International
Journal of
**Human
Sciences
Research**

# VALIDATION OF A PERCEIVED INSTITUTIONAL IDENTITY SCALE AMONG RESEARCHERS AND FACULTY AT PUBLIC RESEARCH CENTRE

*Maria Alfonsina Salazar Escoboza*
Centro de Investigación en Alimentación y Desarrollo, A.C. (CIAD),
https://orcid.org/0000-0002-5521-3631

*Jesus Francisco Laborín Álvarez*
Centro de Investigación en Alimentación y Desarrollo, A.C. (CIAD).
https://orcid.org/0000-0003-0747-6426

*Clara Rosalía Álvarez Chávez*
Departamento de Ciencias Químico-Biológicas. Posgrado en Sustentabilidad. Universidad de Sonora.
https://orcid.org/0000-0002-9949-8047

**Abstract:** A scale was developed to assess the perceived institutional identity among teachers and researchers of a public research center (PRC) in Mexico. The methodology used was a quantitative approach, with an experimental ex post facto design and intentional non-probabilistic sampling. By sending questionnaires via institutional email to faculty and researchers at the seven PRC campuses. Self-selective participation resulted in a response rate of 44.41% of total participants. The data obtained was analyzed with the utilized statistic program using an exploratory factorial analysis of maximum likelihood and Varimax rotation, using a selection criterion for items >.60 of factorial loading. The psychometric structure obtained explained 60.994% of the total variance. The Cronbach's alphas of the scale show high reliability, both globally and in the four dimensions. We conclude that the scale designed to assess researchers' and faculty members' perceptions of institutional identity, is suitable for use in research and/or higher education institutions.

**Keywords**: Institutional identity, teachers, researchers, public research centers, higher education institutions.

## INTRODUCTION

At some public research centers in Mexico are carry out both research and teaching work, and their livelihood depends on resources sent by federation funds, as well as their own income from services provided to their community, in productive sectors, with government, in academic sector, and with individuals.

Belonging to Public Research Centers System (PRCS), that born under that name since 2000, these centers were local institutions that came together to share the science created with the other members of the system and to establish working relationships in common.

The objective of the creation of the PRCS was to increase science and technology in the country, in addition to creating a highly trained human resource base that could collaborate to solve social, economic, political, environmental, and scientific problems, among others.

At present, there are public research centers in Mexico specialized in sciences such as mathematics, chemistry, biology, astrophysics, and social sciences, etc. All of them have teams of researchers and teachers who carry out research with different lines of action, likewise, they teach students the theories required to create research protocols, in addition to guiding them to properly apply that knowledge.

These research centers which started their activities as local entities, suffered at the time they were transformed to federal entities, for which, they saw the need to make modifications in working, localist goals, reports, productivity indicators, teaching styles, to adapt to the new institutional formats, forced out because they were now part of a nationwide system, and these changes affected the centers institutional identity and also, the people who were part of them.

Although it is true that according to Gioia (2000), identity is changing and must be adjusted and updated according to changes that the institution goes through over time, new policies, new governments, scientific and technological advances, new forms of teaching and research, diversity, social complexities, among others. These changes affect the centers' population, from researchers, managers, teachers, staff in general, and of course students.

Therefore, the objective of this study was to validate a scale developed to evaluate the institutional identity perceived by researchers and teachers of a public research center. All this in response to the necessity of knowing

the interference that can have in institution's staff, their good or bad perception about their institution's identity.

The study's main research question was:

- Is there an instrument that could be effective in the evaluation of institutional identity perceived by teachers and researchers of a public research center and/or higher education institution (HEI)?

For the question resolution, we established the following hypothesis:

"The scale to evaluate the perception of teachers and researchers about the institutional identity of a PRC and/or higher education institute, constitutes an empirical measurement model with the necessary validity to be able to be used in higher education and/or research institutions."

In order to be able to develop the measurement instrument, the first step was to search in literature for information of institutional identity in higher education and/or research institutions, and also to search for empirical studies that had evaluated this concept, in order to thus, analyze the information generated and extract from there the questions that could be used in the creation of the instrument that would be used for this study.

## PUBLIC RESEARCH CENTER/HIGHER EDUCATION INSTITUTION'S INSTITUTIONAL IDENTITY

At literature there are many definitions of institutional identity concept. It can be found as the sum of the institution's history, initial ideas, previous businesses, background of its founders, family relationships, friendship, related values (Blombäck and Brunninge, 2009; and Brunninge 2009). Likewise, there are authors such as Moingeon and Ramanantsoa (1997) who, like Van Riel and Balmer (1998), mention that for history and background we

should add beliefs, routines, hidden secrets, symbols, and myths of institution's members, since this accumulation of initial factors are what created the organization's philosophy.

On the other hand, there are authors who see the institution as a type of corporation where identity is formed by aspects such as image, brand, productivity, values, as well as being the soul of the organization, what is durable, what distinguishes it from among others (Albert and Whetten, 1985; Balmer 1998).

Meanwhile, some people also argue that institutional identity is impregnated with motivation and feeling, for which personnel's satisfaction, their plans, vision of future of both organization and its employees, the commitment towards the institution and towards community, and the way in which the institution is seen by its community, could influence and impact towards outside (Albert, et al., 2000; Hatch and Schultz, 1997; Rashid, et al., 2003).

There are also multiple identities and changing identities, the first one affirming that all the institution's members must be represented in the identity, for example, if institution is an university, their different schools must be represented, as well as the diversity of people, that are part of the institution (Alessandri et al., 2006; Leitch and Motion, 1999); and with respect to changing identities, some authors mention that changes are a natural part of any organization, since there is a need to adjust to new times, to various situations presented with different proposals, to give identity a new meaning (Balmer, 2017; Gioia, 2000; Ran and Golden, 2011).

After reviewing the literature, a unification of concepts was carried out to obtain the definition of institutional identity that would prevail in the present study, being:

"The identity of a research and/or higher

education institution is the sum of its history, image, values, mission, professional practices, and commitment to the regional development" (Balmer, 1998; Christensen and Askegaard, 2001; Foreman and Whetten, 2016; Greyser and Urde, 2019).

Through this definition, the proposal's first factors for evaluation of institutional identity perceived by researchers and teachers of a public research center were obtained as a guide of a model to find out or change according to results obtained after the instrument application: image, values, mission, professional practices, and commitment to the development of the region (Figure 1)

## METHODOLOGY

A search was carried out in literature for studies that had measured institutional identity through the dimensions determined by our proposed concept of institutional identity: image, values, mission, professional practices, and commitment to the development of the region. We found that there are various empirical studies that evaluate these dimensions but in a different way than the present study, since the majority were qualitative studies, for which the interview scripts were compiled, and the surveys found (Bennett and Ali-Choudhury, 2009; Chapleo, 2010; Da Silva and Syed Alwi, 2007; Dennis et al., 2016; Gioia and Thomas, 1996; Goi et al., 2014; Gray et al., 2003; Khanna et al., 2019; Pinar et al., 2014; Yoo et al., 2000), to create an instrument that was capable of evaluating the institutional identity perceived by researchers and teachers of a public research and/higher education center.

As we saw, Graph 1 presents the proposed five dimensions that make up the institutional identity, it can be also seen the factors subject to evaluation that are part of each dimension. For this reason, authors were sought whose instruments used, had evaluated these same factors to build the present study's instrument (Table 1).

The items extracted from the studies consulted were reviewed, some were discarded for being repetitive. Likewise, they were edited to regionalize them and adapt them to the type of participants. Immediately afterwards, the form of the statement was modified, since, coming from an interview script, the reagents were presented in the form of a question, and for this study it was required that they be in form of statements, since it was better related to the type of response used, which was Likert scale.

The scale consisted of three parts:

- First part were the items that were dealt with the dimensions of identity. The order of the questions was sorted to make the process of answer less tedious (Table 2). This part consisted of 73 items.

- The second part was made up of items arranged in a grouped manner, in the form of a matrix or table, to facilitate their reading and expedite their response. This part consisted of 39 questions grouped into 6 matrices.

- In the third section were the general questions that gave the attributive data of participants, such as age, sex, school grade, among others. This section consisted of 10 questions.

As previously mentioned, the first two parts of scale consisted of responses on a Likert scale of seven items ranging from "Disagree", which was represented by the number 1, to "Agree", represented by number 7.

## Institutional Identity of a Public Research Center and/or Higher Education Institution
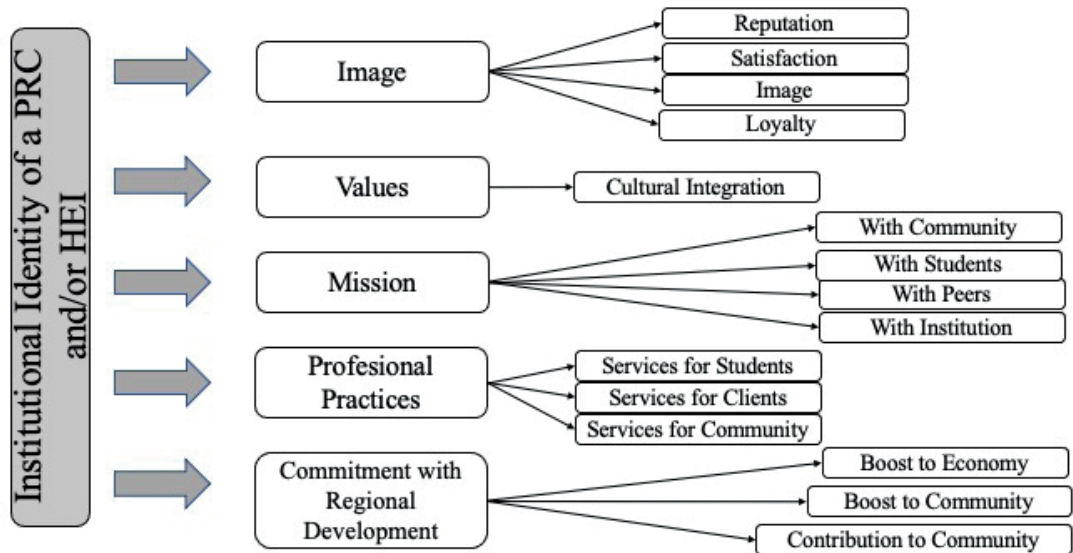


Figure 1. Institutional Identity of a PRC and/or HEI with its dimensions and factors that make up these dimensions that are subject to evaluation.

Own elaboration from Balmer, 1998; Christensen and Askegaard, 2001; Foreman and Whetten, 2016; Greyser and Urde, 2019.

| AUTHORS | FACTORS | QUESTIONS |
|---|---|---|
| Gioia and Thomas 1996 | Mission | --How do you think the institution sees itself?<br>--Where is the institution headed?<br>--What will become the future of the institution? |
| Yoo et al., 2000 | Image | --Can you recognize the institution among other competitors?<br>--When they tell you the institution name, Do you have any difficulty identifying it? |
| | Image | --Did you obtain recommendations, testimonial comments from people who have used the institution's services or have studied in it? |
| | Reputation | --Institution's name<br>--Institution's achievements<br>--Quality of its courses<br>--Institution's experience |
| Gray et al., 2003 | Cultural Integration | --Religious practices can be practiced<br>--Appreciation of cultural diversity |
| | Commitment with Regional Development | --¿Do you think that institution has had any contribution to community?<br>--Do you believe that the educational activities, conferences, workshops, exhibitions, and community services offered by the institution contribute to society's development?<br>--Do you think that the articles, papers, presentations made by students, teachers, and researchers, from the institution cause community impact? |
| | Satisfaction | --Are you happy with services provided by the institution?<br>--Are you satisfied using institution's services or being part of the institution?<br>--Do you think institution fill your expectations? |
| Da Silva and Syed Alwi, 2007 | Loyalty | --How likely is it that you use the institution's services?<br>--In the future, Would you use the institution's services? |
| | Mission | --Do you know institution's mission and vision?<br>--Do you believe that institution has an outstanding mission and vision? |

| Author | Factor | Type of questions |
|---|---|---|
| Bennett and Ali-Choudhury, 2009 | Loyalty | --Members of your institution's senior management team are strongly sensitized to the institution's history.<br>--Does your institution have managers, faculty, and students, who strongly identify with it? |
| | Image | --In general, How do you think peer institutions would rate your institution in terms of: quality of programs offered, quality of faculty, quality of students, quality of managers, academic climate, academic innovation, reputation, and prestige, achievements, financial status, structure? |
| | Reputation | --I think that this is an institution that deserves to be admired and respected.<br>--I think that this institution offers a good value for the money invested.<br>--This is a successful institution. |
| | Cultural Integration | --Institution has academic values that students find attractive or desirable for their needs.<br>--Institution has academic traditions that are well accepted by students. |
| | Mission | --Institution is committed to being among the best institutions in this sector.<br>--Institution has a clear and desirable mission. |
| Chapleo, 2010 | Mission | --How strong do you see your institution? a) Regionally, b) Nationally, c)Internationally<br>--What actions are being taken to build and international brand?<br>--What do you attribute the success of your institution's brand? |
| Goi et al., 2014 | Professional Practices | --Do you know the variety of services offered by your institution?<br>--What do you think of the academic programs offered by your institution?<br>--Do you think that institution's employees and teachers, are well trained and have the necessary skills to fulfill functions they perform? |
| | Satisfaction | --Institution cares about the students' needs.<br>--Institution's teaching staff are well recognized in all their fields. |
| | Loyalty | --Institution's students or graduates are proud to let people know that they are studying or are graduates of it.<br>--Institutions' graduates often recommend it to other people. |
| Pinar et al., 2014 | Image | --The institution logo is easy to recognize.<br>--The institution is the first option that comes to mind when thinking about PRCs in region. |
| | Reputation | --Institution has a well-recognized academic reputation.<br>--Institution's students receive good job offers. |
| | Cultural Integration | --Institution provides students with a supportive environment.<br>--Relationship of students with teachers and employees are warm and friendly. |
| | Loyalty | --If there was another institution as good as this one, Would you prefer to stay here? |
| Dennis et al., 2016 | Image | --Do I hang on to the name of the institution to be recognized by other people?<br>--Does this institution reflect what I am? |
| | Reputation | --What do you think about the institute's reputation? |
| | Commitment with Regional Development | --Are you really committed to this institution?<br>--Do you really care what happens in the institution? |
| Khanna et al., 2019 | Loyalty | --This is an institution where I would like to be educated.<br>--I would do my best to recommend this institute to others.<br>--I feel a great sense of belonging to this institute. |

Table 1. List of factors to evaluate with authors and type of questions.

Own elaboration from Bennett and Ali-Choudhury, 2009; Chapleo, 2010; Da Silva and Syed Alwi, 2007; Dennis et al., 2016; Gioia and Thomas, 1996; Goi et al., 2014; Gray et al., 2003; Khanna et al., 2019; Pinar et al., 2014; Yoo et al., 2000.

| DIMENSION | FACTORS | NUMBER OF QUESTION |
|---|---|---|
| IMAGE | Satisfaction | 1, 4, 18, 23, 34, 41, 65, 69, 71, 72, 73 |
| | Reputation | 2, 6, 8, 24, 25, 26, 32, 39, 40, 44, 45, 46, 47, 50, 55 |
| | Loyalty | 5, 21, 22, 36, 37, 38, 42, 43, 53, 58, 60, 70, 74, 75, 76, 77, 78, 79 |
| | Image | 7, 9, 54, 80, 81, 82, 83, 84, 85, 86, 87, 88 |
| VALUES | Cultural Integration | 3, 10, 27, 28, 48, 49, 56, 57, 61, 62 |
| MISSION | With Community | 12 |
| | With Students | 20, 103 |
| | With peers | 29, 93, 94, 95, 99, 100, 101, 102, |
| | With Institution | 13, 30, 31, 63, 68, 89, 90, 91, 92, 96, 97, 98, |
| PROFE-SIONAL PRACTICES | Services to students | 19, 35, 67, |
| | Services to clients | 51, 66, |
| | Services to community | 16 |
| COMMIT-MENT WITH REGIONAL DEVELO-PMENT | Boost to economy | 104, 108, 110 |
| | Boost to community | 14, 33, 105, 107, 109 |
| | Contri-bution to community | 15, 17, 59, 64, 106, 111, 112 |

Table 2. List of dimensions, factors, and number of items on the scale designed to assess the perception of researchers and teachers about institutional identity.

Own Elaboration

## SAMPLE SELECTION AND PARTICIPANTS.

The study took place in a public research center in Sonora, a Northwestern State in Mexico, which offers postgraduate programs of master and doctorates, in sciences and in regional development. The universe of people were 340 teachers/researchers.

At the beginning of the study, we planned to make face to face questionnaires and field work, but, because of the COVID 19 pandemic, we decided to change the work to surveys online. These is why we opted for use a self-selection non-probability sampling, defined by Wilson (2014) as a sampling where participants by a self-decision, choose to be part of the designed sample, and, in this case, 44.41 % of the public research center's teachers and researchers, chose to participate and they answered the online survey.

Before the field work, we made a few tests to corroborate that the competence and effectiveness of the questionnaire, first, cognitive tests were carried out on people with similar profiles of the prospective participants, who found technical problems for the completion of the survey, in addition to three writing errors and similarity between two items. Immediately afterwards, the deficiencies of the instrument were corrected, a new cognitive test was carried out to verify its proper functioning, and after that, the field work was carried out.

The questionnaire, which was made in google docs, was sent to the entire staff of teachers and researchers of the public research center, using their institutional emails. Likewise, for a month they were sent a reminder inviting them to participate, mentioning that the surveys were anonymous and voluntary.

## STATISTICAL ANALYZES

After carrying out the field work, the process continued, with the creation of the databases and data cleaning in a statistic program for social sciences, to proceed with the analysis of results.

In the first place, we proceeded to carry out a general correlation of items, where we were able to know the existent items interaction between the total scale. Subsequently, we did reliability tests to the total scale too.

Later, we continued with an exploratory factorial analysis with maximum likelihood

and Varimax rotation, because we needed the most robust items to be sure that they were a good representing one of dimensions where they were belonging. Because of that, we selected the items with factor loadings greater than 0.60 (Hair,1999).

After that, through another factorial analysis, we looked to know the number of factors that integrated every dimension, and the number of items that conformed every factor. By these actions we were be able to identify the best items that represented each factor.

Finally, we did a correlation with all the resultant factors that permitted us to know the conduct of each factor in reference to the other ones, what happens if a factor increases, o decreases, what is the behavior of the other factors when facing that increase or decrease.

All these actions took place, because we needed to create and validate a scale that could be able to evaluate the teachers and researchers perceived institutional identity, and, with that information, make the necessarily actions that could improve the working environment and consequently, the life of the institution's workers.

### RESULTS

The average age observed among the participants was 51 years, where 51% were women and 49% men, in addition, 56% had a doctorate, 30% a master's degree and 14% a bachelor's degree. Regarding the marital status of the people, there was a percentage of singles of 27%, 70% married and 3% divorced (Table 3).

Likewise, it was found that the years of work in the institution of the participants fluctuate between 3 years and 42 years, with a mean of 21 years of seniority, and about frequencies, results shown that seniority being 25 years most frequently, followed by 24 years of seniority.

By the other hand, results show that the scale is reliable, because it presented a total Cronbach's alpha of 0.987.

The next step was to know the psychometric properties of the scale. A group of items was created, to which, through the sum of their means, and using 4 percentiles (25, 50, 75 and 90), were placed on 4 levels:

- 25th percentile: low level
- 50th percentile: medium low level
- 75th percentile: medium high level
- 90th percentile: high level

Subsequently, a T test was carried out, contrasting high level and low-level groups, all this to be able to discriminate the items that were more significant than .05, leaving a total of 16 items out and 96 to continue with the analysis.

Next, the factorial analysis that we explained before, was used, and, after that we could reduce the scale into 60 items divided into 4 dimensions (Table 4).

The four dimensions obtained explain 60.994% of the total variance, observing high values of Cronbach's alphas and appropriate KMO sample adequacy measures and Bartlett's sphericity tests in each dimension (Table 5).

After knowing the dimensions, in Table 6 we show the results of the re-performance of the maximum likelihood and Varimax rotation factor analyzes for each dimension, where you can appreciate the factors that compose each dimension, the reliability of each factor, their means, and standard deviations.

Similarly, Table 6 reflects the high Cronbach alphas of the 8 factors, ranging from 0.883, the lowest, belonging to the Student Commitment and Support factor, to 0.969, the highest, corresponding to factor Prestige. Likewise, averages of each factor are appreciated, coinciding that the factor with the lowest alpha also shows the lowest average, of 5.95, which means that teachers and researchers do not agree with the commitment and support that

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| | GRADE | | | MARITAL STATUS | | |
|---|---|---|---|---|---|---|
| | **Bachelor** | **Master** | **Doctorate** | **Single** | **Married** | **Divorced** |
| GENDER **Women** | 16 | 30 | 31 | 31 | 42 | 4 |
| **Men** | 6 | 15 | 53 | 9 | 64 | 1 |
| **Total** | 22 | 45 | 84 | 40 | 106 | 5 |

Table 3. Grade and marital status of teachers and researchers' participants.

Own Elaboration

| Institutional Image #Item. | Fact. load | Institutional Mission #Item | Fact. load | Prestige #Item | Fact. load | Future Vision & O. areas #Item | Fact. load |
|---|---|---|---|---|---|---|---|
| 58 | .856 | 74 | .801 | 90 | .931 | 108 | .864 |
| 70 | .708 | 35 | .768 | 89 | .877 | 110 | .851 |
| 60 | .702 | 27 | .762 | 88 | .796 | 107 | .849 |
| 40 | .700 | 21 | .750 | 81 | .786 | 109 | .807 |
| 30 | .679 | 19 | .749 | 82 | .770 | 111 | .806 |
| 51 | .673 | 2 | .706 | 80 | .764 | 105 | .763 |
| 42 | .671 | 52 | .706 | 84 | .745 | 106 | .749 |
| 26 | .660 | 49 | .699 | 86 | .729 | 112 | .694 |
| 32 | .656 | 20 | .691 | 85 | .719 | 104 | .653 |
| 18 | .652 | 48 | .687 | 83 | .690 | | |
| 69 | .652 | 75 | .678 | 96 | .653 | | |
| 54 | .645 | 53 | .671 | 94 | .648 | | |
| 17 | .628 | 37 | .655 | 95 | .637 | | |
| 34 | .622 | 43 | .632 | 93 | .635 | | |
| 33 | .616 | 11 | .628 | 87 | .621 | | |
| 64 | .615 | | | 97 | .602 | | |
| 47 | .608 | | | | | | |
| 24 | .607 | | | | | | |
| 45 | .600 | | | | | | |
| 65 | .600 | | | | | | |

Table 4. Dimensions with items and their factor loadings, resulting from exploratory factor analysis.

Own Elaboration

| Dimension | # of factors | # of items | KMO | Bartlett Chi$^2$ | Bartlett DF | Bartlett Sig. |
|---|---|---|---|---|---|---|
| Institutional Image | 4 | 20 | .949 | 6504.757 | 741 | 0.00 |
| Institutional Mission | 2 | 15 | .945 | 3990.300 | 406 | 0.00 |
| Prestige | 1 | 16 | .936 | 3120.298 | 171 | 0.00 |
| Future Vision and Opportunity Areas | 1 | 9 | .872 | 1090.712 | 36 | 0.00 |

Table 5. Dimensions with the number of factors that compose them, number of items,
KMO sample adequacy measures and corresponding Bartlett's sphericity tests.

Own Elaboration.

| Dimension | Factor | Reputation | Satisfaction | Image | Loyalty | Commitment | Students Support | Prestige | Future Vision |
|---|---|---|---|---|---|---|---|---|---|
| Inst. Image. | Reput. | | | | | | | | |
| | Satisf. | .78 | | | | | | | |
| | Image | .83 | .75 | | | | | | |
| | Loyalty | .70 | .77 | .59 | | | | | |
| Inst. Mission | Commit | .82 | .76 | .81 | .59 | | | | |
| | Student S | .66 | .61 | .65 | .44 | .75 | | | |
| Prestige | | .66 | .64 | .72 | .52 | .68 | .62 | | |
| Future Vision & Opportunity Areas | | .09 | .10 | .17 | .14 | .11 | .19 | .36 | |

Table 7. Correlation of 8 factors that make up the 4 dimensions of Institutional Identity perceived by teachers and researchers of a PRC.

Own Elaboration

the public research center offers to students. On the other hand, the highest mean is for the Loyalty factor, with 6.55, which signified that teachers and researchers perceive a very good affinity with institution, as well as feeling very committed to it, and to its mission and vision.

| Dimension | Factor | #Item | Alpha CR | Mean | SD |
|---|---|---|---|---|---|
| Institutional Image | Reputation | 6 | .915 | 6.23 | 0.79 |
| | Satisfaction | 6 | .931 | 6.16 | 0.93 |
| | Image | 5 | .921 | 6.07 | 1.00 |
| | Loyalty | 3 | .925 | 6.55 | 0.78 |
| Institutional Mission | Knowing & Commitment w/Institution | 8 | .939 | 6.03 | 0.90 |
| | Student Commitment & Support. | 7 | .883 | 5.95 | 0.89 |
| Prestige | | 16 | .969 | 5.98 | 0.98 |
| Future Vision & Opportunity Areas | | 9 | .933 | 6.27 | 0.9 |

Table 6. Dimensions and resulting factors, through factorial analysis, for scale, with their number of items, Cronbach's alphas, means, and corresponding standard deviation.

Own Elaboration.

In addition to reliability, items that most represented each factor were observed, finding, for example, for "Loyalty" factor, from "Institutional Image" dimension, item 58: I am committed to the mission and vision of my public research center, followed by item 70: I have a high commitment to my research center.

Regarding "Institutional Mission" dimension, the items that are most representative were found in the "Student Commitment and Support" factor and were the one corresponding to question 74, which deals with perception of CEO commitment towards the institution; and question 35 that asks about the willingness to help shown by the PRC staff towards students in their needs and demands.

Subsequently, a correlation was made between the 8 factors (Table 7), observing high, medium, and low correlations. Starting with the low relationships, as we saw with Future Vision and Opportunity Areas factor which was the only one whose correlations are all low, the lowest being for Reputation factor, which means that when the institution increases its offer of programs well-known academics, the opportunity areas that teachers and researchers perceive do not increase at the same level, this leads to the thought that, when the institution corrects those opportunity areas, such as improving the training of human resources, research , interdisciplinary, links with different sectors of the population,

etc., is then when reputation and recognition of the institution increases.

On the other hand, there are high correlations, such as Image factor, with the Reputation factor, which means that, by increasing the standardized quality and safety systems in the teams and increasing recognition that work carried out in the institution causes an impact in community, it also increases considerably the respect that institution has and its academic reputation (Table 7).

## DISCUSSION

As we can see because of the present study, it can be pointed out that institutional identity of this public research center is perceived by teachers and researchers, in an integral way, as confirmed by questioning them about their satisfaction with the institution, loyalty, reputation, values, mission, vision, commitment to community, image, and, within these factors, aspects such as the logo, the way it is seen from outside, positioning as a research and study institution, among others, are included. This can confirm what was expressed by Balmer (1998) and also Christensen and Askegaard (2001).

Results showed that when institutions have real commitment and take care of their teachers, researchers, and students, they retribute them with loyalty, respect, good work, and feel satisfaction for being an important part of this institution, and these is what students look for on an institution, a place where they can feel part of it, they are looking for an identification with an institution as Balmer and Liao (2007) said.

Another thing that student regularly look for an academic institution is that their workers (academics, teachers, researchers, among others) reflect commitment with the institution, with, its history, its values, its traditions, they said that this inspire them to

join the institution (Khana et al., 2014), and in these PRC we could see this commitment and identification in researchers and teachers, although they were no comfortable with some issues, they affirmed that they preferred working in this public research center than in other similar.

Obtained results showed that the factors with bigger factor loadings and higher means were satisfaction, loyalty, and reputation, that is why, they represent mostly the public research center's institutional identity, unlike with Greyser and Urde (2019) that affirmed that vision, mission, and values were the most important factors in the institutional identity.

Observed results also showed that graduates from this PRC caused a big impact in places where they worked, besides being loyal and presenting a commitment to the institution and community, which demonstrates what Lehnen (2019) said that the great value of universities is the intellectual enrichment generated.

Research's results demonstrate that PRC has a very good reputation although teachers and researchers think that it needs to promote itself, it needs to show to different sectors of region, like, governmental sector, industry, commerce, academic, etc., the best that it has, to increase the positive perception that people have of it (Bennet and Ali-Choudhury, 2009).

About results of factor correlations, we saw that when institution has a good reputation, prestige and image, researchers and teachers observed more satisfaction feelings and they perceived themselves a more loyal through their public research center. Besides this, it was observed that opportunity areas such implementation of interdisciplinary research, improve works with social, productive, and academic sectors, among others, did not increase at the same grade, what it can mean that institution has being attending its weak points and that is reflected in its exterior good

image.

This was a quantitative study, with inter-institutional participants whose gave us their points of view about their perceptions of the identity of their institution and the themes that made it up, all this seen from inside the institution. Contrary to what was observed by Foreman and Whetten (2016), who mentioned that studies use external data to know the perception of the organization's identity, as a social form. This study gave us a real information from inside where the feeling of belonging to an institution could make people work well motivated or not and getting satisfaction from their work or not.

## CONCLUSION

It was found that the scale developed to evaluate institutional identity, perceived by teachers and researchers of a PRC, is suitable for the purposes for which it was created, since it obtained a high reliability in all factors that were evaluated, therefore, it has the potential to be effective for use in research and/or higher education institutions.

Evaluation of the institutional identity that teachers and researchers perceived, led us to know their points of view and feelings of belonging, as well as various areas of opportunity that can be used to improve the institution's actions and services to achieve a better workplace.

Furthermore, it was important for us to use this scale to demonstrate that public research centers as well as higher education institutions and universities are institutions that cause an impact in their communities, hence the relevance of questioning participants about their perceptions of the way the society think about their institution, since the main purpose of educational institutions is the development of excellent human resources that could integrate and improve the society in which they operate.

Moreover, it was concluded that the use of this evaluation has the potential to find successes and failures that people from the very inside perceived about their institution. This could be a very valuable information as it can serve as diagnosis, something like an x-ray of possible causes of some attitudes, situations, lack of motivation, loss of enthusiasm, among other. In other words, knowing what workers think and feel, can help them to plan actions to solve or prevent future problems.

As implications for practice, we can affirm that the periodicity use of institutional identity evaluations should potentially improve teachers, researchers and institutional workers' motivation and productivity, because knowing people's feelings and perception could be a good tool for higher education institutions, public and private research centers for make some actions to enhance the work environment, and consequently improve institutions' productivity.

As a limitation, we can say that this study cannot be generalized because non-random sampling was used, but with the results obtained, we can affirm that the scale created can be a very useful tool to evaluate the institutional identity perceived by teachers and researchers in higher education institutions, universities, and research centers.

## HIGHLIGHTS

- A questionnaire (scale) was developed to evaluate the institutional identity perceived by researchers and teachers of a public research center in México.
- 151 surveys were collected by an anonymous and voluntary participation from researchers and teachers of a public research center.
- Scale results showed a total reliability of 0.987 of Cronbach's alpha.
- It was concluded that the questionnaire is suitable for which it was created.

- The obtained results of implementing the developed scale could be used to make actions to improve teachers and researchers' motivation and satisfaction with their research center or higher education institution.

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