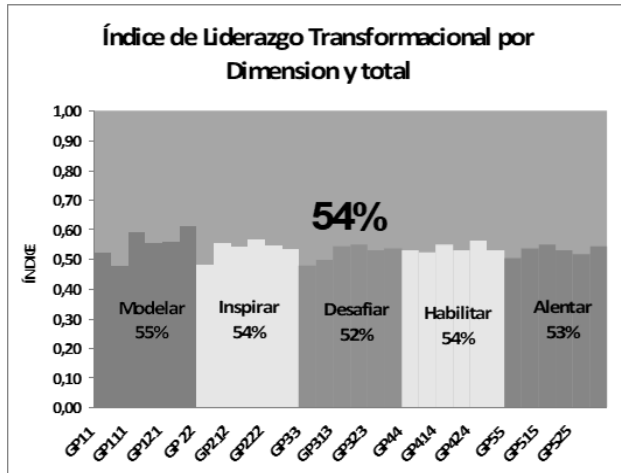


Figure 2. Leadership index per dimension and total for all universities.
Source: The Authors.

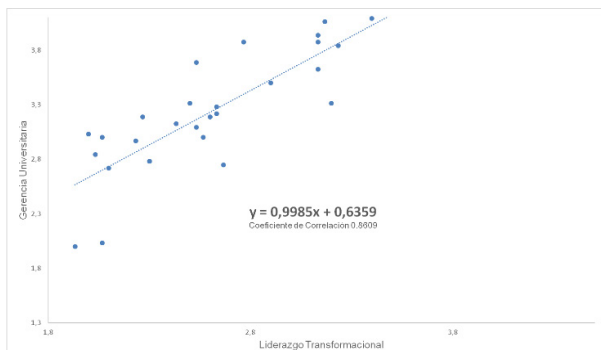


Figure 3. Simple Linear Regression Model Transformational Leadership - University Management.
Source: The Authors.

The next step was to perform the Simple Regression analysis, based on the evaluation of both the university management scale and the IPL form; and in this way to demonstrate the relationship between university management and Transformational Leadership, as shown in Fig. 3.

In Fig. 3, it can be seen that there is indeed a relationship between Transformational Leadership and University Management, given that it is possible to explain the results of university management (function Y) based on the results of the explanatory variables of Transformational Leadership (X).

Once the existence of the aforementioned relationship is verified, a Model of Multiple Regression is generated in order to identify if there is a relationship between dimensions of Transformational Leadership and University Management; obtaining that the University Management from Multiple Regression is a significant and explanatory model, that is, the dimensions of Transformational Leadership can explain University Management. This is demonstrated by having a critical value F or the P-Value lower than 0.05 (5.21517E-10), and $R^2 = 0.74$, explaining 74% of the variability of the management phenomenon.

Once the direct and positive relationship exerted by transformational leadership on university management was verified, the next step was to find the incidence of the different dimensions of transformational leadership in university management; and then, by doing so, to demonstrate how much a dimension of transformational leadership improves the management index.

In fact, the correlations among these dimensions were calculated, which reached values higher than 0.74. That allows claiming that transformational leadership has a positive impact on university management. Therefore, once the relationship between the global indicator of university management and the dimensions associated with transformational leadership has been identified, a significant correlation among the multiples is shown, specifically for the Enabling to Act dimension, which is the one with the highest index (0.83665). This indicates that despite the fact that all dimensions are significant or have an impact, this one exerts greater significance or has more power over university management than the others.

With this information, we proceeded to set a Multiple Regression Model, which provided the information found in Table 1.

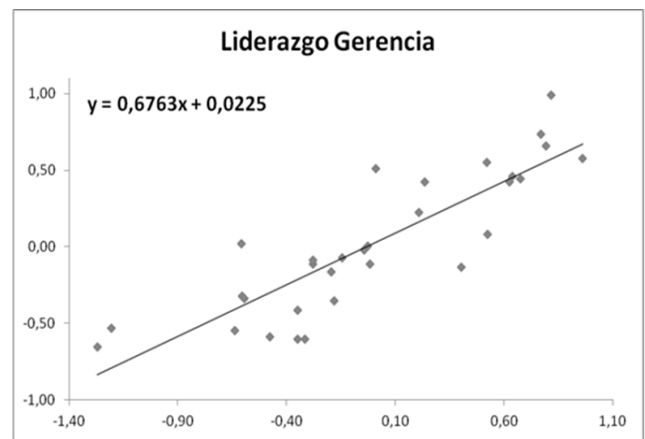
These results (Table 1) show that there is indeed a significant relationship between the management index and the other dimensions associated with leadership (a p-value in the test lower than 0.0001). Therefore, the management model is accepted and it can be stated that the dimension Enable to Act, is the most significant or weight in university management.

Table 1. Multiple Regression Model Management Dimensions of Transformational Leadership.

Analysis of variance
Sum of Square
Source DF square of the mean F-Value Pr> F

Model	5	7.80915	1.56183	15.29	<.0001
Error	25	2.55434	0.10217		
Total corrected	30	10.36348			

Source: The Authors.



Correlation coefficient 0.860

Figure 4. Multiple linear regression with Ridit indices.
Source: The Authors.

Table 2.
Multiple Linear Regression Model with Ridit indices.

Analysis of variance			
Sum of Square	Source	DF	square of the mean F-Value Pr> F
Model	5	7.74926	1.54985 15.42 <.0001
Error	25	2.51234	0.10049
Total corrected	30	10.26161	
MSE root	0.31701	R-square	0.7552
Parameter estimators			
Error Estimator	Variable	DF	standard parameter Value t Pr> t
Intercept	1	-0.03174	0.05719 -0.56 0.5838
SCORE_INSPIRA	1	0.27718	0.21297 1.30 0.2050
SCORE_DESAFIO	1	0.07017	0.20113 0.35 0.7301
SCORE_ALENTAR	1	0.03878	0.22277 0.17 0.8632
SCORE_HABILIT	1	0.42647	0.24572 1.74 0.0949
SCORE_MODELA	1	0.29839	0.19956 1.50 0.1474
Equation:			
Prom_management = -0.03174 + 0.27718 * SCORE_INSPIRA + 0.0717 * SCORE_DESAFIO + 0.03878 * SCORE_ALENTAR + 0.42647 * SCORE_HABILITA + 0.29839 * SCORE_MODELA			
Source: The Authors.			

Finally, in order to eliminate all types of subjectivities that may have been present during the evaluation process of university management and transformational leadership forms in each University, the process of transforming the advance scale from 1 to 5 into a Ridit-type scale [23] was carried out, for all the answers of the mentioned forms.

Once the Ridit indices were obtained, calculations of the grade averages for university management and transformational leadership were first made. Based on them, the simple linear regression model was run in order to find the relationship between transformational leadership and university management. This is shown in Fig. 4.

Finally, we run the multiple linear regression model among the variables of the dimensions of transformational leadership, which is shown in Table 2.

In Table 2, it is shown that there is a significant relationship between the management index (Ridit) and the other dimensions associated with leadership (A P-value in the test lower than 0.0001), therefore the management model is accepted. It is also shown that the dimension Enable to Act is the one with the greatest significance on university management, even when using the Ridit type scale.

4. Results

Once the activities described in the methodology chapter have been developed, the relevant results that contribute to the achievement of the objectives proposed in this research are presented below.

In regard to the assessment of the scale of university management, it is highlighted that the main variables proposed by [1] and [2] reached positive results, which aligns the current management with the global requirements.

In the specific case of the teaching dimension, universities face the major challenge of increasing their academic programs coverage, especially for women and

disadvantaged ethnic minorities, since it reaches only 65% in their evaluation. In addition, they must advance in the quality accreditation of their programs (64%).

Regarding the questions on the research dimension, whose progress during the managerial process is 66%, there is a greater effort by the university management in activities such as the adaptation of regulations and the solution of problems in their environment. Nevertheless, there is little effort in the dissemination of partial results or for the researchers to improve the understanding of the world or of the current and future problems, key processes recommended by Unesco for the sustainability of the University of the XXI Century.

Moreover, the results of the management support dimension (68%) show an effort on the part of university executives to develop activities associated with the improvement of administrative processes, which is also related to the presentation of clear and transparent reports to the different instances of control, as well as to the accountability to the university community and the society; two premises Unesco has insisted on for the universities to consolidate.

Also, there is an incipient concern on the part of university management in the processes that seek to democratize the participation of the academic community in the decision-making, as well as in the process related to guaranteeing university autonomy through the training of executive professors as a long-term institutional policy.

Likewise, universities marked as positive the progress in the processes of permanent adjustment of the organizational structure, and in those related to the improvement of employment, as well as the active participation of the teaching and administrative employees in the decision-making of the university.

On the other hand, regarding the application of the IPL form, it can be claimed that, while it is true that the Transformational Leadership theories agree that under this type of leadership leaders achieve extraordinary results, it is not used a lot in the university management (55% advance).

From the five practices proposed by [12], the one reaching the highest values was Modeling the Way, a practice that generates high performance when the leader is clear about their values and beliefs, keeps projects in the way they were designed, and shows with their example how they expect others to behave.

Thus, the university manager is perceived at a low level when making their values and beliefs clear, so that they influence others and align behaviors to obtain better results. Nor are they perceived as leaders who always do what they say, who publish the rules of the game, who are not very eloquent, and do not offer opportunities or alternatives to their subordinates.

Another one of the leadership practices is Inspiring a shared vision. It characterizes a manager who makes superlative efforts to discover and propose the future beyond what is provided over time, that is, proposes to build a future instead of waiting for it to happen. The results allow us to claim that it is still necessary that the university management advances in the processes related to the university vision as a goal of the entire academic community. We can also affirm

that the university director is not perceived as a builder of the future and that their dedication is greater than the daily tasks, with little enthusiasm and poor communication with others.

The pending tasks for university managers include to direct actions that allow them to learn from the past to bring a better future to their followers; to act more intuitively, to deeply know their followers, to create their own speech and to test the assumptions. These tasks -according to Kouzes and Posner's model- generate a perception in their followers as an inspiring leader.

In relation to the practice of Challenging the process, it can be mentioned that the university director is perceived as not very adventurous, unimaginative; someone who accepts the norm and is not willing to take risks; who is a budding innovator and who gives little importance to learning from their own mistakes.

Regarding the fourth practice -Offering encouragement, the university director is perceived as someone who gives little feedback, who does not encourage their followers, that is, someone who doesn't lend the heart. All of them necessary behaviors when the university transformation is required.

Finally, the practice of Enabling others to act, which leads the manager to be a true conqueror of support while their followers manage to execute the right things, does not reach a positive rating in the universities of the sample. This is due to the fact that the university manager rarely indicates goals to their followers and fails to create mutual trust. Then continuous delegation of responsibilities, involving everyone in the planning, and offering freedom and autonomy, is required.

On the other hand, in the case of the hypothesis "there is a positive relationship between transformational leadership and university management", the evaluation shows that it is possible to explain the progress of university management (function Y) based on the results obtained in the variables that make up Transformational Leadership (X). Similarly, the results support a significant and explanatory multiple regression model, which shows that the dimensions of Transformational Leadership explain the University Management with 74% of the variability of the management phenomenon.

In addition, regarding the incidence of the different dimensions of transformational leadership in university management, to demonstrate how much a dimension of the first improves the index of the second, the results show that the dimensions associated with transformational leadership have a positive effect on the dimensions associated with university management. They also show that there is a significant correlation between all the dimensions of leadership and management, and that the dimension Enabling to act is the one with the highest index (0.83665), which indicates that despite the fact that all the dimensions are significant or have an impact, this is the one having the highest significance on university management.

All these arguments, resulting from the application of the activities described in the methodological framework, allow to validate the guiding hypothesis in this article: there is a positive relationship between transformational leadership and university management.

5. Conclusions

Given that the objective of this research was to find the relationship between transformational leadership and university management, and that during the methodological development it was possible to demonstrate the existence of a direct and positive relationship model that exerts transformational leadership over university management, two conclusions can be drawn. First, it is possible to explain the results of university management based on the results of the variables that make up transformational leadership -that is to say, as the level of transformational leadership increases, the progress of university management is also increased. Second, the transformational leadership leads to positive effects on the factors associated with university management.

Similarly, once the methodology is applied, it is concluded that the scale of measurement of university management EGU and the IGU achievement index proposed in this research are analysis tools that have validity and reliability to be used in university management as a good tool for monitoring and controlling the management. Therefore, by applying this methodology, the main finding of this research was that the Enabling to act dimension and its variables are the ones having the greatest impact on university management. That means that the progress of the university management will be greater if the following variables are achieved: developing more cooperative skills among the people with whom leaders work, listening carefully to the different points of view, treating people with dignity and respect, supporting the decisions made by people on their own initiative, providing others with freedom and choice about the way they do their job, and making sure that people grow in their jobs by learning new knowledge and through their personal development.

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