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THE IMPACT OF RESEARCH PROJECTS AND PROFESSIONAL PROMOTION ON TEACHERS' ACADEMIC PERFORMANCE

Abstract. *The performance of teaching staff and the evaluation of research are increasingly common concerns in university programs. This article aimed to quantify and analyze the impact of research projects and promotion, on the academic performance of teaching staff, using counterfactual impact assessment techniques, namely the DID method. The performance was analyzed by the number of articles published in the best-rated journals from the point of view of the impact factor, respectively AIS (Article Influence Score). The results show that promotion has a significant effect on the academic performance of teaching staff, compared to research projects. The study covers both general aspects of the analysis of academic performance, as well as the specific analysis of the situation of academic staff at Bucharest University of Economic Studies (BUES).*

Keywords*: academic performance, promotion, research projects, DID (the Difference-In-Differences) method, articles*

JEL Classification: C4, I23, H51, H53

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1. Introduction

The performance of university teaching staff depends on several factors, both subjective and objective. University professors have a double responsibility in the activity they carry out. The first task is related to the teaching activity, and the main result is related to how the students manage the knowledge they acquire during the years of study and can integrate themselves into the labor market. The other responsibility considers the research activity, which involves the dissemination of the research results in research projects, scientific articles in the best-rated journals, patents, and inventions. As Smith K.et.al (2013) emphasized, every researcher/teacher wants to excel in the activity he carries out and is concerned with how his work changes people's lives, improving it beyond the "world of academic journals". At the same time, the results of the research contribute to the development of the didactic activity, through the contributions made to the field and by informing the students about the newest approaches.

Universities tend to give more importance to research activities than to teaching, because they are primarily interested in obtaining the best possible place in the national and international rankings, and in this case research plays the main role. (Cadez, S. et.al, 2017),

Research projects also play an important role in the management of any university's funds and represent an essential condition for research activity (Yun, 2018). Practically, you can't do research performance, if you don't have the financial resources to support this research.

The main objective of this paper is to show to what extent promotion and research projects represent effective "treatments" in increasing the performance of teaching staff in the university environment. Performance measured by the number of articles published in magazines, as best rated in terms of impact factor, AIS review. The secondary objective of this research is to identify the portrait of the researcher from BUES, the largest university of economic sciences in Romania. The hypotheses from which we started this research are:

RQ1: Can research projects influence the performance of university teaching staff?

RQ2: Can promotion influence the performance of university teaching staff?

RQ3: Does promotion represent a more effective treatment than research projects in stimulating the production of scientific articles?

This paper is divided into six parts: introduction, literature review, research methodology, data collection, descriptive analysis, and empirical results and discussions. The key conclusions are presented at the end of the study.

2. Literature review

2.1. Academic performance

According to Steinberger (1993), academic performance is a concept multidimensional related to human, cognitive, emotional, social and physical

development. This performance leads to the development of individuals in higher education institutions. Marsh and Hattie (2002), Fairweather (2002), and Asif et al. (2017) explained academic performance based on two activities: teaching and research. Hilman and Abubakar (2017) share the same opinion, considering that performance involves both working with students and academic activities outside of class. Performances related to students can be measured through the following indicators: students' academic status, classes of degree, and graduation rates as indicators for assessing university performance (Hilman and Abubakar, 2017). In addition, the success of the graduates can directly influence the research activity of the coordinating professors (Kyvik and Smeby, 1994). Non-student performance includes research projects, scientific articles, published books, participation in conferences, patents, and academic awards (Chang and Chiu, 2008).

University Grants Commission/India (Bahadur, 2010) developed the academic performance indicator (API), which is based on several sub-indicators: (1) activities related to teaching, learning, and assessment, (2) co-curricular, extension, and development of professional related activities, and (3) research and academic contributions. According to these indicators, academic performance involves teaching, learning, and research activities. On the other hand, Paudel (2020) identified several factors that underlie academic performance, namely: Innovation, Interactive Learning, Capacity Building, Research, and Publication. Therefore, in Nepali educational institutions, academic performance is determined by teaching, learning, research, publication, and the generation of new knowledge, as well as innovation.

Some authors consider that to increase the prestige of a university, the research activity becomes more important than the teaching activity (Cadez, Dimovski, Zaman, 2017). For the management of any university, research is an important objective, because research stimulates innovation and can ultimately lead to an increase in social well-being. In addition, universities are ranked according to the research of teaching staff. A better position of the university in the rankings will increase the prestige of the university and attract more and better students.

Gaston, Heimeriks and Hoekman (2017) analyzed the factors underlying the performance of universities depending on the number of citations, international publications, and publications within the business environment. Based on the three performance indicators, we can evaluate the three essential pillars for any university: research excellence, internationalization, and innovation. Based on a regression analysis, the authors showed that the research performance in the university environment mainly depends on the size of the university, the disciplines taught, and the location (capital or city).

Beyond research and teaching, Creswell (1985) considers that the factors that can influence the academic performance of university teachers can be grouped into two categories: individual factors (for example intellectual ability, teacher motivation, promotion, age, gender, perception of stress) and environmental factors (for the example research field, university reputation, allocation of resources within

the university, colleagues). Blackburn and Bentley (1993) supported the same idea, namely: background variables influence the performance in a university, but an important place also belongs to environmental factors (a good research space, a good interaction with colleagues, the university's research policy, etc.). Gaston, Heimeriks and Hoekman (2017) showed that the performance of teaching staff and implicitly of the university depends indirectly on the size of the university, the disciplines taught, and the location of the university (capital or city).

Yang (2017) analyzed through a questionnaire 5 categories of factors and 15 sub-indicators that can influence the academic performance of university professors, namely: research funding, organizational climate, facilities offered by the university, human resources, and access to different sources of information. The analysis showed that the most important factors that can influence academic performance are: research funding, human resources, access to information, the organizational climate, and the facilities offered by the university. From the analysis of the sub-indicators, it emerged that public funding is the most important factor, the second place was occupied by the student's academic results, and the third place was indicated by digital resources (journals, university databases).

2.2. How can the research activity be measured?

The most used tool for evaluating the performance of teaching staff from a research perspective is the journal Impact Factor (IF). It represents the average number of citations of a journal in a certain period, usually two years. The indicator "the journal impact factor" was initially created to help selection of magazines for the "Science Citation Index", since it was not created to evaluate the performance of teaching staff. Garfield (1964), one of the founders of the impact factor, considers that, with the help of the impact factor, we can effectively evaluate articles and journals, but we cannot evaluate the performance of university professors as effectively.

Smith K.et.al (2013) analyzed in the specialized literature the effectiveness of the impact factor. Of the 71 articles examined, 70 contain numerous criticisms regarding the impact factor, as a performance evaluation tool. Some of the criticisms of this indicator refer to the fact that a researcher's performance is equal to that of the journal in which he published (Ortner, 2010) or the values of the impact factor are not comparable across different fields of research. The indicator (IF) has been modified (updated) over time. In this sense, we can talk about the Normalized Impact Factor (NIF), which was introduced as a method that allows the use of IF to evaluate the quality of journals and papers in different disciplines. Then the Highest Impact Factor (HIF) was discussed at a different level and by adding Color Coding, as follows: disciplines (red), sub-disciplines (orange), branches (yellow), and specialties (green).

Another indicator that can measure the performance of teaching staff and that can be compared with the impact factor is the "Article Influence Score (AIS)", which was created by Bergstrom, Althouse, and Rosvall (Bergstrom 2007). This

indicator is part of the "Journal Citation Reports (JCR)" and is calculated based on the "Page Rank" algorithm from Google and is based on the JCR citation network. For the calculation of this indicator, the citations are weighted with the journal from which they originate (for a stronger journal the weight is higher, compared to a weaker journal). Davis (2008) compared AIS with IF and concluded that at least in one field, medicine, AIS does not provide substantially different information compared to IF.

The "h" index is another tool developed by Hirsch (2005) that measures the productivity of teaching staff and the individual results of researchers (Ortner, 2010). This index arose from the need to evaluate as correctly as possible the performances of teaching staff, performances that lead to obtaining financial resources for the university, and promotion and employment in research institutions. This bibliometric tool takes into account the most cited articles of the teacher, as well as the number of citations he received in other publications (Smith et.al (2013). Most researchers value more indicator performance than the impact factor (Harzing, et al., 2009; Jackson et al., 2009; Ortner, 2010).

Recently, governments have started to invest in research to contribute to economic development. Thus, university staff should develop papers and research projects for the benefit of society. Buxton, et al., 2004; Grant, 2006; Hananney et al., 2003; Moodie, 2006, believes that a new calculation model of academic performance should be developed, starting from the following hypothesis: how many people's lives have been saved or improved? (Grant, 2006).

A study carried out by Gutu and Manolescu (2018) showed that higher education institutions in Romania (West Timisoara University, Babes-Boyai University, Bucharest University, and Alexandru Ioan Cuza University) do not take advantage of the funding opportunities of the European Union. The results of the study showed that there is no correlation between the number of research projects financed from national and international funds and the academic performance of the university, implicitly of the teaching staff.

In Romania, the evaluation of academic staff performance is carried out through bibliometric indicators (Hirsch index; Google Scholar index; Scopus index, and multidisciplinarity index), the number of published articles, and research projects. The value of the articles is given by the magazine's impact factor, respectively AIS. About the two indicators, the scientific journals are divided into three zones: red (with the highest value), yellow (with the average value), and gray or white (without AIS or a low impact factor).

3. Research methodology

The methodology used in this article was based on the counterfactual analysis technique, analyzed in the specialized literature by Drukker (2016), Loi and Rodrigues (2012), Pomeranz (2017), Bang et al. (2005), Rubin (1974).

The counterfactual impact assessment represents a family of methods related to the application of econometric tools on a series of models, in order to obtain valid statistics regarding: the existence, size and structure of the impact that

a certain form of intervention exerts on an observable indicator or a characteristic. Counterfactual impact assessments measure the net effect (or impact) of an intervention or treatment. In other words, we follow the difference between the result observed after an intervention has taken place and the result that would have been observed if the intervention had not taken place. The last-mentioned result has been called "counterfactual". The treatment effect refers to the causal effect of a binary variable (0-1) on a result variable.

This method consisted of the formation of two groups of units similar in observable characteristics, with the difference that the units of the treatment group had access to the intervention (treatment), while the units of the control group did not benefit from the treatment.

The main methods of counterfactual evaluation are the propensity score matching (PSM) method, the difference-in-differences (DID) method, as well as "the discontinuous regression (RD) method" (Evalsed Sourcebook: Methods and Techniques, European Commission, 2013). There are several methods of evaluating the impact of a certain treatment:

- Simple difference: involves comparisons between the group of treaties and non-treaties. It represents the most widely used method in impact assessment and involves comparing beneficiaries with non-beneficiaries of treatment with the assumption that those who did not participate in the program represent a valid counterfactual of what would have happened to those who accessed the program (treatment), if they hadn't accessed it.
- Ante-post treatment comparison: represents a special case of the simple difference, but instead of using another group as a control group, the same group is compared before and after participating in the program (treatment). A pre-post comparison is a particular type of simple difference assessment. The impact is measured as the difference between the outcome of interest before and after the intervention.
- *Differences in differences* (DID), the method used in this research. This combines the two previously stated methods in order to be able to reveal the role played by research projects and the promotion of university staff in increasing their performance. This method takes into account both the differences between the two groups and the changes over time. The effect is calculated by measuring the change over time in the behaviour of the treated and control groups and then taking into account the difference between these two differences. The difference-in-differences analysis compares the change in outcomes (behaviours) over time of the treated group versus the untreated (control) group. The key assumption of this method is the common trend assumption, assuming that without the program, both groups would have identical trajectories over time. The disadvantage is that it is usually impossible to assess whether the two

groups would have developed in the same way in the absence of the program.

The difference-in-differences type of method is the special case of the longitudinal model, which involves comparing the results of interest:

- before (Pre=0) and after treatment (Post=1)
- between the treated group (Ti = 1) and the control group (Ti = 0)

The change of results in the control group (which should not be affected by the treatment) provides a counterfactual for the change in treatment results in the absence of treatment.

The assumptions of the model are: similar (parallel) pathways in the absence of treatment; the treatment group is the target group for the intervention; the control group is the comparison group in the impact assessment and has similar characteristics to the treatment group.

An important concept in DID is the average treatment effect (ATE-average treatment effect) defined as the average gain in the outcome of the group of participants compared to that of non-participants (control):

$$\text{ATE=E(Yi(1)Ti=1)-E(Yi(0)Ti=1)}$$

$$ATE = E(Yi(1)Ti = 1) - E(Yi(0)Ti = 1) \qquad (1)$$

where:

Y_i is the outcome of individual i, T_i is the treatment dummy variable.

$Y_i(1)$ is the outcome of an individual under treatment;

$Y_i(0)$ is the result of an individual who does not participate in the treatment

ATE explains that the expected results (in terms of averages) of the individual due to the treatment can be estimated by comparing the expected value when the individual is not a participant with the one in which he is a participant.

Starting from the model:

$$Y_i = \alpha + \beta \cdot T_i + \varepsilon_i \qquad (2)$$

where: the result Y_i is a linear function of the treatment dummy variable T_i and when $T = 1$ the individual i is a participant in the treatment, and when $T = 0$ he is not a participant, α represents the effect that would not depend on the treatment over time, over time where β is the estimator that captures the treatment effect

The associated regression model is:

$$Y_i = \beta_0 + \beta_1 * T_i + \beta_2 * t + \beta_3 t * T_i + e_i \qquad (3)$$

where:

Y_i = result of individual i,

$Y_i(1)$ = the result of an individual under treatment;

$Y_i(0)$ = the result of an individual who does not participate in the treatment

T_i= treatment dummy variable and can take the values T=1 if the individual is a participant in the treatment and T=0 if he is not a participant in the treatment.

t = time variable reflecting the time periods in the analysis: before the intervention t=0 (pre-intervention) and after the intervention (post-intervention) t=1.

β_3 **= the estimator that captures the treatment effect.**

Table 1. DID model

	Before	After	The difference
Treatment Group (Y_T)	$\beta_0 + \beta_1$	$\beta_0 + \beta_1 + \beta_2 + \beta_3$	$\Delta Y_T = \beta_2 + \beta_3$
Control Group (Y_C)	β_0	$\beta_0 + \beta_2$	$\Delta Y_C = \beta_2$
			$\Delta\Delta Y = \Delta Y_T - \Delta Y_C = \beta_3$

Source: Based on the catalog of indicators regarding research excellence of Bucharest University of Economic Studies

The DID method is a way to correct endogeneity problems if there are unobservable heterogeneous effects in the error term that are unchangeable over time.

To estimate the impact of a program/intervention, and to determine the ATE we must estimate $E(Y_i(0)|T_i = 1$ because we cannot find the ideal counterfactual for something that cannot happen at the current moment.

The selection bias (B) appears because in reality, we do not have an ideal counterfactual, so we consider:

$$D = E(Y_i(1)|T_i = 1 - E(Y_i(0)|T_i = 0 \quad (4)$$

and D is the average effect of a program (an estimate of ATE).

D= E((Y_i (1)|T_i=1)-E((Y_i (0) | T_i=0)+E((Y_i (0) | T_i=1)-E((Y_i (0) | T_i =1) (5)

This time, we compare the expected results of the treated group relative to the non-treated group in the situation where the treatment T_i s not given. The expected difference cannot be due to the intervention of the program. To analyze this, subtract the ideal counterfactual $E(Y_i(0)|T_i = 1$ from the above equation and obtain:

$$D = E((Y_i(1)|T_i = 1) - E((T_i = 0) + E((T_i = 1) - E((T_i = 1) \quad (6)$$

ATE can be determined as $E((Y_i(1)|T_i = 1) - E((T_i = 1)$, so the equation is transformed into:

$$D = ATE + E((Y_i(0)|T_i = 1) - E((T_i = 0), \quad (7)$$

D=ATE+B, (8)

The average effect of program D is the sum of ATE and bias B, with the mention that to estimate D we need an estimate of ATE. Therefore, we cannot calculate the size of the bias because we do not know $E((T_i = 1)$.

A detailed description of the DID method is provided by the studies of Wooldridge (2007), Wooldridge and Imbens (2007), Khandker, Koolwal, Samad (2009) and Pomeranz (2017) as well as the IRVAPP Winter School.

The characteristics of the DID method are: (1) It takes into account the unobserved heterogeneity in the participants; (2) Heterogeneity is invariant over time; (3) Requires data before and after the intervention; (4) Controls for initial conditions and possible selection bias; (5) Provides an alternative to calculate program impact.

DID solves the problem of selection bias by considering outcomes and covariates for both participants and non-participants in two time periods pre-intervention and post-intervention.

Y_t^T=Y_i (1) Y_t^C=Y_i (0)

Therefore, considering two periods of time, where t is the time variable defined as t=0 for pre-intervention and t=1 for post-intervention and considering $Y_t^T = Y_i(1)$ as the result of the beneficiaries of the program, and $Y_t^C = Y_i(0)$ is the result of the untreated group, the estimated DID is determined as follows:

$$DD = E(T_1 = 1) - E(T_1 = 0) \quad (9)$$

For the DID estimator, it is assumed that:

$$E(T_1 = 0) = E(T_1 = 1) \quad (10)$$

So $E(T_1 = 0)$ becomes an appropriate counterfactual that is used in practice in estimations. Considering the fact that individual heterogeneous effects are invariant over time, the difference between the two time periods cancels the selection bias.

The basic DD model is:

$$Y_i = \beta_0 + \beta_1 * T_1 + \beta_2 * t + \beta_3 * t * T + \varepsilon_i \quad (11)$$

The DD estimator is: $DD = E(T_1 = 1) - E(T_1 = 0)$.

Taking into consideration: $E(T_1 = 1) = (\beta_0 + \beta_1 + \beta_2 + \beta_3) - (\beta_0 + \beta_1)$ $(T_1 = 0) = (\beta_0 + \beta_2) - \beta_0$ and subtracting the two terms we get DD=β_3

4. Data collection and design of the two interventions: research projects and promotion

In this part of the research, we will present how was applied, considering the two treatments: research projects and promotion.

4.1. Data collection of the intervention of research projects from the period 2016-2017 on the performance of teaching staff

Assumptions of the model:

Intervention: analysis of the impact of the research projects carried out in BUES during 2016-2017 on the performance of teaching staff. The duration of the projects was at least 2 years. We assume that a project carried out for two years (until 2018/2019) will produce results (scientific articles) in 2020.

There are two groups in research:

- The treated group consists of teaching staff who had the status of director or member in the research projects carried out during 2016-2017.
- The control group (untreated) consists of professors who did not have this status during the respective period.

In the 2014-2017 period, BUES research projects had six funding sources: European funds, partnerships, sectoral projects, the business environment, institutional projects and international projects. Most of the financed projects were financed by European funds, and the second place was occupied by institutional financing.

4.2. Data collection and intervention design of promotion from the period 2016-2017 on the performance of teaching staff

Assumptions of the model:

The intervention: evaluation and analysis of the impact of BUES promotions from the 2018-2019 period on the performance of teaching staff. The people who graduated in 2018-2019 were selected to be part of the treatment group.

There are two groups in research:

- The treated group consists of teaching staff who were promoted during 2018-2019.
- The control group (untreated) consists of teachers who didn't promote during the period 2016 - 2020.

For both interventions we have the following covariates and outcome indicators:

Covariates:	**Result indicators:**
Teaching function, the quality of doctoral supervisor reporting area CNATDCU	the number of ISI articles in the red zone; the number of ISI articles in the yellow area; the number of ISI articles in the white area; the number of ISI proceedings articles.

The result indicators were taken from the catalog of indicators regarding research excellence from BUES articles, made based on the criteria for promotion to the position of professor and the habilitation thesis.

The average treatment effect on treated (ATT) is identified by the parameter β_3 in the regression equation:

$$Y_i = \beta_0 + \beta_1 * T_1 + \beta_2 * t + \beta_3 * t * T + \varepsilon_i$$

where: Y_i is the result, T is the binary treatment variable, t is the pre-and post-intervention indicator, and the X-set of covariates.

5. Descriptive analysis and empirical results

5.1. Descriptive analysis of the control group and the treatment group in the case of research projects

From the table below, it can be seen that only 32 teaching staff in 2015 (pre-intervention) had research projects and published articles in 2020.

Table 2. Descriptive statistics for participants and non-participants in research projects

	Pre-intervention	*Post-intervention*	*Total*
Control group	*725*	*725*	*1.450*
%	*50*	*50*	*100*
Treatment group	*32*	*32*	*64*
%	*50*	*50*	*100*
Total	*757*	*757*	*1.514*
%	*50*	*50*	*100*

Source: Bucharest University of Economic Studies-The catalog of indicators regarding research excellence of BUES

Regarding the number of articles published in the 4 categories (red area, yellow area, white area and ISI proceedings) in 2020, most articles were published in order in ISI PROCEEDINGS (57%), ISI ALB (28%), ISI YELLOW (11%) and ISI RED (4%).

If we analyze the two groups (treated and non-treated) we notice that the control group published more articles in all four areas compared to the treated group. However, we must also consider the fact that the number of professors in the two groups is not proportional (the control group consists of several subjects).

Also, an improvement in the results of the treated group can be noted, after "treatment". It is interesting to note that **after the intervention the teaching staff recorded a greater number of yellow ISI articles compared to the pre-intervention period.** (Appendix 1)

The analysis of the empirical results for the four result indicators highlighted the statistical significance of the difference-in-differences (inter) estimator only in the case of ISI articles published in the yellow zone, at a significance threshold of 1%. While for ISI articles published in the white area and ISI proceedings the probability of the estimator was much higher than the 10% threshold. Similarly, in the case of the number of ISI articles published in the red zone, the DID estimator does not prove its statistical significance at the 10% significance threshold. (Appendix 2)

Among the covariates, the quality of being a doctoral supervisor positively and statistically significant impacts the performance of teaching staff at the 1% threshold for ISI articles in the yellow, white and ISI proceedings areas, but this fact is invalidated in the case of ISI articles in the red area. On the other hand, the didactic function included in the model through three dummies (lecturer, associate professor and teacher related to the reference category: university assistant) does not show a significant impact on the academic performance of teaching staff.

If ISI articles in the white area are mostly produced by professors, the impact being a positive and statistically significant one, in the case of ISI proceedings articles they are the prerogative of university assistants, a potential explanation could come from the fact that they, being doctoral students, need such publications to validate their criteria for completing their doctoral studies.

5.2. Descriptive analysis of the control group and the treatment group in the case of promotion

From the Table below, it can be seen that the number of subjects in the control group is significantly higher than that of the treated group.

Table 3. Descriptive statistics for participants and non-participants for promotion

	Pre-intervention	Post-intervention	Total
Control group	744	744	1.488
%	50	50	100
Treatment group	15	15	30
%	50	50	100
Total	759	759	1.518
%	50	50	100

Source: The Bucharest University of Economic Studies-The catalog of indicators regarding research excellence of BUES

It is interesting to note that after the intervention the didactic staff recorded a higher number of ISI yellow, white or ISI processing articles compared to the pre-intervention period and this is more valid for the treated group compared to the non-treated ones. The promotion increases the academic performance of teaching staff by stimulating the publication of ISI articles in the yellow, white area and ISI proceedings in a greater proportion compared to the first intervention research projects, the increase being almost 2.49 articles in the yellow area.

In the case of ISI articles in the white area, access to promotion led to an average increase of 0.65 in the number of articles, while analyzing pre vs. post-intervention there was an increase of 0.80 in the number of articles on average post-intervention.

As expected, in the case of ISI proceedings articles, the dynamics are even greater, so an average increase of 1.38 in the case of graduates compared to the control group and 1.58 post-intervention compared to the pre-intervention period is found.

The analysis of the empirical results for the four result indicators highlighted the statistical significance of the differences in differences (inter) estimator for the articles ISI published in the yellow area, ISI published in the white area and ISI proceedings at a significance threshold of 5%. While the ISI

articles in the red area, the probability of the estimator was much higher than the 10% threshold (Appendix 3 and 4).

Among the covariates, the quality of being a doctoral supervisor impacts in a positive and statistically significant manner the performance of teaching staff at the 1% threshold for ISI articles in the yellow, white and ISI proceedings areas, but this fact is invalidated in the case of ISI articles in the red area. Instead, the didactic function included in the model through three dummies (lecturer, associate professor and professor reported to the reference category: university assistant) shows a significant impact on the performance of teaching staff quantified by the number of yellow and white ISI articles for the reported category of university professors in the university assistant category. So that the biggest increase is recorded in the case of the number of ISI articles in the white area, of 0.325 on average for teachers compared to assistants.

The quality of doctoral supervisors led to the greatest increase in the number of ISI proceedings articles, with an average of 1.43 compared to a professor who does not have this status.

6. Discussions

The performance of university staff is extremely important for the development of society, especially under the given conditions, when we are facing a pandemic caused by the Sars-Cov-2 virus and a war. The work done by academics directly influences the professional future of students, and their research can contribute to the improvement/promotion of public policies or different types of innovations, which can positively change people's lives. The main objective of this paper is related to how promotion and research projects influence the performance of university staff.

At the moment, the performance of academic staff is measured using the number of published articles, the area in which the journal is located where the research is found (red, yellow, white), respectively the nature of the journal (e.g. economics, management, education). However, in recent years governments have begun to collaborate directly with university researchers to find together the best solutions to the problems facing society today, and these are not a few.

In this article, research projects, along with the promotion of teaching staff, are considered "treatments" that can contribute to improving the performance of university staff. The term treatment comes from medicine, because the research method applied in this article, Difference in Difference (DID), was used for the first time when testing some drugs.

Research projects represent the main source of financing the research activity of university staff and can be considered environmental factors that can directly influence the production of scientific articles and implicitly the performance of teaching staff. They ensure your support in the development of well-documented studies because they can provide the necessary material base (e.g. funding of national level surveys, the purchase of software and databases).

This study showed that the teaching staff in BUES who were "treated" with projects registered a higher number of articles, especially ISI in the yellow area, compared to the pre-intervention period, in which they were not treated. ISI articles in the white area are mostly made by university professors, while university assistants publish more ISI proceedings articles. The quality of doctoral supervisors positively influences the production of articles, because they have the obligation to comply with certain performance criteria. The specialized literature confirms that funding research activity contributes to improving the performance of university teaching staff (Yang, 2017).

Based on the results obtained in this study, we can create a portrait of the successful researcher within the USEB, namely: Ph.D. supervisor, generally publishes ISI articles in the yellow, white and ISI processing areas, participates in research projects. The articles in the red area are more difficult to access because they generally require a multidisciplinary collaboration, which is more difficult to achieve. Without a doubt, in the near future, we will witness the introduction of new criteria for evaluating university performance, which will take more into account of the usefulness of the research

Conclusions

Research evaluation has become a regular practice in science, technology and innovation management programs. This trend is determined both by the pressure exerted by society on accountability in terms of public spending and by the growing interest in evaluation as a basis for planning and managing programs. In this case, the research is evaluated using the number of articles published in four areas: red, yellow, white, and ISI proceedings by teaching staff in BUES.

This study aimed to see to what **extent promotion and research projects influence the performance of the university and BUES teaching staff. Promotion can be seen as an internal,** subjective factor that primarily depends on the desire of each professor to promote, while **research projects can be seen as external factors** that help professors to publish articles.

In order to highlight the impact of promotion and research projects in the activity of teaching staff in BUES, we used the DID research method. Regarding the number of articles published in the 4 categories in 2020 by BUES teaching staff, most articles were published in order in: ISI PROCEEDINGS (57% of the total), WHITE ISI (28% of the total), YELLOW ISI (11% of the total) and RED ISI (4% of the total).

Among the two types of possible interventions tested to have a significant effect on the academic performance of BUES professors, promotion has more notable results, compared to research projects. Therefore, the promotion manifests a statistically significant positive impact on the articles in the yellow and white areas, as well as ISI proceedings articles, unlike projects that manifest a positive impact only in terms of the ISI articles in the yellow area

The quality of being a Ph.D. supervisor shows a significant and positive impact on the creation of ISI articles from the yellow, white and ISI proceedings areas, but the results are invalidated in the case of ISI articles from the red area. It is interesting to note that after the intervention related to the promotion of teaching staff, they registered a greater number of ISI yellow, white or ISI proceedings articles compared to the pre-intervention period and this is more valid for the treated group compared to non-treaties. The promotion increases the academic performance of teaching staff by stimulating the publication of ISI articles in the yellow, white and ISI proceedings areas in a greater proportion compared to the first intervention-research projects, the increase being almost 2.49 articles in the yellow area.

All the hypotheses stated at the beginning of the research were validated by the empirical results. Therefore, research projects play an important role in the production of ISI articles in the yellow zone, while promotion stimulates the publication of ISI yellow, white, or ISI proceedings articles. As was pointed out above, in the discussion section, the articles in the red zone require multidisciplinary research and a longer publication period.

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