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## **Teacher-Researchers in Morocco: A Phenomenological Study**

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**Abstract:** In order not to stay on the surface of things and especially not to sink into easy ways, we have decided to respond in an unstoppable and uncompromising way to several suspicions, which gradually take hold as data analysis from the scientific production of teacher-researchers progresses. The objective was clearly to find an econometric method which does not distort or undermine the final results, hence the use of the phenomenological approach which allowed us to analyze from every angle, the impact of individual and professional characteristics of teacher-researchers on the volume of their scientific production. Indeed, since using the phenomenological approach, we have been able to discover that there is a mediating variable among the explanatory variables. This is influenced by certain sociocultural and demographic characteristics of teacher-researchers, while being a determinant of their scientific production. Consequently, the descriptive phenomenological analysis has also shown that it is possible to formulate hypotheses about some determinants of the scientific production of teacher-researchers at FSJES-Souissi. These hypotheses will be the subject of a second article and will be tested by a structural equation model estimated on data collected from 136 teacher-researchers at FSJES-Souissi.

**Keywords:** Phenomenology, Mediating variable, Scientific production, Teacher-researchers, Description.

### **Introduction**

In this work that deals with the relationship between scientific production and the individual and professional characteristics of a sample of teacher-researchers of the FSJES-Souissi, what was difficult was the specification of the econometric model. By specification, we mean the choice of the form of the functional relationship between the endogenous variable and the exogenous variables. While econometric models are often in the form of a single equation, there are models that correspond better to reality and that spread over several equations especially in the case where the exogenous variables are not linearly related to the endogenous variable. This is our case study.

Indeed, the study of the relationships between variables in the exploratory phase could not be done without the adoption of a phenomenological approach following the intertwined relationships between the data. In fact, in our case, we could not simply ask a model where we will align explanatory variables on the right (the characteristics of teacher-researchers) and on the left a variable to explain (the scientific output of teacher-researchers) and then apply econometric analysis because this has led us to hasty conclusions that assume that some variables are related while logic says the opposite.

To take a phenomenological approach is to abandon all our knowledge about a field, because it could be prejudices, stereotypes, or preconceived ideas, and focus on the data observed in real time. To assume that

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nothing is true, that everything is possible and that nothing is possible at the same time and to hold for true a result only if it emerges from a consensus between several methods, several other results and that it occupies a place making it homogeneous in the following other results.

Adopting a new method that is at the opposite of what we are used to doing, implies finding at least studies on scientific research and in general educational science that use the phenomenological approach as a tool for analysis, but unfortunately the disappointment is as great as the expectation was strong. We found work in other fields where this instrument of descriptive analysis of phenomena was used as: Health science (Martin, 2006; Macdonald, 2014), Social science (Roche, 2015; Robaszkiewicz, 2018; Blunden, 2019; Ying Lau & Nenon, 2020), Natural and Mathematical science (Balaguer, 2010; Mensh, 2015) ... etc. But as far as we know, there is no research that deals with the problem of the scientific production of teacher-researchers through the phenomenological approach.

In short, it is now clear that our starting point is the adoption of a phenomenological approach to discover which of the individual and professional characteristics of teacher-researchers (Hanafi & Arvanitis, 2016) has the traits of a mediating variable. It is also essential to recall that this work is divided into two articles, the first is the one that concerns an analytical treatment of the scientific production of teachers-researchers, and the second will address the modelling of the scientific output of teacher-researchers which will be done using an analysis by structural equations.

## **Literature Review**

### **Phenomenology as a Descriptive Tool**

At the turn of the 20th century, Edmund Husserl invented an approach that is still widely talked about: phenomenology. It is an approach that capitalizes a lot on going beyond strictly scientific visions, while limiting itself to the analysis of perceived phenomena (Nenon, 2020). Therefore, according to him, to sanitize reality, it is necessary to “a return to the things themselves”, meaning in another formulation that Phenomenology: “is a science not of the factual and actual, but of pure possibilities as such. The eidetic structures of experience and the objects constituted within experience are not just generalizations about the specific experiences of individuals or the things that they happen to have encountered in those experiences, but about the very nature of experience itself” (Nenon, 2020). According to Husserl, Phenomenology is essentially based on description. In fact, the ultimate goal of the Husserlian school is to: “turn away from the construction of abstract theories to the concrete description of the “thing themselves”. (Dostal, 2000). Husserl even goes on the offensive when he criticizes the exact sciences, in his view: “All sciences are imperfect, even the much-admired exact sciences. On the one hand they are incomplete, because the limitless horizon of open problems, which will never let the drive toward knowledge rest, lies before them; and on the other hand, they have a variety of defects in their already developed doctrinal content, their remain evidences here and there of a lack of clarity or perfection in the systematic ordering of proofs and theories.” (Husserl, 1965, p.74). Phenomenology then acts as a theoretical barrier to face empirical analytical reasoning, in this sense: “It is significant in this characterization of philosophical science that Husserl has arrived, by means of a phenomenological analysis, at an intuition revealing the very “essence” of science” (Husserl, 1965). Since Husserl many works on phenomenology have circulated, citing as such: “phenomenology of the inapparent” developed by Heidegger (Figal, 2020; Uljée, 2020; Vegso, 2020) or he explains that phenomenology makes it possible to discover the unobserved part of phenomenon. Hegel in turn describes the phenomenology as” the first part of the system of science” (Stewart, 2008; Mccumber, 2014). Despite the differences between Bergson’s philosophy and Husserl, it seems that for both authors: “true philosophical thought involves a kind of intuitive experience that is only possible once we have put aside habitual interests and the way of thinking that is customary in daily life.” (Jacobs & Perri, 2010). Moreover, the phenomenology according to Merleau-Ponty places itself in a different register, focused more on the existence which is embodied in a body perceived as being an ineligible condition of the experience (Schmidt, 1985). Given the indisputable originality of the phenomenological approach, it was impossible for us not to use it to analyze our problematic which is not stingy in variables, each of which is associated with a host of details.

Based on the following definition: “objective logic is to be phenomenologically- descriptively analysed” (Wiegand, 2000), while reading the work of authors fully invested in studies on phenomenology in the image of Chakravartty (2007) who advocates the idea that: “the notion of description is central to realism, and it is time now to consider it in more detail”, as well as Bostock (2012) which insists on the idea that: “There is some arbitrariness in our way of slicing up the world, and often the precise limits of thing are left somewhat vague”, it is therefore important to clarify the role of phenomenology in this work. This involves using the

phenomenological approach as a qualitative descriptive tool allowing us to discover the nature of the mediating variable without attacking the various philosophical, intuitive, subjective, transcendental and psychological aspects that compose it. Given that the objective of our study is to grasp the main idea of phenomenology to better insert it into a reflection with a descriptive vocation.

### **Scientific Production and the Status of the Moroccan Teacher-Researcher**

In Morocco, reflection on reforms relating to the conditions of promotion to the grade of teacher-researchers, is not without interest (Cohen, 2015). In fact, some of these reforms ended to ambitions for advancement in a university career instead of stimulating them, since they were only at the service of certain profiles, while marginalizing the rest (El Atri, 2019). This quote explains in clearer terms how the marginalization of certain types of teacher-researchers occurs: “The actions of academics, departments, journals, associations, and funders are relatively unconstrained. They can choose to reward, or sanction, certain types of people or certain types of work. They can establish new standards or revise old standards. They can change standards for employment, promotion, publishing, and virtually any other gatekeeping task.” (Gerring et al., 2020).

The problem comes from the fact that the 1975 reform required the teacher-researcher how wishing to become a professor of higher education, to firstly hold a state thesis which subsequently allowed him, after four consecutive years of work as a university professor to move up in “PES” (*Decree No. 2.75.665 of 17 October 1975 on the special status of teacher-researcher in Morocco*). However, the 1997 reform changed for good the terms of promotion to the grade of “PES”, it offered the possibility of getting rid of the rigid modalities of the old reform, of which the Qualified Professors “PH” had been captive for almost 22 years (*Decree No. 2-96-793 of 11 Chaoual 1417 (February 19, 1997) relating to the special status of the body of higher education teacher-researchers (BO No. 4458 of February 20, 1997)*). Indeed, apart from the fact that the 1997 reform stood out in terms of architectural change, since it proposed a new educational breakdown (Doctorate, DESA, DESS) replacing the state thesis, but apart from this quality and this laudable attempt aimed at giving a certain international recognition of State diplomas, the 1997 reform was not able to fulfill all its promises (Report of the Hassan II Academy of Science and Technology, 2009, p.30).

In fact, to be promoted to the grade of “PES”, the teacher-researcher in 1997 was required to pass an exam. However, the competition poses no problem, on the contrary, it has allowed to fuel competition between candidates. In this sense, everyone tried to surpass themselves and overshadow the other. This rival side was highly recommended, due to its potential to push scientific research forward, to the extent that each Qualified Professor “PH” sought to advantageously boost his professional career while optimizing his application, which allowed him to obtain the coveted status of Higher Education Professor “PES”.

But although, the 1997 reform was the first to remove the sword of Damocles which threatened access to all profiles of Qualified Professors to the grade of “PES”, the number of positions “PES” seemed to be the main limitation of this reform. In fact, the objective was to add a certain flexibility in the transition from a PH to the PES, but this change was not without drawbacks, since in 1997, a single “PES” position was opened in front of a titanic workforce of Qualified Professors, a situation which inevitably killed any desire to fight to become a “PES”, and above all that it spoiled the possibility of improving the scientific production of Moroccan teacher-researchers.

Seeking a reform which does not sink into failure, and which strikes a perfect balance between improving the conditions for moving to the “PES” grade and boosting scientific production of teacher-researchers, the Ministry of Higher Education, Scientific Research and Executive Training (MESRSFC) decided in 2015 to develop a “New Educational and Research Evaluation Grid” (*Ministry of Higher Education, Scientific Research and Executive Training, “project of the evaluation grid for the promotion of teacher-researchers from the grade of PH to the grade of PES”, version of the Thursday 13/11/2014*). With the adoption of the “New Educational and Research Evaluation Grid”, the seniority of university professors was no longer considered a determinant of the change from “PH” to “PES”. As a result, to properly manage the careers of teacher-researchers, academic decision-makers have sought a reform that is different from what already exists, through the gathering between educational and scientific requirements. In other words, the transition to the rank of “PES” is made on meritorious terms considering all the efforts made by each teacher-researcher in teaching, supervision and above all in scientific research.

### **Method**

It is never easy to approach a theme such as the relationship between the scientific production of teacher-researchers and their individual and professional characteristics, following the complex links between the different variables. It took us a while to figure out how to tackle this issue and deal with it properly. It is the phenomenological approach which proved to be the answer to many questions left unanswered and it is also thanks to it that we were able to discover the mediating variable among the explanatory variables. Therefore, in what follows, we will present the process of descriptive analysis which relates to the phenomenological approach.

## Data Analysis

Before studying the impact of the individual and professional characteristics of teacher-researchers on the volume of their scientific output, it was necessary to first select a sample of teachers-researchers with which complete information would be available for all variables, hence the choice of 136 teachers-researchers of the faculty to which we belong FSJES-Souissi. The table below shows all the variables with a detailed description of each one.

Table 1. Summary of variables

Variable	Description
	<b>Endogenous variable</b>
Scientific output per year	Number of research work carried out by the FSJES-Souissi teacher-researcher per year since his assignment until 2018
	<b>Moderating variable</b>
Scientific collaboration	Number of co-authors in scientific work published since assignment
Diploma specialty	1: Law, 2: Language and Geography, 3: Economics, 4: Statistics, Computer science and Mathematics values of the variable increase as the specialty of the degree is technical
Language of writing of the thesis for obtaining the PhD or equivalent	1: Thesis written in Arabic, 2: Thesis written in French
Country for obtaining the PhD	1: Thesis defended in a Moroccan university, 2: Thesis defended abroad
Age	1: [30-35[, 2: [35-40[, 3: [40-45[, 4: [45-50[, 5: [50-55[, 6: [55-60[, 7: [60-65[, 8: [65-70[
Grade	1: PESA, 2:PH, 3: PES (reform 1975), 4: PES (reform 1997), 5: PES (reform 2015)
Economic situation	Monthly net salary
	<b>Control variable</b>
Marital status	1: Teacher-researcher of the FSJES-Souissi is not married 2: Teacher-researcher of the FSJES-Souissi is married
Assignment date	Number of years from recruitment to the position of university teacher until 2018
Gender	1: Male-teacher, 2: Female-teacher
Obtaining a PhD or equivalent diploma at a public university establishment in Rabat	1: Thesis defended in a public university establishment outside Rabat 2: Thesis defended in a public university establishment in Rabat
Number of years since 1995	Number of years since the day before the 1997 reform of 1995

## Results and Discussion

### Analytical Treatment of the Scientific Output of Teacher-Researchers

#### *Profile of FSJES-Souissi Teacher-Researcher*

The teacher-researcher of the FSJES-Souissi is in most cases a man (64%); women occupy only a third of the positions filled by this institution. The teacher-researcher of this faculty, whether male or female, is married and at least 35 years old.

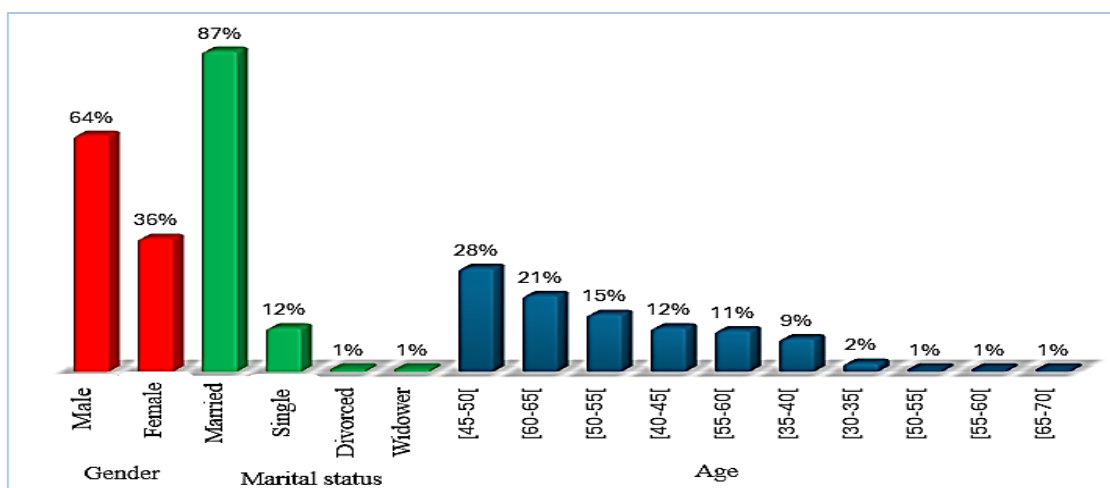


Figure 1. Sociodemographic characteristics of the teacher-researcher of the FSJES-Souissi

With an average age of 51, half of the FSJES-Souissi teacher-researchers have reached the rank of Professor of Higher Education (PES). Although almost half (49%) of these teachers joined the faculty at least two decades ago, they can only reach the PES degree by seniority. This is especially true since only 42% of these teachers had a PhD in 2000. For the time being, all FSJES-Souissi teachers have this diploma, obtained after a thesis in law (49%) or economics (41%), prepared in one of the Moroccan faculties (71%) or in a faculty abroad and written in French (71%) or Arabic (29%). The importance of mathematics in economics and the trend towards computerization as a solution to improve pedagogy and remedy the university massification pushes the FSJES-Souissi to create positions for holders of a PhD in mathematics and computer science (6%). The importance of the fraction of teachers who have reached the PES is more or less explained by the graduation in the scales of the status of university teacher. It indicates in fact that these professors justified other methods of career promotion such as participation in scientific events, the accumulation of experience in teaching and administrative management in academic institutions or the production of teaching materials and research documents.

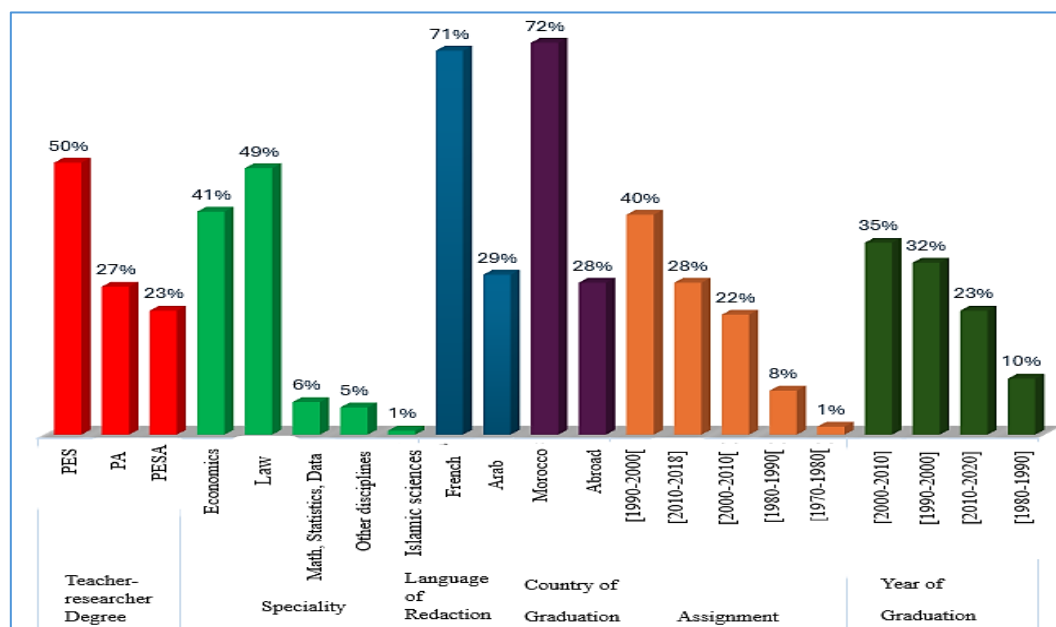


Figure 2 Sociodemographic characteristics of the teacher-researcher and specificities of the diploma

### Scientific Production of the Teacher-Researcher of the FSJES-Souissi

Whether they are articles, conference proceedings, individual or collective works or research documents, the publications produced by the FSJES-Souissi teacher-researchers are of the order of 1361 documents. While two-thirds of the teachers at this school have at least three publications to their credit, some have not managed to publish documents. The number of publications per teacher, which is of the order of 10, therefore gives a

distorted vision of the reality of the scientific production of the teacher-researchers of the FSJES-Souissi. This reality becomes even more prismatic when approached by the number of English-language publications. Indeed, although this number indicates that an FSJES-Souissi teacher published an article in English on average, only a third of these teachers managed to do so. The correspondence between the fraction of teacher-researchers who wrote their doctoral thesis in French and those who made scientific contributions in the same language is quite striking it caricatures a possible association between the language of writing the doctoral thesis and that of writing research papers. The disparities in scientific output of the FSJES-Souissi teacher-researchers (CV = 1.26) indicate the existence of sociocultural, demographic, institutional, even psychological factors, that make teachers in the same institution stand out from each other by the number of research papers they publish.

Table 2. Scientific output of the teacher-researcher of the FSJES-Souissi

	Minimum	First quartile	Median	Mean	Third quartile	Maximum	CV
Publications	0	3	7	10	13	94	1,26
Publications in English	0	0	0	1,61	1	32	2,41
Co-authors	0	0	1	5,21	6	69	1,82

### Sociodemographic Determinants of the Scientific Output of the Teacher-Researcher of the FSJES-Souissi

The disparities in scientific output of the FSJES-Souissi teacher-researchers can be demographic. An initial awareness of the influence of these factors is achieved by comparing the mean and median of the number of publications by gender, age group and heritage status of the FSJES-Souissi teacher-researcher. If the latter publishes on average more abundantly than his female teacher-researcher counterpart, it is unlikely to find the same difference with teachers of other faculties. It is hardly possible to say that the scientific output of half of the teachers-researchers of the FSJES-Souissi exceeds that of half of the female teacher-researchers of the same institution.

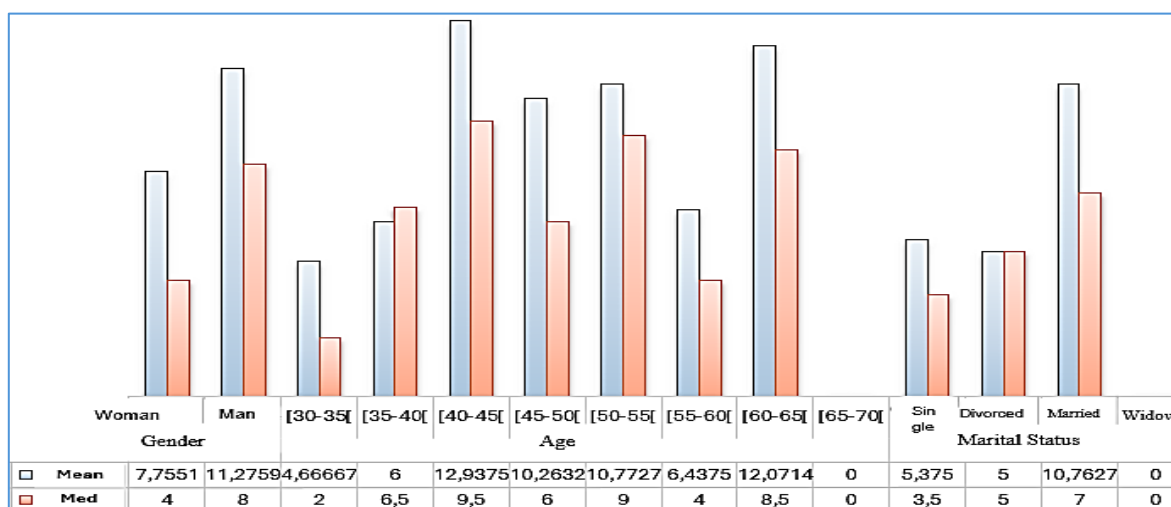


Figure 3. Demographic characteristics and scientific output

The scientific output of the teacher-researcher of the FSJES-Souissi does not vary in a palpable way according to his age, although it appears less abundant among the youngest teachers of this institution and almost non-existent among the veterans of this faculty. Indeed, the teachers who recently joined the FSJES-Souissi have to their credit some scientific work, and it is only when they acquire a professional experience of at least 5 years within this faculty that the number of scientific publications they produce begins to increase. It is likely that, a few years after his recruitment, the teacher-researcher begins to publish to prepare his habilitation file. The only teacher-researcher without scientific publications is a retired man who has decided to work for another two years beyond the age of 65. Laureate of the FSJES of Agdal where he obtained a university degree in 1985, this teacher who is married, is recruited in 1995 and has confined himself since his recruitment in the degree of PESA. The scientific output of the teacher-researcher of this faculty is not associated with its patrimonial situation, and the married individuals among these teachers who seem more active in terms of scientific research, are in fact only those who initially joined this institution and who, as a result, had the opportunity to be part of a research laboratory and obtain their accreditation, or even to access the rank of PES. It is probably also the age of the teacher-

researcher of the FSJES-Souissi and therefore his accession to this rank, which is in filigree of the association, although weak, between his scientific production and the gender. Indeed, half of the teacher-researchers joined the FSJES-Souissi four years before their female teacher-researcher counterparts. This slight time lag for the benefit of men, would have allowed most of them to be eligible for the rank of PES as it was reformed in 2015. A slight association emerges between the degree of the teacher-researcher and his gender and between the gender of the latter and the reform he took advantage of to become PES. Even considering the superiority of men in the study sample, the supervisory grades of the research, and where appropriate those of the PH and the PES, are slightly more occupied by men. Most of these have become PES after the amendments made to this statute in 2015; most female teacher-researchers are promoted to PES after checking the conditions of eligibility for this status. As foreseen by the 1997 reform. It is indeed in the wake of this reform that the status of PES appeared to distinguish the highest degree of higher education in Morocco. The teacher-researcher therefore enters the public service under the rank of PESA and becomes a PH before moving to the rank of PES.

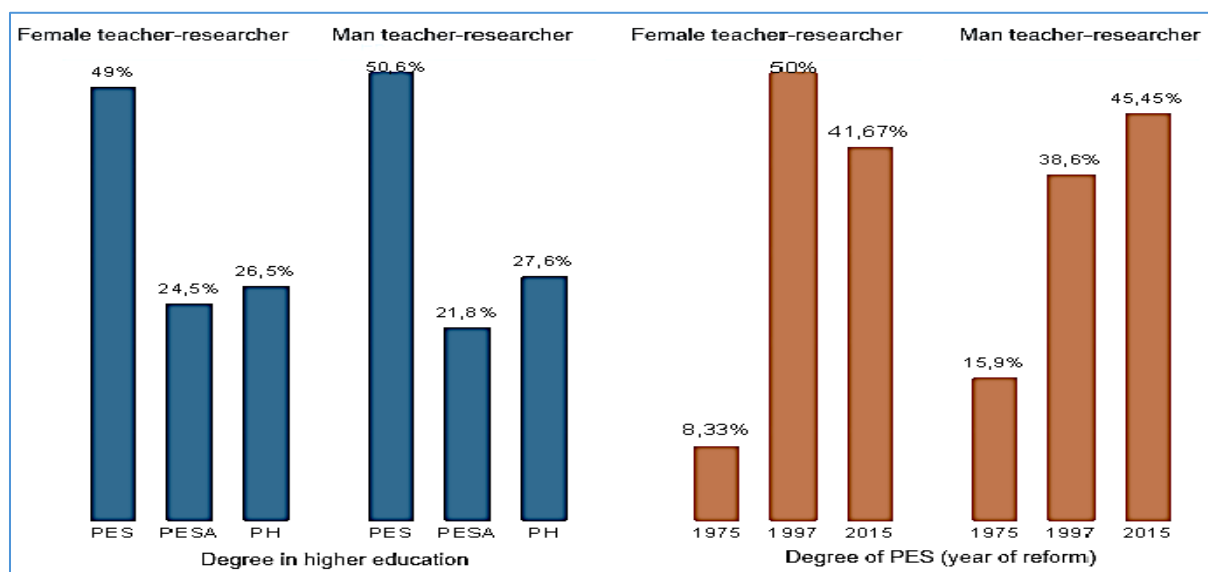


Figure 4. Gender of the FSJES-Souissi teacher-researcher and his rank in the public service

The conditions of graduation of the teacher in the career of teacher-researcher, provided for in the decree 2-96-793 legal framework for the 1997 reform, are administrative in nature and do not concern in any way scientific production. It was the advent of the 2015 reform of this status that rehabilitated scientific research by giving it the greatest weight in the final score obtained by the candidate for the degree of PES. The fact is that most teacher-researchers are promoted to the rank of PES according to the criteria of this new reform explains that they justify more research than their female teacher-researchers' counterparts. Socio-cultural factors, such as training, professional experience and, where appropriate, the degree in higher education, seem to better explain the disparities in scientific output of the FSJES-Souissi teacher-researchers. These factors will be studied in the following section.

#### *Sociocultural Determinants of the Scientific Production of the Teacher-Researcher of the FSJES-Souissi*

Although most of the teacher-researchers at FSJES-Souissi have completed their postgraduate studies (third cycle) in Morocco, the fact remains that they differ by the specialty of their thesis, the language in which it was written and the year of its defense and by the date of their recruitment. Teacher-researchers at FSJES-Souissi are distributed according to the grade they have reached in higher education, according to the conditions for promotion to this grade and according to the number of years spent in the same grade. The scientific production of the FSJES-Souissi teacher-researcher would therefore differ depending on whether he is a PESA, a PH or a PES. It is even possible that the scientific production of teachers of the same grade is totally heterogeneous on the grounds that the criteria that they verified to be promoted to the grade in question and which refer to scientific research are not the same due to the reforms of the status of teacher-researcher. The specialty of the postgraduate diploma, the language in which it was written, the country and the year in which it was obtained; the date of recruitment, the grade reached, the number of years spent in the same grade, the conditions for moving from one grade to another and possibly the scientific collaborations established by the teacher-researcher, are factors which could lifting the veil on the variability of scientific production from teacher-researchers at FSJES-Souissi.

The grade reached by the teacher-researcher at FSJES-Souissi can prove to be a predictor of his scientific production. The PES is in fact the best-off in terms of scientific production since it has on average 13 scientific publications to its credit compared to 8 and 5 publications respectively for the PH and the PESA. Half of the PES at FSJES-Souissi managed to publish at least 11 scientific works while half of the PH and PESA only published 5 and 2 respectively. Disparities in scientific production are noted even among teachers of the same grade and, following the example of the PES, it is the teachers promoted to this grade after amendment in 2015 to the law which governs it, who justify more scientific publications. A teacher-researcher from FSJES-Souissi who became PES after 2015 has published on average 16 scientific works. To this end, he exceeds his teacher-researcher counterparts who became PES according to the eligibility criteria for this grade resulting from the reforms of 1975 and 1997, by 5 and 4 scientific works respectively. A teacher-researcher who became PES following the 1975 reforms of this status nevertheless has more years of teaching experience and supervision of research work than those who are promoted to this grade after the amendments to the framework law of this status, intervened in 1997 or in 2015. And yet, the years spent at the FSJES-Souissi did not allow this veteran to increase the number of his scientific publications.

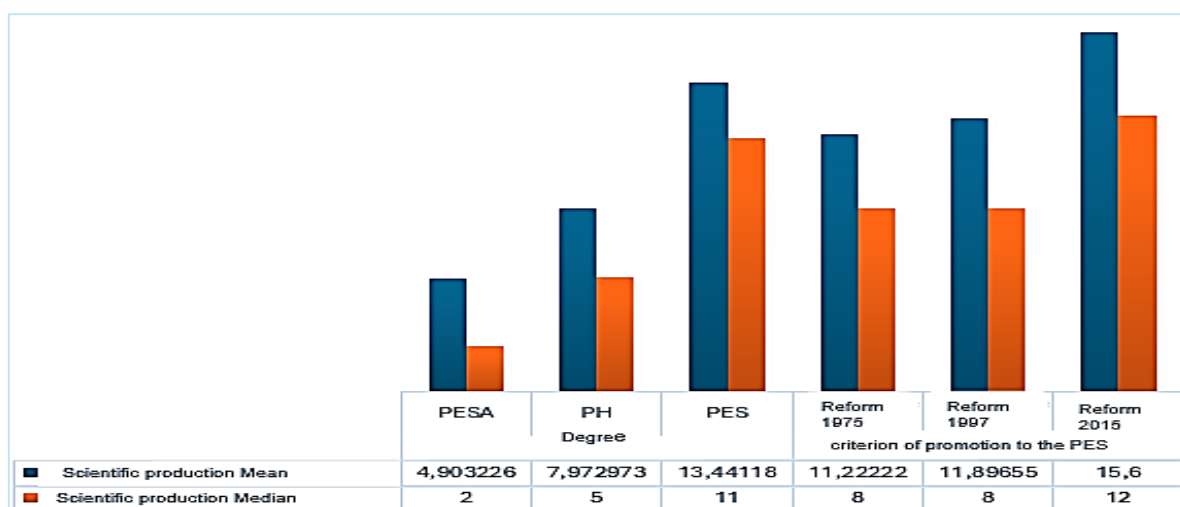


Figure 5. The variability of the scientific production according to the grades and reforms

A teacher-researcher from FSJES-Souissi with prolific scientific publications would not necessarily be a veteran in university teaching nor a doctoral student who defended his thesis decades ago today. Seniority in this faculty as a teacher-researcher would not be associated, and at least directly, with scientific production. Being a recent graduate or having obtained your postgraduate degree a long time ago would also not be associated with the parsimony or abundance of scientific publications.

A teacher-researcher of the FSJES-Souissi who became PES after the reform of this degree in 2015 would justify a larger number of scientific publications than the other teachers of this faculty. This reform, known as the pedagogical and research evaluation grid, has made eligibility for the PES grade conditional on obtaining a minimum of 30 points after evaluation of an application file where publication of research work occupies a preponderant place in the rating. It should be noted, however, that the 2015 reform came a decade after the implementation of the License-Master-Doctorate (LMD) system in Morocco. This system not only marked the beginning of the semester evaluation and validation of acquired knowledge by modules, but also of the promotion of scientific research through the creation of Masters, research laboratories and doctoral study centers. The advent of the LMD system would have created suitable conditions to encourage teacher-researchers to publish scientific work. Being part of research laboratories, teaching in master's courses and supervising final master's theses and doctoral theses would explain the scientific development experienced by the teacher-researcher at FSJES-Souissi even before entering the university. validity of the evaluation grid for promotion to the grade of PES. This is what would result, among other things, in research collaborations and scientific work carried out by several researchers or by a teacher-researcher and the students he supervises. Among all the teacher-researchers at the FSJES-Souissi, the PES promoted to this grade following the 2015 reform had the highest number of co-authors to publish research work. A PES under the conditions of the 2015 reform of this grade collaborated with an average of 12 researchers to write and publish their research work. He therefore published his work with 7 more co-authors than a PH, 8 more co-authors than a PES following the reform of this grade in 1975 and 9 more co-authors than a PES according to the conditions provided. by the reform of this grade in 1997, when a PESA from FSJES-Souissi published his 4 research works with a single co-author.



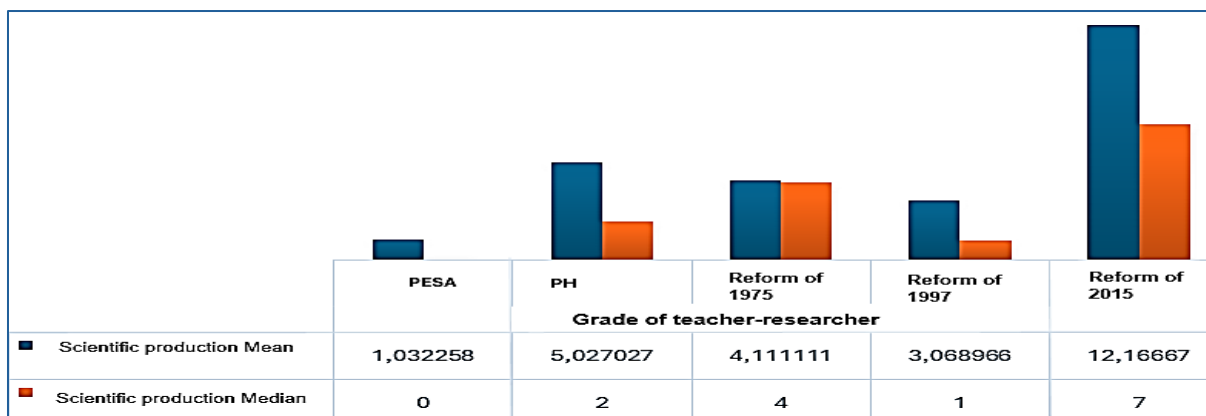


Figure 6. The variability of the scientific production according to the grades and reforms

Coming into force in 2015 in Morocco, the new reform of the PES grade which conditions access to the publication of scientific work would force the teacher-researchers of the FSJES-Souissi to demonstrate scientific activism. However, it is through co-publication that this reform will stimulate scientific production, and the teacher-researchers of the FSJES-Souissi wishing to take up this challenge have found a providential outcome in scientific collaboration. Already professors authorized to supervise research work, these teacher-researchers were directors of current theses, Masters supervisors and members of research laboratories. These conditions suitable for scientific production would benefit these teachers to access a network of co-authors, made up of other teachers, doctoral students or students wishing to pursue doctoral studies. It is in fact the teacher-researchers recruited during the second half of the 1990s and who consequently witnessed the 1997 reform of higher education, who have more than 40 publications in 2019 and who co-wrote with at least 40 authors.

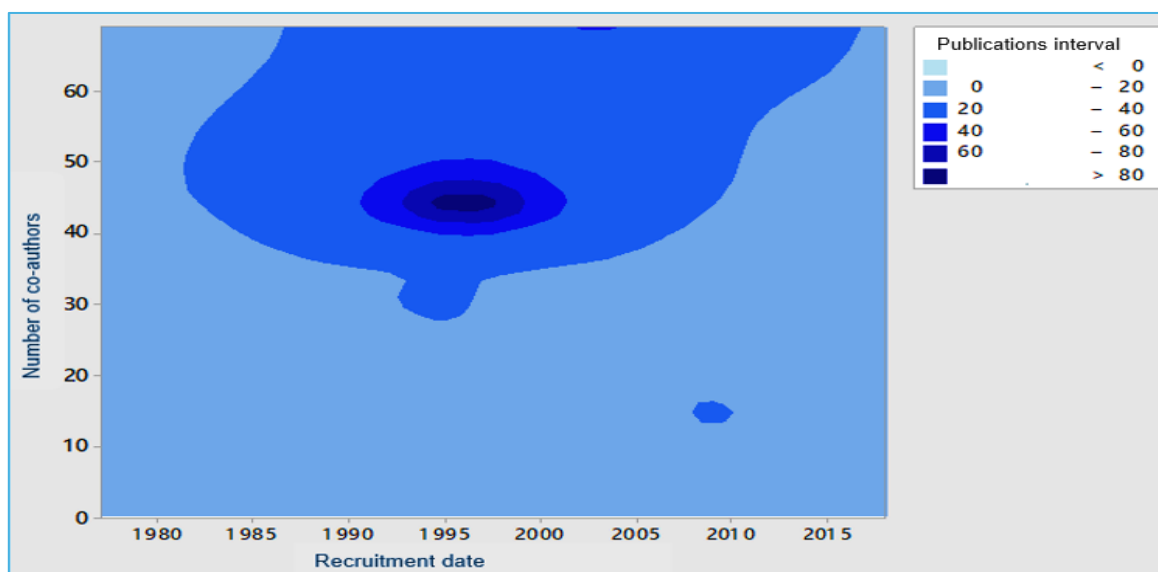


Figure 7. The intersection between number of co-authors; recruitment date; number of publications

The power conferred by the status of being authorized to supervise research work allowed teacher-researchers recruited towards the end of the 1990s to call on co-authors to write and publish scientific work when it became obligatory for become PES in 2015. Teachers hired during the second half of the 1990s, took advantage of the major changes experienced by the higher education sector following the 1997 reform: establishment of the status of teacher-researcher, determination of the evaluation methods for obtaining the PhD and the diploma of in-depth and specialized higher studies as well as the criteria for the accreditation of establishments hosting postgraduate training. These teachers also took advantage of the 2004 reforms which gave universities financial autonomy and collegial bodies where these teachers were able to participate in decision-making, and at the same time, to acquire new skills to their resume. The entry into force of the 2015 reform, establishing the system of promotion to the PES grade through the grid, benefited the teacher-researchers recruited around the middle of the 1990s. The latter would have already accumulated significant experience in university teaching, in the administrative management of the faculty and would have developed a dense network of links with other researchers. Even the teacher-researchers in service within the FSJES-Souissi since the mid-1990s and who

found themselves without publications on the eve of the 2015 reform, made up for it by calling, among other things, on their relational network to co-publish.

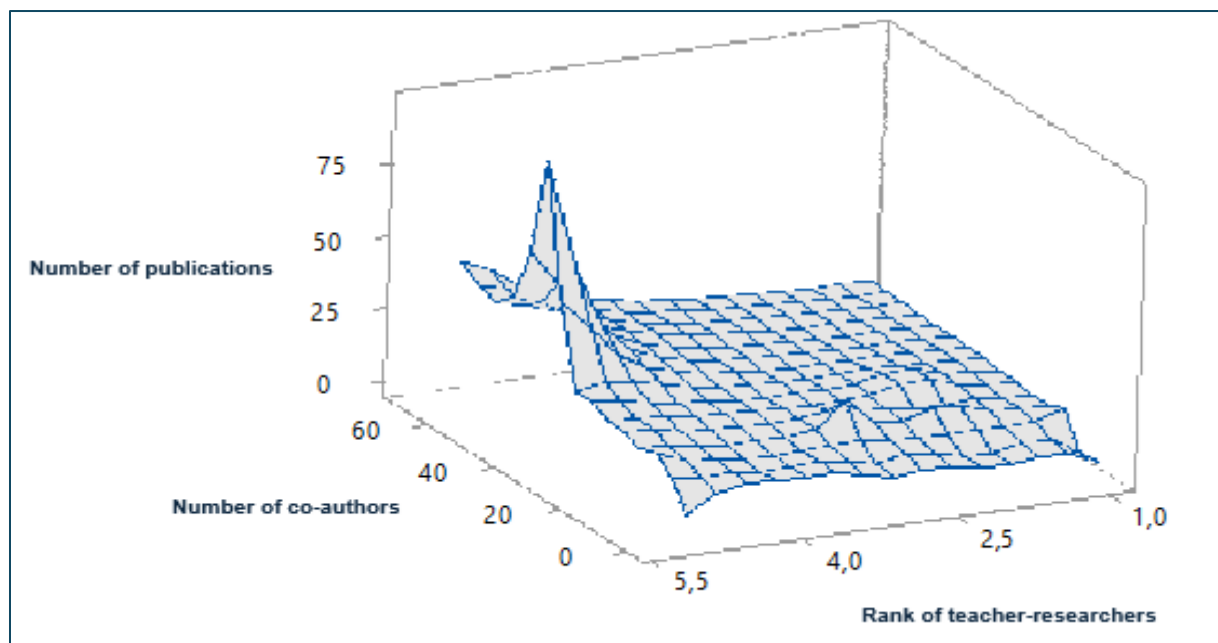


Figure 8. The intersection between number of publications; number of co-authors; rank

As an indication, it should be noted that: Grade of the teacher-researcher: 1: PESA, 2: PH, 3: PES reform 1975, 4: PES reform 1997, 5: PES reform 2015.

Scientific collaboration between researchers is a springboard for the scientific production of the teacher-researcher at FSJES-Souissi. Those among these teachers who have been able to establish links of scientific collaboration through their seniority, their authorization to supervise research work or through the links maintained with the laboratories where they studied and worked, whether abroad or in Morocco, which helped them to integrate into international and national collaboration networks. In addition, Co-authoring and Co-publication help to increase the volume of scientific articles by each signatory of the scientific work. Therefore, cooperating with other authors was seen as a simple and effective way to climb the hierarchical ladder quickly. According to the results of the phenomenological descriptive analysis, we can conclude that the explanatory variable number of co-authors has the traits of a mediating variable.

## Conclusion

The descriptive phenomenological approach has overlooked nothing by simplifying the task of discovering the mediating variable during which the effect of the other explanatory variables fades in its presence. This task, which was tinged with doubt, complexity, and illogic, turned out to be feasible with the adoption of phenomenology. Indeed, the idea on which phenomenology is based is that: “an intuition revealing the very “essence” of science” also “an accumulation of completely verified affirmations (Husserl, 1965).” This definition inspires many things, it manages to give a broader dimension to the meaning of the phenomenon studied; here it is a question of searching for the essence of the phenomenon independently of any value judgment (Rota, 2000; Rajan, 2002; Moran, 2010; Flynn, 2014). It must be remembered, however, that our objective is to take advantage of the phenomenological approach as a means of collecting and processing data separately from its philosophical aspect. Initially, there were many signals which show that most of the explanatory variables more or less impact the volume of scientific production of the FSJES-Souissi teacher-researchers and not only the number of co-authors like the econometric results let us think. So, we could not apply an empirical study to all the data without first going through a descriptive analysis.

The results of the descriptive phenomenological analysis indicated that the scientific collaboration of the teacher-researcher which is measured by the variable: number of co-authors, presented the signs of a mediating variable.

This is influenced by certain sociocultural and demographic characteristics of teacher-researchers, while being a determinant of their scientific production. This initiatory work, which draws its ideas from phenomenology as an inspiring qualitative tool, will soon be completed in a study devoted to modeling using structural equations of the determinants of the scientific production of 136 teacher-researchers from the FSJES-Souissi. We will subsequently show that the study of the determinants of the scientific production of teacher-researchers at the FSJES Souissi is initially based on the intuition of seven main research hypotheses, each of them is subdivided into two sub-hypotheses. Thus, while the first sub-hypothesis predicts the effect of a factor on the scientific collaboration of the teacher-researcher, the second conjecture on the effect of this factor on the scientific production of this teacher. The research hypotheses are constructed to predict the effect of age, grade, and financial situation of the teacher-researcher of the FSJES-Souissi, the specialty of his diploma PhD or equivalent, the language of its writing and the place of its obtaining on his scientific production, considering of course the mediation effect of the scientific collaboration of this teacher-researcher.

## **Scientific Ethics Declaration**

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS Journal belongs to the authors.

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