VALIDATION OF THE QUESTIONNAIRE OF A SURVEY FOR THE EVALUATION OF THE QUALITY OF TEACHING BY TEACHERS BELONGING TO UNIVERSITY IBN TOFAIL

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ABSTRACT

Since the commitment of Morocco in the reform based on the Educational National Charter and of Training and the Law 01-00, carrying organization of the higher education. The evaluation became a necessary approach to assure the quality of teachings and guarantee the valuation of teachers' pedagogical activities, the pivots of the improvement of the higher education, which assure the sustainability of the public university system.

Convinced of the role that the teacher can play as an actor of the evaluation movement, we have tried to shed light on his professional world through a qualitative and quantitative study which aims at measuring the degree of satisfaction teachers of the university Ibn Tofail towards their physical environment working conditions and teaching pedagogy in their institution. The investigated subjects belong to three university establishments of the Ibn Tofail University: the Faculty of Science, the Faculty of Humanities and Social Sciences and the National School of Applied sciences.

This publication tries to shed light on the validation of the survey questionnaire through two different tools. The validation analysis of the content showed that the questions of the instrument are relevant towards the objectives of the study. The reliability analysis, applied to questionnaire variables, showed a Cronbach Alpha index greater than 0.7, consequently, the questionnaire was considered as coherent and reliable.

Key Words: Evaluation, quality teaching, Satisfaction survey, Physical universe, Educational Universe, Validity, Reliability, Cronbach's alpha.

1. INTRODUCTION

The improvement of the quality of the higher education service, its efficiency and the transparency of its functioning became a constant concern for Morocco which is confronted with the expectations of the social demand and with the socio-economic mutations of recent period.

In this context, the National Charter of Education and Training [12] and the promulgation of the Law 01-00 [5] carrying organization of the higher education calls up to the installation of quality assurance models, in particular by the creation of authorities of evaluation and the adoption of evaluation systems. At present, the evaluation takes place at the heart of the modernization of Moroccan higher education system.

Our research focuses on the teacher as the pivot of the improvement of higher education, which can contribute dynamically to the promotion of self-assessment in his institution. The idea of this

work emanates mainly from the law 01-00 which insists on "the periodic survey of the opinions of the educational actors" including the teacher, central actor of the educational system. The scarcity of the work focusing on the feelings of teachers also encouraged us to begin this subject.

Within the framework of this work, we carried out a survey of teacher satisfaction at Ibn Tofail University of Kenitra with regard to their professional universe by insisting on its physical, pedagogical, relational and managerial dimensions.

We will focus here on the pre-survey phase, from the choice of the reference population to the validation of our measuring instrument. Of the latter appears the main objective of this work which aims at the validation of our survey questionnaire.

For the structuring of this work, we shall present in one first stages the necessary methodological approach to determine the sample as well as the stages of construction and data collection of the variable measurement instrument. In a second step, we shall describe the statistical validation aproach of this instrument to ensure that it is indeed able to to account for the factors considered. To this end, we proceeded in two steps to the validation of the questionnaire, at first by an analysis of validity, then by an analysis of reliability.

2. MATERIALS AND METHODS

2.1 Reference population

2.1.1 Type of survey

It is about a qualitative and transverse quantitative survey by poll, led with a population of teachers from the Ibn Tofail University in Kenitra.

2.1.2 Target Population and sampling methods

The target population of the study is formed by the teachers practicing at the Ibn Tofail university.

In this search, we opted for the type of simple random sampling. It is about a sample selection process which consists in drawing, from the **N** size mother population, a sample of fixed size **n**, chosen at random, so that each statistical unity(unit) has the same probability to be a part of our sample.

To build our study population, we tried to cover all the university establishments Ibn Tofail University. But the main part of the data which were harvested emanated only from the FST, the FLSH and the ENSA, which agreed well to collaborate. The FSEJ will not be a part of this work because of the very weak number of collected answers. It's the same for the ENCG whose teachers have been solicited several times without any return.

2.1.3 Discussions

the Sample size is an important consideration for any research study, however, indicators given in the literature, concerning the sampling procedure, vary widely (Dépelteau, 2010 [6] ; Ebersold, 2012 [8] ; Caselli and al., 2006 [3]).

We find on the other hand that the notices of the authors agree on the fact that the more the size of the sample is big, the more sampling error tends to zero and better will be the quality of the results. If we want to make a precise decision about a parameter **p**, we must take a large sample so that the sampling error is "reasonably low".

Statistical representativeness is ensured by the law of large numbers or the law of convergence (Dodge, 2007 [7]). When the sample size **n** increases, the values observed in the sample (such as average, the median, the variance, etc.) tend to converge on real values of the population with a certain determined risk. This risk of error decreases when the size of the sample increases and tends to zero in the case of a census where the entire population is surveyed. In our case, as the size of the sample is critical, the size of the parent population itself is important.

2.2 Methodology of survey and collection of information

2.2.1 Design of the questionnaire (qualitative study)

The theoretical framework and the research objectives that we have set, have guided the construction of our measuring instrument. We then ensured that the questionnaire included all the variables that will allow us to obtain the necessary information to build our analysis. We were also inspired, for the choice of these variables, by the questionnaires of Faure and al. (2005) [10], Berchoud and al. (2008) [1] and Crepaldi and al. (2003) [4].

A number of 115 teachers were invited to respond to the questionnaire. The answers to questions are collected through a four-point Likert scale ranging from "very satisfied" to "very dissatisfied".

The sphere of perception of teachers account 107 variables (or items) which we have divided into three dimensions, themselves subdivided into sub-dimensions. A main variable is added to these items the interest of which is to perceive the general feeling of teachers towards the quality of education within their institution.

Our questionnaire is anonymous and includes four dimensions as we will see more in-depth in - the following section.

2.2.1.1 Dimensions of the questionnaire

Before discussing the dimensions of the questionnaire and their purpose, it should be pointed out that we tried to put ourselves in the skin of the investigated, to whom the questionnaire will be administered, in order to try and predict their reactions to the questions. The poster 1 summarizes the contents of our measuring instrument.

Socio-demographic characteristics

These data make it possible to collect certain information about teachers, these correspond to the city, establishment of belonging, department, sector, sex, age group, status, number of years of education, rank education and type of training.

Perception of teachers on their working conditions

This part allows to look for the possible material problems that should be solved in order to improve teaching and to shed light on the working conditions of the teacher. To try to identify the origins of these problems, we classified the items according to the 5M method: Mother-nature, Machinery, Materials, Method and Manpower.

Several items were chosen in this sense, namely:

- The hourly load of the teacher
- The state of cleanliness of the premises
- The availability of the computer tools, etc. …

Teachers' opinions on teaching pedagogy

The evaluation of teaching pedagogy concerns the environment in which teachers carry out their pedagogical activities. At the level of the questionnaire, the pedagogical and relational quality was assessed on the basis of different criteria.

In the term of the questionnaire, we asked to the teachers for their general feeling on the educational system and of training(formation) through the following open question:

What is your general degree of satisfaction on your education(teaching)?

Overall Appreciation of Teachers

At the end of the questionnaire, teachers were asked about their general feeling about the education and training system through the following open question:

How satisfied are you with your teaching?

2.2.1.2 Categories of questions

The questionnaire contains opinion questions, which fall into three broad categories:

- **Closed questions:** they require respondents to have a specific form of response and a limited number of answer choices. In this category, we distinguish the closed dichotomous and multiple choice questions:

  - ***Closed dichotomous questions:***

Example : What is your status as a teacher?

Permanent ☐ Temporary ☐

  - ***Multiple choice closed questions (MCQ) and single response :***

Example : Number of years of teaching

1 to 5 years 5 to 10 years 10 to 15 years 15 to 20 years > 20 years

- **Questions with attitude scale (Likert scale):** This scale allows the interviewee to express his degree of agreement (satisfaction) or disagreement (dissatisfaction) toward an assertion. We chose then a Likert scale with 4 levels of satisfaction ranging from "very satisfied" to "very dissatisfied".

Example : What is your overall level of satisfaction with your teaching?

Very satisfied Satisfied Dissatisfied Very dissatisfied

- **Open questions:** They leave the answer free in its form and length.

Example : Do you live other problems non-listed in the questionnaire?

All the items in the questionnaire are taken back in the appendix.

2.2.2 Conduct of the investigation (quantitative study)

The questionnaire was administered in two stages: the pre-test and the survey itself. This was done through the questionnaire which we developed in digital and paper format.

Pre-investigation

A semi-directive interview was then conducted with a small group of teachers, representative of the population to be studied. The objective was to:

- Obtain the feelings of the group of teachers, concrete and personal elements on the main items of the questionnaire namely the working conditions of the teachers and their pedagogical practices;
- Understand how the interviewees will perceive these items;
- Provide a concrete answer to our research question.

The modalities of the pre-test will be discussed more deeply in the part relating to the validation of the questionnaire.

The survey itself

To target a large number of teachers (the participants in this study), the latter were initially solicited via a digital questionnaire by google drive. However, this approach seemed quick and efficient, but the small number of respondents (13 questionnaires recovered out of 100 sent) led us to look for new ways to increase the rate of harvest of the answers.

We first thought of tabling the paper questionnaires at the level of the various departments so that the head of department or his secretary facilitates the distribution of the forms to the affiliated professors. Nevertheless, the number of collected forms stays below our expectations.

Faced with this problematic situation, administering the questionnaire through a direct interview with teachers seemed an appropriate solution. The initiative consisted in approaching the teachers at

any times and in different places in the workplace (offices, refreshments, green spaces, etc.), by handing them the questionnaire hand to hand.

To bring to a successful conclusion this action, we first made sensitive the teachers on the merits of the survey in order to obtain their consent. If so, the survey sheets were distributed to them, but otherwise the process was stopped. The majority of the interviews followed a similar progress.

The questionnaire was administered only once to the teachers, who took 15 minutes to complete it. The questionnaires were then retrieved after a response time fixed by the teacher. The field investigation lasted two months, from May 15 to September 10 of 2014.

After the harvest of the survey forms, comes the processing stage of the survey outcomes. To achieve this, we performed a coding and data entry on an SPSS matrix (Carricano and al., 2010 [2]).

2.3 Questionnaire validation methodology

As we will see later in the second chapter, the analysis of the validation of the questionnaire will be approached in three different forms:

2.3.1 Content Validity Analysis

The notion of content validity rests on a set-theoretic vision of the items making up the questionnaire. An instrument is valid if it measures well what it is supposed to measure. The validity of a measurement scale refers to its ability to apprehend a phenomenon (Hair and al., 2006 [11]).

Ensuring that a measuring instrument has a good validity of content amounts to clarifying whether the questions are relevant to the desired objectives. In other words, it is a question of wondering if the instrument and the items which it contains really represent the field studied.

In other words, if the questionnaire seems unrelated to the respondent's work environment, the answers given are more likely to contain errors due to erroneous interpretations or lack of motivation, a possible source of inattention on the part of the respondent. In addition, the less relevant items can arouse answers impossible to interpret. (Streiner, 1993 [14]). It took several days to validate the qualitative elements of the work.

2.3.2 Reliability analysis

The reliability analysis allows to study the properties of the measurement scales (questionnaire) and the elements that make up the scales, in other words, it allows to determine the extent to which the questionnaire data are linked to one another and to provide a general index of the consistency or the internal coherence of the scale as a whole.

This analysis necessitated the use of the IBM SPSS Version 22 software which offers different models of reliability, the Cronbach Alpha coefficient remains the most used; It is an internal coherence model, based on the average correlation between elements (Evrard et al., 2003 [9]).

Cronbach's alpha is a reliability coefficient that measures the internal coherence of a scale constructed from a set of items (Carricano, 2010). This coefficient varies between 0 and 1. The more the alpha value is close to 1 the stronger the internal coherence of the scale (its reliability).

Nunnally (1978) [13] recommends an Alpha greater than 0.6 to decide on the reliability of the measurements.

The data covered by this test of internal coherence belong to the two main dimensions of the questionnaire, namely the working conditions of the teachers and the teaching pedagogy.

3. RESULTS AND DISCUSSION

3.1 Validity analysis of content

A group of teachers from Ibn Tofail University, who were thoroughly familiar with the subject, examined the questionnaire and judged the relevance of its content to know to what extent the questions will be used to measure the characteristics studied, namely the material relational conditions in the work as well as the live teaching of teachers. First of all, and after the questionnaire was drawn up, this one was re-read by this small group of teachers who brought their appreciation on:

- The absence of drift with regard to the initial objective of the investigation;
- The understanding of the questions by the target population;
- The relevance of the modalities of answer;
- The choice of answers and their number;
- The non-ambiguity of the vocabulary;
- The utility of all the questions to reduce at the most the length of the scale.

In fact, a great convergence of views showed itself between the teachers about the items of the questionnaire, which will help to validate its content.

A pre-test was then carried out to identify the imperfections of a first draft and to check the concordance between the questionnaire items and the characteristic to be studied (working conditions and teaching practices).

To do this, we gave the grid to a representative sample of the target population, made up of 10 teachers with different profiles. This group includes teachers Of different specialties, belonging to three institutions: the Faculty of Science, the National School of Applied Sciences and the Faculty of Humanities and Social Sciences. The selected teachers were typical of the the universe of the investigation so that they could agree to devote time to answering questions.

3.2 Reliability analysis

As explained earlier in this paper, we calculated Chronbach's alpha coefficient for items related to working conditions and teaching pedagogy. The results of the reliability analysis are presented in the tables 1 and 2.

From the tables 1 and 2, it can be seen that for all dimensions, the items making up this scale of measure show good internal coherence with an alpha greater than 0.7. The scale is therefore reliable since it has clearly exceeded the limit fixed by Nunnally for 0.6.

4. CONCLUSION

This work describes the main traveled stages and the steps implemented for the realization of the survey and the validation of the survey questionnaire.

After the description of the sampling and design methodology of the questionnaire, we reviewed the various stages of the survey, namely the design of the questionnaire, the description of the survey protocol and the difficulties encountered.

We also gave an overview onto the general approach taken to the confirmation of our instrument. In this sense, some validation techniques were adopted. In order to apply the first technique of validation, we asked experts to make a professional judgment on the relevance of the test statements to ensure that this one is relevant to the satisfaction behavior to be measured. This operation was an opportunity to situate our problematic well and to have elements likely to base the construction of a sufficiently credible information gathering instrument.

The experimental phase, which followed, made it possible to gather the information on which we relied to verify the acceptability and to appreciate the internal coherence of our instrument. The aim is to ensure that, through the questions asked about the content, it measures the information sought (measured objective and the respondent's experience). Among the methods of fidelity estimation, we chose the alpha index of Chronbach. The calculation of this coefficient was calculated for the variables reflecting the working conditions and the pedagogical environment of the teachers.

The results showed that this index exceeds the value of 0.7, the threshold recommended by the American Psychological Association, thing which allowed us to consider our measuring instrument as coherent and reliable.

The process of research can not be developed without constraints. The first difficulty with which we were confronted was the limited number of papers on similar studies at the national level. We had to resort to research coming from other countries, related to our theme.

The terrain also did not happen without difficulties. At this stage, the major difficulty was encountered in the collection of data: lack of availability of certain teachers, their reluctance to answer the questions and to collaborate to bring to a successful conclusion this survey.

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List of tables and figures in order of appearance:

Table 1 : Cronbach's alpha for items related to working conditions

Dimensions	Number of items	Chronbach's alpha
Mother-nature	11	0,740
Machinery	10	0,772
Materials	5	0,753
Method	5	0,788
Manpower	7	0,708
Items of axis 1	**58**	**0 ,752**

Table 2 : Cronbach's alpha for items related to teaching pedagogy

Dimensions	Number of items	Chronbach's alpha
Programs	10	0,842
Courses, Tutorials, Practical work	23	0,831
Exams	12	0,921
Internships and End-of-studies project	8	0,874
Leaderships	5	0,890
Items of axis 2	**38**	**0,871**

Poster 1 : Architecture of the questionnaire